

Labor Market Power, Export Prices and Pass-through

Malik Curuk, Jérôme Héricourt & Gonzague Vannoorenberghe

Highlights

- Estimating the effects of goods and labor market power on firm pricing behavior is difficult since firm-level output and employment are jointly determined.
- We separately identify the effects of goods and labor market power on pass-through rates.
- We present a theoretical framework in which multi-destination exporters are oligopolists in their goods markets and oligopsonists in their local labor market.
- Combining firm-level export data per product-destination with establishment-level balance sheet data and employment zone identifiers for the universe of French firms from 1995 to 2015, we construct theoretically sound proxies for labor and goods market power and jointly estimate their effects on export prices using exchange rate shocks as the source of identifying variation in firm demand.
- We provide robust evidence that firms with stronger labor market power have a lower pass-through of changes in their effective exchange rate into export prices conditional on their goods market power in the relevant export markets.



Abstract

Estimating the effects of goods and labor market power on firm pricing behavior is difficult since firm-level output and employment are jointly determined. We exploit the variation in the sets of destination countries across exporting firms, which enables us to separately identify the effects of goods and labor market power on pass-through rates by reducing the comovement of firm size across specific sales markets and in its local labor market. We present a theoretical framework in which multi-destination exporters are oligopolists in their goods markets and oligopsonists in their local labor market. Combining firm-level trade data per product-destination with establishment-level balance sheet data and employment zone identifiers for the universe of French firms from 1995 to 2015, we construct theoretically sound proxies for labor and goods market power and jointly estimate their effects on export prices using exchange rate shocks as the source of identifying variation in firm demand. Consistent with the model's predictions, we provide robust evidence that firms with stronger labor market power have a lower pass-through of changes in their effective exchange rate into export prices conditional on their goods market power. The findings indicate a sizable degree of labor market power for French exporters.

Keywords

Labor Market Power, Goods Market Power, Exchange Rate, Pass-through.

JEL

F16, F31, J42.

Working Paper



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CEPII Working Paper
Contributing to research in international
economics

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EDITORIAL DIRECTOR:
ANTOINE BOUËT

VISUAL DESIGN AND PRODUCTION:
LAURE BOIVIN

ISSN 2970-491X

November 2025

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RESEARCH AND EXPERTISE
ON THE WORLD ECONOMY



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Malik Curuk[†] Jérôme Héricourt[‡] Gonzague Vannoorenberghe[§]

1 Introduction

There has been a recent surge of interest in the implications of labor market power on firm-level outcomes and recent macroeconomic trends (Syverson (2024)). Oligopsonistic labor markets imply that dominant firms pay wages lower than the marginal revenue product of labor and that the transmission of productivity gains into wages is incomplete. Hence, changes in labor market power may have sizable effects on the labor share, allocative efficiency, inequality, and wage dynamics (Berger et al. (2022), Deb et al. (2022, 2024)).¹ Nevertheless, estimating the effects of labor market power on firm behaviour is empirically challenging in the presence of goods market power as these two forms of market power are correlated due to the joint determination of firm size in goods and labor markets, it is often difficult to determine the boundaries which define the relevant goods and labor markets, and output prices are typically not observed.²

In this paper, we combine French customs data on firm-level exports per product-destination pair with local labor market identifiers for the universe of French firms from 1995 to 2015. We observe firms' prices (unit values) and relative sales shares in different export markets,

*We would like to thank Giancarlo Corsetti, Shubhdeep Deb, Jan Eeckhout, Gregor Jarosch, David Lagakos, Kalina Manova, Thierry Mayer, Isabelle Méjean, Marc Melitz, Simon Mongey, Andreas Moxnes, Ralph Ossa, and Giovanni Peri for insightful comments on earlier versions of the paper. Access to some confidential data, on which is based this work, has been made possible within a secure environment offered by CASD – Centre d'accès sécurisé aux données (Ref. 10.34724/CASD). This work was supported by the Fonds de la Recherche Scientifique – FNRS/FWO under Grant EOS Project 3078531 "Winners and Losers from Globalization and Market Integration: Insights from Micro-Data." The usual disclaimer applies.

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¹The extent of labor market concentration, which is found to be sizable, and its evolution over time have been documented in a growing literature, see e.g. Azar et al. (2022), Benmelech et al. (2022). Lamadon et al. (2022) quantifies the importance of imperfect competition in the US labor market by using a matched employer-employee panel data and documents sizable rents in the labor market.

²A common way to recover firm-level markups and markdowns is using the production approach (Hall (1986), Loecker and Warzynski (2012)). Bond et al. (2021) shows the potential issues in estimating markups when output prices are not observed and demand schedules are heterogeneous across firms. Syverson (2024) presents a review on the existing methods of estimating markups and markdowns, and potential issues in interpreting estimated markups when there are wedges due to imperfections in factor markets.

proxying for goods market power, as well as employment shares in their local labor market, proxying for labor market power. In our setup, the differences in the degree of export intensity and the set of sales markets across exporting firms limit the correlation between the relative size of the firm in the labor market and in a particular export market. Hence, we are able to jointly estimate the effect of both types of market power on the pricing decision of exporting firms conditional on an extensive set of fixed effects to partial out aggregate goods and labor market shocks using exchange rates as the source of identifying variation in firm demand.

To guide our empirical analysis, we present a theoretical framework highlighting the determinants of the pricing decisions of multideestination exporters, which operate in imperfectly competitive goods and labor markets. Our model rests on three main pillars. First, workers self-select into firms based on their comparative advantage à la Roy (1951), leading to upward-sloping labor supply curves for each firm. Second, local labor markets are partially segmented and oligopsonistically competitive. The level and elasticity of the markdowns are increasing in the employment share of a firm in its local labor market (cf. MacKenzie (2021); Berger et al. (2022)). Third, firms engage in oligopolistic competition in the goods markets as in Atkeson and Burstein (2008) and the markup is increasing in the sales share of a firm in a particular export market. In this setup, the responses of firm prices to demand shocks are correlated across different sales markets via the common cost component due to upward-sloping labor supply curves. Firms' export prices further respond differentially to (i) the *bilateral exchange rate* depending on their relative goods market power in the specific destination, and to (ii) the *firm-specific effective exchange rate* depending on their labor market power. Firms with higher goods market power in a destination absorb bilateral exchange rate fluctuations by stronger markup adjustments. Similarly, firms with higher labor market power face less elastic labor supply and pass-through effective exchange rate shocks less into their export prices. The presence of goods market power also dampens the effects of the exchange rate shocks on the labor demand of the firm, implying a lower change in marginal costs and a weaker markdown adjustment.

To assess the prevalence of oligopsony in the labor markets, we use micro-level administrative data from 1995 to 2015 on the exports of French manufacturing firms for each product-destination pair, combined with employment data at the establishment level. We proxy the *labor market power* of a firm by its employment share in its sector-employment zone pair as implied by our model.³ The share of exports of a firm in the total French exports of a product to a destination gives a measure of its relative *goods market power* compared to other French exporters. We use exchange rate variations as the source of foreign demand shocks. In line with the model's prediction, we provide robust evidence that firms with larger

³We elaborate on our methods of assigning multi-product and multi-region firms to particular goods and commuting zones in Section 3.1.

labor market power pass-through firm-level *effective exchange rate* shocks into their export prices to a lower extent conditional on their goods market power. We find that a monopolist in its local labor market with a negligible share in its sales markets (i.e., without any goods market power) will pass-through only about 10 to 25 percent of an effective exchange rate shock into export prices depending on the sample and empirical specification. These results are robust to a wide range of well-known determinants of firm-level pass-through such as the firm's import intensity, changes in imported input prices (Amiti et al. (2014)), firm size (Berman et al. (2012)) and invoicing currency (Corsetti et al. (2022); Amiti et al. (2022)). We further show that these results are stronger for the firms operating in labor intensive industries and they are robust to the consideration of alternative explanations and our particular choices on measurement and sample selection. Our findings indicate a sizable role for the labor market power in the pricing behavior of exporters, which cannot be solely explained by their goods market power.

This paper contributes to the expanding literature on the effects of labor market power on firm- and aggregate-level phenomena. Berger et al. (2022) investigates the effect of oligopsonistic labor markets in general equilibrium with worker heterogeneity in preferences for working in different firms. Azkarate-Askasua and Zerecero (2024) present a model with labor market power and unions where they show that the unions partially counteract the distortions due to oligopsony in France. Jarosch et al. (2024) develops a search model with granular employers, which generates the positive relationship between firm-level employment and labor market power. These studies focus on the effects of imperfect competition in the labor markets with perfectly competitive goods markets. A recent literature investigates the effects of labor market power on the transmission of international trade shocks without oligopolistic competition (Jha and Rodriguez-Lopez (2021), Felix (2021), Juarez (2024), Chan et al. (2022)). Alvarez et al. (2023) shows the implications of two-sided market power in input trade for the pass-through of tariffs into price-level and aggregate prices. The existing studies which feature imperfect competition in both the goods and labor markets typically adopt the production approach to measure markups and markdowns jointly or rely on structural models to infer the associated distortions (Dobbelaere and Mairesse (2013), Morlacco (2019), Yeh et al. (2022), Kroft et al. (2020), Deb et al. (2022), Dhyne et al. (2022), Hashemi et al. (2022)).

An important empirical challenge in this line of research is to define the relevant goods and labor markets within which the firms compete. In this respect, Deb et al. (2024) proposes to estimate a stochastic model of market structure jointly with technology using model-based structural relationships between market structure, wage bill, and revenue assuming that the sales and labor markets of a firm are identical. Gutiérrez (2022) uses the sector-region pairs to define local labor markets and 4-digit industry classification of firms to define goods markets to investigate the impact of goods and labor market power on the pro-competitive effects of

trade in a quantitative general equilibrium model and shows that the two forms of market power reinforce each other to increase the pro-competitive effects of trade. Combining firm-level international trade data with establishment-level information on employment enables us to both observe the prices charged by firms in different product-destination markets, where they have different degrees of goods market power, and measure their share of employment in their sector-employment zone. These theoretically sound definitions for the goods and labor markets are particularly useful to disentangle the effects of different forms of market power on the pricing behaviour of firms in the reduced-form estimations.

An important point to note is that the presence of multi-region firms makes the definition of a local labor market challenging and constitutes a source of measurement error in the employment share of firms in their local labor markets as we observe the export prices at the firm-product-destination level but not at the establishment level. To address this issue, we present extensions of our model with multi-region firms and show that the theoretically relevant proxy for the labor market power of a multi-establishment firm posting a single wage across its establishments is a weighted average of the employment shares of its establishments in their local labor markets where the weights are given by the payroll share of each establishment within that firm. We use this measure in our baseline empirical analysis and test the sensitivity of the baseline results for the exclusion of multi-region firms in Section 5.⁴

Our paper is also related to the literature on the firm-level pass-through of exchange rates into tradable prices.⁵ [Berman et al. \(2012\)](#) document that export prices of more productive firms respond less to exchange rate shocks due to the adjustments in their markups. [Auer and Schoenle \(2016\)](#) show that the direct firm-level response to own cost shocks is U-shaped in the market share of the firm while the response to the changes in competitors' price is hump-shaped.⁶ [Amiti et al. \(2014\)](#) highlight the importance of imported intermediate inputs in explaining the incomplete pass-through for large firms and show that exchange rate pass-through in export prices is increasing in the market share conditional on the appropriate set of fixed effects. Using UK customs data, [Corsetti et al. \(2022\)](#) present evidence that

⁴For the ease of exposition, we assume that the firms are located in only one local labor market while presenting our theoretical framework in the main text. The derivations of the optimal markdown of multi-region firms for the two cases with a single wage rate and fully flexible wages across establishments are presented in Appendix 7.2.1.

⁵The literature highlights the importance of various channels in limited pass-through: monopoly power in the goods markets and endogenous markup adjustments in response to exchange rate fluctuations ([Krugman \(1986\)](#), [Dornbusch \(1987\)](#), [Bergin and Feenstra \(2001\)](#), [Atkeson and Burstein \(2008\)](#), [Berman et al. \(2012\)](#), and [Auer and Schoenle \(2016\)](#)); the short-run price rigidity in consumers' or a vehicle currency ([Engel \(2002\)](#); [Gopinath and Rigobon \(2008\)](#), [Amiti et al. \(2022\)](#)), and the comovement between exchange rates and marginal costs, i.e. local distribution costs and imported inputs ([Burstein et al. \(2003\)](#); [Corsetti and Dedola \(2005\)](#), [Goldberg and Campa \(2010\)](#); and [Amiti et al. \(2014\)](#)) among many others.

⁶The U-shaped relationship between the degree of exchange rate pass-through and market share at the firm level is also documented in [Garetto \(2016\)](#), [Devereux et al. \(2017\)](#).

exporting firms price-to-market only when they price in local currency. [Amiti et al. \(2022\)](#) show that currency invoicing is an active firm-level decision, influenced by the flexible price determinants of the exchange rate pass-through and also has a direct causal impact on the degree of exchange rate pass-through in the short and medium run.⁷ We contribute to this literature by introducing labor market power as a novel dimension and providing evidence that firms having a larger share in their local labor markets exhibit a lower degree of exchange rate pass-through. Furthermore, our theory highlights that export prices respond to a multilateral exchange rate when marginal costs are non-constant, which is theoretically equal to the firm level effective exchange rate with constant markups.

The rest of the paper is organized as follows. In section 2, we develop the theoretical setup and derive the estimating equation of firm-level pass-through, which guides the empirical analysis. In section 3, we describe our dataset and empirical methodology. Section 4 presents the main findings on the role of oligopsony and oligopoly on firms' pricing behaviour in response to exchange rate shocks predicted by our model. Robustness tests are reported in Section 5. Section 6 concludes.

2 Theoretical framework

General setup. We consider a static environment in which each firm produces a differentiated good and sells to multiple destination markets, indexed by j . We assume the set of destination markets J_i to be firm-specific and exogenous for simplicity. In each market, the firm faces a downward sloping demand curve for its variety and we denote the price charged by firm i on market j as p_{ij} , expressed in the currency of the destination. The price in the producer's currency, indexed with a *, is equal to the price in destination currency times the bilateral exchange rate between j and the home country e_j :

$$p_{ij}^* = p_{ij}e_j,$$

where a higher e_j corresponds to a depreciation of the home currency. Firm i , located in r , produces using effective units of labor Λ_i with production function:

$$Q_i = h_i\Lambda_i.$$

⁷[Lyonnet et al. \(2022\)](#) document that access to finance also increases the likelihood of foreign currency pricing for large firms.

To attract additional labor, firm i needs to pay a wage $w_r(\Lambda_i)$, or w_i in short, which is strictly increasing in Λ_i . The profit maximization problem of firm i is:

$$\max_{q_{ij}} \pi_i = \sum_{j \in J_i} p_{ij} q_{ij} e_j - w_r(\Lambda_i) \Lambda_i, \quad \text{where} \quad \Lambda_i = \frac{\sum_j q_{ij}}{h_i} \quad (1)$$

which yields the pricing equation:

$$p_{ij}^* = \underbrace{\frac{\varepsilon_{p_{ij}}^{q_{ij}}}{1 + \varepsilon_{p_{ij}}^{q_{ij}}}}_{\text{Markup}} \underbrace{\frac{1 + \varepsilon_{w_i}^{\Lambda_i}}{\varepsilon_{w_i}^{\Lambda_i}}}_{\text{Markdown}} \frac{w_r(\Lambda_i)}{h_i} \quad (2)$$

where ε_y^x denotes the elasticity of variable x to y . The rightmost term is the average wage per effective unit of labor divided by productivity, i.e. the average cost. Our assumption that labor supply curves are upward sloping ensures that $\varepsilon_{w_i}^{\Lambda_i} > 0 \forall i$. We also assume that $\varepsilon_{p_{ij}}^{q_{ij}} < -1 \forall i, j$ so that markups are larger than 1. For lower levels of employment elasticity, labor is less responsive to wage differentials across firms which leads to larger markdowns. When $\varepsilon_{w_i}^{\Lambda_i} \rightarrow \infty$, rents in the labor market are arbitrated away and equation (2) yields the monopolistic and oligopolistic pricing formulas as special cases. The values of $\varepsilon_{p_{ij}}^{q_{ij}}$, $\varepsilon_{w_i}^{\Lambda_i}$ are specific to each firm and depend notably on the size of the firm in its respective markets. Under sufficient regularity conditions, which hold in the parametric structure we assume below, the J_i number of first-order conditions $\frac{\partial \pi}{\partial q_{ij}}$ pin down the quantity sold to each market, as well as the size of the firm on the labor market Λ_i . These, in turn, matter for the elasticities entering the markup and the markdown, as well as for the average costs. This simple structure helps highlight the importance of using firm-level trade data. In a closed economy setting, as is evident from (1), Q_i is perfectly correlated with Λ_i over time conditional on productivity. Hence, estimating the contribution of markup and markdown adjustments to the pass-through of demand shocks would need to rely on variation at the labor or goods market level. This makes the results sensitive to how these markets are defined, a challenge in the presence of many industries, or else dependent on functional form assumptions about labor supply and demand.⁸ In our setup, where firms sell to different markets, shocks to bilateral exchange rates affect their size in each destination market and their size in the labor market differently. Furthermore, the set of sales market of firms even within narrowly defined sectors is not identical. This enables us to control for an extensive

⁸The variation in the pass-through of demand shocks across firms are affected by aggregate demand or supply shocks in the markets where the firms are operating. With the standard definitions of these markets based on product and geographic classifications, conditioning on the relevant fixed effects would typically leave insufficient independent variation in firm size in the output and labor markets across firms to convincingly estimate the effects of goods and labor market power on the degree of pass-through into prices.

set of fixed effects to capture the effects of aggregate changes in the goods and labor markets while having identifying variation in firms' prices across destinations, which is not perfectly correlated with firm's total demand and employment. The rest of this section specifies the demand and labor supply functions faced by firms and derives the firm-product level pass-through equation, which guides the empirical analysis.

Labor supply. Workers are immobile across commuting zones (r) and supply one unit of labor inelastically. Each worker independently draws his productivity (z) for each firm in r from the following nested-Fréchet distribution:

$$F(z) = e^{-\sum_{s \in S} (\sum_{i \in I_{sr}} z^{-\nu})^{\frac{\phi+1}{\nu}}} \quad (3)$$

with I_{sr} the set of firms active in sector s in region r . A worker ω in region r faces a vector $\{z_{\omega i}\}_{i \in I_{sr}}$, summarizing the number of effective labor units that he can provide in each firm. The parameter $\nu > 0$ affects the heterogeneity of productivity draws between firms within a region-sector pair (s, r) and captures the degree of firm specificity in human capital (cf. [Becker \(1962\)](#), [Lazear \(2009\)](#)), while ϕ captures the heterogeneity in productivity draws of workers across sectors. We assume that $\nu > \phi + 1$, that is, labor is significantly more mobile between firms within a sector than between sectors, and $\phi > 0$ to ensure that the labor supply in a commuting zone is finite. For a small ν , a worker typically has very different productivity draws in different firms, and the percentage loss in productivity during a job transition is large. For a large ν , on the other hand, the productivity draws of a worker in different firms are relatively close to each other.

In equilibrium, the number of workers choosing firm $i \in I_{sr}$ (l_i) and the corresponding level of labor in efficiency units (Λ_i) are given by:⁹

$$l_i = \left(\frac{w_i}{W_{sr}} \right)^{\nu} L_{sr} \quad (4)$$

$$\Lambda_i = \Delta \left(\frac{w_i}{W_{sr}} \right)^{\nu-1} \Lambda_{sr} \quad (5)$$

where $W_{sr} \equiv \left(\sum_{j \in I_{sr}} w_j^{\nu} \right)^{1/\nu}$ is the index of wage in efficiency units in a sector-region pair, $\Delta \equiv \Gamma\left(\frac{\phi}{\phi+1}\right)$ and $\Gamma()$ is the gamma function. Equations (4) and (5) show that both the labor supply and the effective labor supply increase in the wage paid by that firm and decrease in the average wage of other firms in sr . The degree to which the labor supply reacts to wage differences between firms depends on ν . As ν increases, the worker-specific

⁹The details of the derivation of the labor supply curves are presented in [Appendix 7.1.1](#)

productivity differences between firms become less important, and workers react more to the wage differences between firms. Equations (4) and (5) further show that the supply of labor in any firm pair is positive for any $w_i > 0$.

The equilibrium levels of labor market aggregates are given as follows, where we assume that the regional labor stock is exogenously given by L_r .

$$L_{sr} = \left(\frac{W_{sr}}{W_r} \right)^{\phi+1} L_r \quad (6)$$

$$\Lambda_{sr} = \left(\frac{W_{sr}}{W_r} \right)^{\phi} L_r \quad (7)$$

$$W_r = \left(\sum_{s \in S_r} W_{sr}^{\phi+1} \right)^{\frac{1}{\phi+1}}, \quad (8)$$

where workers respond to wage differentials across sectors within an employment zone and the strength of this response is governed by ϕ . W_r is the regional wage index.

Under the assumption that there are many sectors, firms have a negligible impact on the average wage in the region (W_r) and the firm-specific elasticity of labor (in efficiency units) to wages is, from (5) and (7) equal to:

$$\varepsilon_{w_i}^{\Lambda_i} = (\nu - 1) (1 - S_i^l) + S_i^l \equiv \varepsilon^l (S_i^l) \quad (9)$$

where $S_i^l \equiv \frac{L_i}{L_{sr}}$ is the employment share of firm i in the sector-region pair sr .

Equation (9) reveals the inverse relationship between the employment share of a firm within an industry-region and the employment elasticity it faces. The labor supply is less sensitive to the wages posted by firms employing a larger fraction of labor in a sector-region, which allows those firms to appropriate larger rents and have higher markdowns.

Goods markets. The demand for each variety in a market is characterized by a nested CES structure as in [Atkeson and Burstein \(2008\)](#), where ρ_s and η denote the elasticity of substitution between varieties within and across sectors, respectively.¹⁰ The demand schedule

¹⁰We use same index s to denote the sectors in the goods and labor market to economize on notation. In the empirical part, we use 2-digit HS codes to define the relevant product market and 2-digit NACE industry codes in the definition of the labor markets in our baseline specifications. We present the tests on the robustness of the main findings to different ways of defining the goods and labor markets in Section 5.3.

that firm i faces in sector-destination pair (s, j) is:

$$q_{ij} = \alpha_{ij} \left(\frac{p_{ij}}{P_{sj}} \right)^{-\rho_s} Y_{sj}, \quad (10)$$

$$Y_{sj} = \left(\frac{P_{sj}}{P_j} \right)^{-\eta} Y_j \quad (11)$$

where α_{ij} is the firm-destination specific demand shifter, P_{sj} is the sectoral price index, Y_{sj} is the total sectoral demand in market (s, j) . Y_j and P_j denote aggregate consumption and the corresponding price index in the destination country j , respectively. In the presence of many sectors, and symmetrically to the labor side of the model, firms internalize the effect of their pricing decision on the sectoral price index (P_{sj}) while taking the country-wide aggregates (Y_j, P_j) as given. Hence, the effective demand elasticity of a firm is equal to:

$$\varepsilon_{p_{ij}}^{q_{ij}} = -(\rho_s (1 - S_{ij}^g) + \eta S_{ij}^g) \equiv \varepsilon^g (S_{ij}^g), \quad (12)$$

where $S_{ij}^g = \frac{p_{ij} q_{ij}}{P_{sj} Y_{sj}}$ is the market share of firm i in its sales market (s, j) . We employ the standard assumption that substitution between goods is higher within a sector than across sectors, i.e. $1 < \eta < \rho_s \forall s \in S$, which ensures that the demand elasticity faced by a firm in a particular market is decreasing in its sales share.

Prices and pass-through. When maximizing profits, firm i sets a producer price for destination j given by equation (2), where the respective elasticities are given by (9) and (12); hence, the optimal output price expressed in local currency for firm i in sector s reads as:

$$p_{ij}^* = \frac{\varepsilon^g (S_{ij}^g)}{\varepsilon^g (S_{ij}^g) - 1} \frac{\varepsilon^l (S_i^l) + 1}{\varepsilon^l (S_i^l)} \frac{w_i}{h_i}. \quad (13)$$

Equation (13) is an implicit equation in p^* , where average costs are given by $\frac{w_i}{h_i}$. Log-differentiating (13) and using the equilibrium values for the shares in goods and factor markets, we show in the appendix 7.1.2 that:

$$\hat{p}_{ij}^* = \frac{1}{1 - \Phi_{ij}} \left[-\Phi_{ij} \hat{e}_j + \frac{\mathcal{K}_i \rho_s}{1 + \mathcal{K}_i \tilde{\Phi}_i} \left(\sum_{k \in J_i} \frac{q_{ik}}{Q_i} \frac{1}{1 - \Phi_{ik}} \hat{e}_k \right) \right] + u_{ij}, \quad (14)$$

where hats denote the growth rates, i.e. $\hat{x} = d\ln(x)$, and

$$\Phi_{ij} \equiv \frac{(1 - \rho_s)(\rho_s - \eta)S_{ij}^g}{\varepsilon^g(S_{ij}^g)(1 + \varepsilon^g(S_{ij}^g))} < 0 \text{ and } \frac{\partial \Phi_{ij}}{\partial S_{ij}^g} < 0, \quad (15)$$

$$\tilde{\Phi}_i \equiv \left(\sum_{k \in J_i} \frac{q_{ik}}{Q_i} \frac{\rho_s}{1 - \Phi_{ik}} \right) \text{ and } 0 < \tilde{\Phi}_i < \rho_s, \quad (16)$$

$$\mathcal{K}_i \equiv \frac{1}{\nu - 1} \left(\frac{\nu(\nu - \phi - 1)S_i^l}{\varepsilon^l(S_i^l)(\varepsilon^l(S_i^l) + 1)} + 1 \right) > 0 \text{ and } \frac{\partial \mathcal{K}_i}{\partial S_i^l} > 0, \quad (17)$$

$$u_{ij} = \frac{1}{1 - \Phi_{ij}} \left(\frac{1}{1 + \mathcal{K}_i \tilde{\Phi}_i} \left(\hat{W}_{sr} - (\mathcal{K}_i + 1)\hat{h}_i + \mathcal{K}_i(\hat{D}_i - \hat{\Lambda}_{sr}) \right) - \Phi_{ij} \left(\hat{P}_{sj} + \frac{\hat{\alpha}_{isj}}{\rho_s - 1} \right) \right), \quad (18)$$

$$\hat{D}_i = \sum_k \frac{q_{ik}}{Q_i} \left(\frac{\rho_s - 1 + \Phi_{ik}}{(\rho_s - 1)(1 - \Phi_{ik})} \hat{\alpha}_{ik} + \left(\frac{\rho_s \Phi_{ik}}{1 - \Phi_{ik}} + \rho_s - \eta \right) \hat{P}_{sk} + \eta \hat{P}_k + \hat{Y}_k \right). \quad (19)$$

Φ_{ij} captures, up to a constant, the elasticity of markups to the share of sales (S_{ij}^g), showing the strength of the adjustment to firms' markups when they sell relatively more. $\mathcal{K}_i$, on the other hand, captures the elasticity of marginal costs to the employment share of the firm (S_i^l), combining the elasticity of markdowns to the employment share and the direct effect of the employment share on the wage per efficiency unit. The structural error term u_{ij} is firm-destination specific and depends on aggregate and idiosyncratic shocks other than the exchange rates.

Equation (14) guides our empirical analysis and highlights three main points on the effects of variable markups and markdowns on the firm-level pass-through of exchange rate shocks. First, upward sloping labor supply curves lead to a comovement in export prices across different destinations for a particular firm through the common cost component. The eventual effect of an exchange rate shock in a particular market on the firm-level cost is determined by the direct pass-through of this bilateral exchange rate shock into prices in the consumers' currency ($\frac{1}{1 - \Phi_{ik}}$), the demand elasticity (ρ_s), the share of this market in total firm demand (q_{ik}/Q_i), and the firm-specific elasticity of marginal costs to employment share of the firm ($\mathcal{K}_i$). Second, conditional on marginal costs and the relevant firm and aggregate level shifters subsumed by u_{ij} , the firms with larger goods market shares pass-through bilateral exchange rate shocks into export prices to a lower extent, i.e. $\frac{\partial \Upsilon}{\partial S_{ij}^g} > 0$ where $\Upsilon \equiv \frac{\partial \ln(p_{ij}^*)}{\partial \ln(e_j)} = \frac{-\Phi_{ij}}{1 - \Phi_{ij}}$. Third, conditional on the exposure of the firm to exchange rate shocks, a firm with stronger goods market power, i.e. with larger sales shares across destinations on average, will pass-through the exchange rate shocks less into firm demand due to larger markup adjustments; hence, the associated changes in marginal costs will be lower. As a result, goods market power will dampen the comovement between marginal costs including markdowns and ex-

change rate shocks and will lead to stronger pass-through of effective exchange rate shocks into export prices conditional on the labor market power of firms. Briefly, goods and labor market power are substitutes in dampening the effects of international demand shocks into export prices.¹¹

Discussion. In this part, we focus on some special cases of our model to elaborate on the effects of labor and goods market power on the pricing decisions of exporting firms. When the demand elasticity is not variable and the markups are fixed, and the labor markets are monopsonistic, then $\Phi_{ij} = 0 \quad \forall i \in \mathcal{I}, \forall j \in \mathcal{J}_i$ and $\mathcal{K}_i = \mathcal{K} = \frac{1}{\nu-1}$ for all firms. In this case, there is no pricing-to-market and export prices will respond to the firm-level effective exchange rates conditional on the relevant demand and productivity shifters. Still, given the set of bilateral exchange rate shocks, the degree of pass-through will be heterogeneous across firms within an industry due to their varying degrees of exposure to foreign markets. To underscore this observation more clearly, consider identical exchange rate shocks across export markets, i.e. $d\ln(e_j) = d\ln(e) \quad \forall j \in \mathcal{J}$. Then, using equation (14), we find the partial elasticity of export prices to the exchange rate shock

$$\frac{\partial \ln(p_{ij}^*)}{\partial \ln(e)} = \frac{\mathcal{K}\rho_s}{1 + \mathcal{K}\rho_s} \theta_i,$$

where θ_i is the share of foreign markets in total firm demand and captures the exposure of a firm to exchange rate fluctuations.¹² Hence, larger exporters which are also typically more export-oriented will exhibit a lower degree of pass-through even in the absence of variable markups or markdowns if firms face upward sloping labor supply curves.

We then consider the case with oligopsonistic competition in the labor markets and fixed markups. In this environment, the elasticity of export prices to the firm-level effective exchange rate changes will be increasing in the employment share of the firm within its local labor market without pricing-to-market as $\frac{\partial \mathcal{K}_i}{\partial S_i^g} > 0$, which is the main hypothesis we test in our empirical analysis.

The presence of variable markups together with oligopsonistic competition in the labor markets alters the pricing and wage-posting decisions of exporting firms in response to exchange rate shocks, as shown in equation (14). Given the same set of bilateral exchange rate changes, firms with higher goods market power will dampen the effect of the exchange rate shocks on their output more by endogenous markup adjustments, which leads to a smaller increase in labor demand. This dependence of the wage-posting decision of firms on the

¹¹To see this point more clearly, assume that the firm has the same sales share in all destinations, i.e. $S_{ij}^g = S_i^g \quad \forall j$. Then, $\Phi_{ij} = \Phi_i \quad \forall j$, $\tilde{\Phi}_i = \frac{\rho_s}{1-\Phi_i}$ and $\frac{\partial \mathcal{K}_i \rho_s}{\partial S_i^g} \left(\sum_{k \in \mathcal{J}_i} \frac{q_{ik}}{Q_i} \frac{1}{1-\Phi_{ik}} \hat{e}_k \right) < 0$.

¹²We refer to θ_i as the export intensity of firm throughout the text for simplicity although it represents the share of non-Euro markets in firm demand in the context of French exporters.

goods market power an exporter has across different markets constitutes a challenge in the measurement of the theoretically valid firm-level foreign demand shocks driven by the exchange rate changes, i.e. $\sum_{k \in J_i} \frac{q_{ik}}{Q_i} \frac{\rho_s}{1-\Phi_{ik}} \hat{e}_k$. In our baseline empirical specifications, we proxy the firm-level demand shock by its counterpart in monopolistically competitive markets, the standard firm-level effective exchange rate ($\hat{E}_i = \sum_{k \in J_i} \frac{q_{ik}}{Q_i} \hat{e}_k$), and test for the interdependence between these two sources of market power by including the interaction terms of the goods and labor market power proxies with the corresponding exchange rates. In order to totally mute the effects of goods market power on export prices, we also use the subset of firms which constitute a negligible share in all its sales markets, including the domestic market, as the pricing behaviour of these relatively small firms can be well approximated by a constant markup over marginal costs in Section 5.

3 Data and empirical methodology

3.1 Data and construction of main variables

Datasets. Our empirical analysis is based on a rich panel of administrative, French firm-level data covering the period from 1995 to 2015. We combine several administrative datasets that provide complementary information on firms' balance sheets, location, and international trade. The accounting data are drawn from the *Fichier Complet Unifié de SUSE* (FICUS, 1995–2007) and the *Fichier Approché des Résultats d'ESANE* (FARE, 2008–2015), both produced by the French statistical institute (INSEE) from information collected by the tax authorities. We also use data on employment by mainland French establishments from *Déclaration Annuelle des Données Sociales* (DADS), which covers all establishments for which employees are subject to the general regime of social security over the period 1995 to 2015. We focus on firms that are privately owned in at least some years and that have most of their employment in a manufacturing industry.

We combine these data with firm-level export and import data provided by the French Customs, which report detailed export and import flows by firm, product (at the 8-digit level of the EU Combined Nomenclature), destination and origin country, and year. These data are available from 1995 onwards, include both the value (in euros) and quantity (in tons) of each trade flow, and are quasi-exhaustive.¹³ Balance-sheet, employment, and customs data can be merged using the firm identifier (SIREN number) and year.

Finally, the principal macroeconomic variable employed in our empirical analysis is the yearly nominal exchange rate, obtained from the World Development Indicators database.

¹³While intra-EU transactions are subject to reporting thresholds (150,000 euros per year), exports to destinations outside the EU are recorded exhaustively, except for flows below 1,000 euros or one ton—thresholds that eliminate only a very small proportion of total exports.

Our sample is therefore *de facto* restricted to non-Eurozone destinations, comprising current eurozone members prior to the adoption of the euro. After merging the various data sources, we are left with over 5 million observations from more than 40,000 firms. Further details about the characteristics of our dataset are presented in section 3.2.

Unit values and effective exchange rate. Following the standard practice, unit values are computed as the ratio of export value divided by export quantity, obtained from Customs data. We denote the unit value in euros of product m exported by firm i to destination j at time t as p_{imjt}^* . Our main variable of interest is the change in the logarithm of the unit value between $t - 1$ and t , denoted as: $\hat{p}_{imjt}^*$.

Regarding exchange rates, we express e_{jt} in euros per unit of foreign currency, such that an increase in e corresponds to a depreciation of the euro. The change in the logged nominal exchange rate is denoted as $\hat{e}_{jt}$. We exclude the observations in the top or bottom 5% of the distribution of changes in unit values and exchange rates from our sample.

Combining customs and balance sheet data, we measure the weight of a trade flow in the firm's total sales. Specifically, we compute the share of a firm's total sales accounted for by a given trade flow in $t - 1$ and t as:

$$\omega_{imjt}^{sales} = \underbrace{\frac{X_{imjt-1}}{X_{it-1}}}_{\text{Customs data}} \times \underbrace{\frac{X_{it-1}}{S_{it-1}}}_{\text{Balance sheet data}} \quad (20)$$

where X_{imjt} is the value of sales of product m by firm i in destination j at time t . X_{it} and S_{it} are, respectively, the total exports and the total sales (exports plus domestic sales) of i at t .

We use (20) to compute the effective exchange rate change faced by firm i as:

$$\hat{E}_{it} = \sum_{m,j} \omega_{imjt-1}^{sales} \hat{e}_{jt}. \quad (21)$$

Proxy for goods market power. Unlike our model, firms in the data export multiple products. To capture firms' market power in destination markets, we use customs data to compute the share of firm i in total French exports of a given good to a given destination. We aggregate products m to their corresponding HS 2-digit level s' and define:

$$S_{is'jt}^g = \frac{\sum_{m \in s'} X_{imjt}}{\sum_{i, m \in s'} X_{imjt}} \quad (22)$$

where X_{imjtt} denotes the export of product m by firm i to destination j at time t . Note that goods market power is measured at the 2-digit HS product that the firm exports (s') while labor market power is measured at the 2-digit NACE industry of the firm, indexed by s . $S_{is'jt}^g$ captures the relative market power of firm i in market $s'j$ compared to other French firms. While we do not observe the sales of product s' in j coming from other sources, we control for sector-destination-year fixed effects in our baseline specifications and $S_{is'jt}^g$ captures the same variation in the theoretically valid market share, i.e. the sales share of a firm in the total size of an export market.

Proxy for labor market power. Using DADS data, we assign each establishment to one of 297 commuting zones (“CZ” or “zones d’emploi”) as defined by INSEE in 2010. For each firm i , we compute the share of employment (L_{isrt}/L_{srt}) that its establishments represent in a given 2-digit NACE industry s and commuting zone r , which together defines the relevant labor market (s, r) . For firms having establishments in multiple regions or industries, we compute a payroll share weighted average of this share across all s, r pairs where the firm is present:

$$S_{it}^l = \sum_{r,s} \frac{w_{isrt} L_{isrt}}{w_{it} L_{it}} \frac{L_{isrt}}{L_{srt}}. \quad (23)$$

We define the main region of each firm as the employment zone where it has the largest share of employment over the period, or, in case of a tie, where it pays the highest wage bill. Similarly, we define the main 2-digit product that the firm exports as the one with the highest export value over the period. These main region and product definitions are used to construct the corresponding fixed effects in the regression equations.

Cost shocks. Following [Amiti et al. \(2014\)](#), we also construct a firm-level proxy for the change in variable costs due to imported inputs. A currency depreciation makes imported inputs more expensive, increasing production costs specifically for firms that rely more heavily on imported inputs. We compute the share of variable costs accounted for by imports outside the Eurozone (“*Imp. intensity*”) as the value of imports of firm i divided by the sum of the wage bill, the spending on raw materials and other purchases (VC_{it}). We interact this share of imports in variable costs with the changes in the effective exchange rate $\hat{E}_{it}$ to proxy for the change in marginal costs due to variations in the exchange rate for importing firms. In a robustness check, we also exclude the products that the firm exports from *Imp. intensity* to ensure that our proxy for the change in variable costs due to imported inputs is not affected by carry-along-trade. All results are robust to this extension.

3.2 Descriptive statistics

Table 1 shows the distribution of the main variables of interest in our analysis over the 5.1 million observations defined as a firm's export to a destination of an 8-digit product in a specific year. Behind those more than 5 million observations are 40549 firms, which export to a non-euro country at least once in the sample period. Table 2 provides the distribution of these firm characteristics, where one observation now corresponds to one firm. The data is heavily skewed, with some firms exporting many products to many destinations in many years and generating a large number of observations. Firms also vary much in size. The median firm in the sample has 24 employees in an average year where it is present, while the firm at the 95th percentile has more than 300 employees on average. Most firms account for a very small share of employment in their local labor market, the median being about 2%. Some firms however have much higher values of S_{it}^l , reaching 0.45 at the 95th percentile. It is worth pointing out that the average value of S_{it}^l is very different when taken over all observations (0.21) rather than over all firms (0.08). This reflects the fact that the large exporters in our data, which account for relatively more observations, have a higher labor market share.

Table 1: Distribution of main variables

VARIABLES	mean	p5	p25	p50	p75	p95
$\hat{e}_{jt}$	-0.007	-0.136	-0.033	-0.001	0.024	0.107
$\hat{p}_{imjt}^*$	0.008	-0.705	-0.163	0.007	0.182	0.712
S_{ipjt-1}^g	0.046	0.000	0.000	0.003	0.022	0.249
S_{it-1}^l	0.214	0.002	0.023	0.107	0.329	0.742
Imp. intensity	0.276	0.017	0.105	0.225	0.394	0.722
$\hat{E}_{it}$	-0.003	-0.034	-0.010	-0.001	0.003	0.028
$S_{it-1}^l \times \hat{E}_{it}$	-0.001	-0.009	-0.001	-0.000	0.000	0.006
$S_{ipjt-1}^g \times \hat{e}_{jt}$	-0.001	-0.005	-0.000	-0.000	0.000	0.002
Share of sales out of Eurozone	0.312	0.027	0.135	0.280	0.454	0.722

Descriptive statistics of the main variables used in our regression equations, taken over 5105821 observations, except for the import cost variable, available for 4657500 observations.

The growth rates of the exchange rates and unit values are computed as log differences.

Table 2: Distribution of firm characteristics

VARIABLES	mean	p5	p25	p50	p75	p95
Obs. per firm	125.9	1	3	13	63	485
Nb. years per firm	7.2	1	2	5	11	20
Nb. dest. per firm	10.2	1	1	4	12	43
Nb. prod. per firm	11.8	1	2	4	11	45
Av. empl. per firm	92.3	2	8.8	23.7	60.8	315.3
Av. S_{it-1}^l per firm	0.08	0.00	0.00	0.02	0.08	0.45

Distributions are taken over the 40549 firms in our sample. Average employment or S_{it-1}^l refers to the average over all the years in which a firm appears in the data.

Tables 8, 9 and 10 in Appendix 7.2.2 list the largest employment zones, exported products, and destination countries in our sample.

3.3 Empirical methodology

This section investigates the role of goods and labor market power on the transmission of exchange rate shocks into export prices motivated by the theoretical framework in Section 2. We estimate different versions of the following specification guided by equation (14), which highlights how a firm's sales share in its export markets and employment share in its local labor market shape the transmission of exchange rates into export prices:

$$\hat{p}_{imjt}^* = \beta_0 + \beta_1 \hat{e}_{jt} + \beta_2 S_{is'jt-1}^g \hat{e}_{jt} + \beta_3 S_{is'jt-1}^g + \beta_4 S_{it-1}^l + \beta_5 S_{it-1}^l \times \hat{E}_{it} + \beta_6 \hat{E}_{it} + \gamma \mathbf{X}_{imjt} + \epsilon_{imjt}. \quad (24)$$

$\hat{p}_{imjt}^*$ is the variation in the log of the unit value in euros, representing the export price for the 8-digit product m exported by firm i to destination j in year t . s' is the 2-digit HS corresponding to the 8-digit product m , and $\hat{E}_{it}$ is the firm-level effective exchange rate shock defined in equation (21). Our main parameters of interest are β_2 and β_5 , which are both predicted to be positive if there is oligopolistic competition in the goods market and oligopsonistic competition in the labor markets, respectively.

Although bilateral exchange rates are plausibly exogenous to firm-level demand and supply shocks, several identification challenges remain. First, our estimating equation (14) shows that the error term contains not only firm-specific demand and productivity shifters but also aggregate prices and wages in the export and local labor markets ($\hat{P}_{s jt}, \hat{W}_{s rt}$), which

are mechanically related to firm-level prices. This mechanical correlation is especially pronounced for larger firms which are over-represented in exporting firms. We control for sector-destination-year fixed effects and sector-region-year fixed effects in our specifications to partial out these changes in the market aggregates. Hence, we use the variation in the sales shares and price growth across firms within a sector-destination-year to estimate the effects of goods market power on the strength of pass-through of bilateral exchange rates into prices. Similarly, we use within local labor market variation in the change in firm demand, captured by the firm-level effective exchange rate ($\hat{E}_{it}$), employment shares, and price growth across firms within a local labor market to estimate the effects of labor market power on the transmission of demand shocks on prices. However, equation (14) shows that the rate of response to aggregate shocks are also firm-specific when profit markups and/or markdowns are variable. Due to this parameter heterogeneity, even this extensive set of fixed effects is not sufficient to fully partial out the effects of aggregate shocks, e.g. $\hat{P}_{sj}, \hat{W}_{sr}$, which are heterogeneous across firms and correlated with the deviations in firm market shares from a sector-specific average. In this case, the estimated effect of the exchange rate shocks captures also the comovement in these aggregates even conditional on sector-destination-year and sector-region-year fixed effects. In section 5, we address this issue semi-parametrically by focusing on different sub-sample of firms with similar employment shares where the parameter heterogeneity is less pronounced.

Second, the firm-level effective exchange rate has a shift-share structure and its assignment may not be random across exporting firms, which might lead to biased estimates for both β_5 and β_6 . We include firm fixed effects in our baseline specifications to control for time-invariant factors affecting the growth of prices common across the products of a firm. Given the high number of bilateral exchange rates (shifts) and the fact that they are plausibly exogenous to unobserved determinants of firm-level prices conditional on sector-destination-year, and sector-region-year fixed effects, we rely on the *shifts-based* approach of [Borusyak et al. \(2022\)](#) to clarify and address the remaining potential identification issues. To show that the average importance of any shift is small in our data, we compute the average share of each export market across exporting firms, i.e. $\lambda_j = 1/|S| \sum_i \omega_{ijt} \forall j, t$, and find that both the mean and median of λ_j are close to zero and its maximum is about 0.021 in 2015, which indicates that any export market does not have a sizable weight on $\hat{E}_i$.¹⁴ The shifts are zero for the destination countries using Euro by construction, and the total share of non-Euro destinations in total firm sales (θ_i) is lower than 1. Hence, our design is an "incomplete shares" case where there is a positive correlation between the effective exchange rates and firms' exposure to non-Euro countries, which is a source of bias if the market composition of firms is correlated with unobserved factors affecting the growth rate of prices and especially

¹⁴The distribution of λ_j is similar for other years with no indication of an influential market on the construction of the firm-level effective exchange rate shocks.

if this correlation depends on the employment share of firms in their local labor markets. In addition to the firm fixed effects that capture the time-invariant differences in the exposure to exchange rate fluctuations, we also include the lagged value of total share of non-Euro destinations in total firm sales as it is the relevant sum of shares used in the construction of $\hat{E}_{it}$.¹⁵ Another potential issue is the measurement of shares in the construction of the firm-level effective exchange rates (Borusyak et al. (2025)). As shown in equation (21), we use lagged shares of each destination in total firm sales to construct the firm-level effective exchange rate shocks as an exogenous and relevant shifter in firm demand while mitigating the issue of reverse causation from firm-level prices to the share of the destination in total firm sales. However, persistence in the bilateral exchange rates might introduce serial correlation in these shares and is a potential concern. In order to test the sensitivity of our baseline results to the measurement of shares, we also use fixed shares from the first year when a firm appears in the sample to construct $\hat{E}_{jt}$ in Section 5. Finally, $\mathbf{X}_{imjt}$ includes the main determinants of firm-level pass-through emphasized in the literature, e.g. import intensity, marginal costs predicted by the price of imported inputs, firm size, and their interactions with $\hat{E}_{it}$ to control for the effects of these variables which might be potentially correlated with firms' employment shares and mediate the transmission of effective exchange rate shocks into export prices. We two-way cluster the standard errors at the destination-year level and the firm-year level.

4 Main results

In this section, we present the main results on the effects of the goods and labor market power on the pricing behaviour of firms in response to exchange rate shocks. Columns (1), (2), and (3) in Table 3 report our baseline estimates for different versions of equation (14). As shown in Table 3, the coefficients on the sales share in goods market interacted with the change in the bilateral exchange rate on the one hand ($S_{is'jt-1}^g \times \hat{e}_{jt}$), and the employment share in the regional labor market interacted with the firm-specific effective exchange rate ($S_{it-1}^l \times \hat{E}_{it}$) on the other hand, are strong and significant with a positive sign in all specifications. Both results attribute a significant role to the goods and labor market power in the transmission of bilateral and effective exchange rate shocks into export prices.

Column (1) reports the results of the most parsimonious specification where we control for the sector-destination, region and year fixed effects, and shows that the firms with negligible goods and labor market power pass-through 9 percent of the bilateral exchange rate shocks into export prices measured in euros with a substantial rate of pass-through of 91 percent

¹⁵We also control for the interaction of S_i^l and the lagged value of the share of non-Euro markets in total firm sales. Since it is always insignificant, equal to zero and the remaining coefficient estimates are identical, we omit this interaction term from the estimations for brevity.

into consumer prices. From the second specification (Column (2)) on, we include sector-destination-year, sector-region-year and firm fixed effects to control for the changes in the sectoral price index in the export market, the change in the labor market aggregates including changes in the average wage and the sectoral employment in the local labor market, and the time-invariant differences in productivity and employment share across firms, respectively. Despite this extensive use of fixed effects, the results are in line with the main predictions of the model on the role of goods and labor market power on the pricing behaviour of exporting firms. Column (3) is our preferred specification, where we also control for the import intensity of a firm and its interaction with the effective exchange rate to show that the baseline findings are not driven by the possible correlation between the import intensity of the firms and their relative size in the labor market. As predicted by theory, the share in the local labor market of a firm, our main proxy for the labor market power, decreases the pass-through of firm level effective exchange rate shocks to a sizable extent even conditional on its goods market power which is captured by the interaction of the sales share and the bilateral exchange rate. These results indicate a significant role for the labor market power in firms' pricing behaviour and the estimated effects are economically large. Column (3) shows that a monopsonist firm in the labor market with no goods market power and zero imported input intensity still absorbs almost 90 percent of the effective exchange rate shocks by markdown adjustments.

5 Robustness tests

In this section, we test the robustness of the main results on three dimensions. First, we check whether our results are sensitive to different modeling assumptions and to the presence of alternative explanations. Second, we test the effects of our choices on the measurement of the main variables of interest. Finally, we assess the robustness of the main findings in different sub-samples.

5.1 Alternative channels

Market power in other inputs. In our framework, upward sloping labor supply curves due to heterogeneity in worker productivity and endogenous markdowns stemming from the strategic interactions of firms in the labor market are the two labor market imperfections which might influence the transmission of exchange rate shocks into export prices at the firm level. While we assumed that labor is the only input factor for simplicity, the imperfections in other input markets might influence the pricing decisions of exporter firms in a similar

Table 3: Main Results

Dep. Variable	$\hat{p}_{im,jt}$				
	(1)	(2)	(3)	(4)	(5)
Sample	All	All	All	Labor intensity High	Low
$\hat{e}_{jt}$	0.09*** (0.01)	- -	- -	- -	- -
$\hat{E}_{it}$	0.11*** (0.03)	-0.08** (0.04)	-0.16*** (0.04)	-0.15*** (0.06)	-0.16** (0.07)
$S_{ijt-1}^g \hat{e}_{jt}$	0.11*** (0.02)	0.19*** (0.03)	0.18*** (0.03)	0.14** (0.07)	0.22*** (0.04)
$S_{it-1}^l \hat{E}_{it}$	0.40*** (0.09)	0.91*** (0.15)	0.82*** (0.17)	0.95*** (0.21)	0.68*** (0.23)
S_{ijt-1}^g	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01 (0.01)	-0.00 (0.00)
S_{it-1}^l	-0.00 (0.00)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)	-0.02* (0.01)
θ_{it-1}	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	0.00 (0.01)	-0.02*** (0.01)
<i>Imp.intensity</i>			0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Imp.intensity</i> $\times$ $\hat{E}_{it}$			0.44*** (0.11)	0.55*** (0.14)	0.31* (0.16)
Sector $\times$ destination FE	Yes	No	No	No	No
Region FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Sector $\times$ destination $\times$ year FE	No	Yes	Yes	Yes	Yes
Sector $\times$ region $\times$ year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
Observations	5104948	5065621	4621277	2099957	2500578
R^2	0.003	0.049	0.049	0.052	0.068

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. A sector in the goods market is defined at the 2-digit HS product level. A sector in the labor markets is defined at the 2-digit NACE industry level. Column (4): sample restricted to industries with above median labor intensity. Column (5): sample restricted to industries with below median labor intensity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

way.¹⁶ A possible way to test the relevance of this explanation is to investigate the pricing behaviour of firms across industries with different levels of labor intensity. We expect that the effect of the labor market power on the pricing behaviour of firms will be stronger in more labor intensive industries as the elasticity of marginal costs to employment is increasing in the labor elasticity of output. On the other hand, the estimated coefficient on $(S_{it-1}^l \times \hat{E}_{it})$ would not exhibit a systematic relationship with the labor intensity of industries if our main findings are primarily driven by the market power in other inputs.¹⁷ Columns (4) and (5) of Table 3 present the results for the industries with above and below median level of labor intensity, respectively. In line with the labor market power mechanism, the employment share of a firm in its local labor market is a stronger source of imperfect pass-through in more labor intensive industries.¹⁸

Invoicing currency. An important factor which affects the transmission of exchange rates into prices is the practice of local currency pricing where firms use the destination currency in setting their prices. If the choice of invoicing currency is correlated with firms' employment share in their local labor markets, then our estimates will not reflect the direct effect of the employment share of firms in their local labor market. [Amiti et al. \(2022\)](#) document that the choice of invoicing currency is endogenous to firm characteristics and the probability of pricing in a foreign currency is correlated with the flexible price determinants of the desired level pass-through. While we control for the import intensity and its interaction with firm level effective exchange rate in our baseline estimations, it is plausible that the firms with higher employment shares invoice more frequently in foreign currencies as they would exhibit lower pass-through under flexible prices. Our dataset enables us to test whether labor market power decreases the rate of pass-through independent of local currency pricing as we observe the currency of invoicing, albeit only after 2011. Given the strong correlation of the currency choice over time within firm-destination pairs, we compute the share of invoicing in Euros after 2011 for each firm in a destination-product-year and assign the corresponding flows as invoiced in Euros if the maximum of annual share of Euros is above 90 percent. We also compute the annual shares at the destination-year level, which is a less restrictive definition of producer currency pricing. The results are presented in columns (1) and (2)

¹⁶In particular, [Morlacco \(2019\)](#) has documented sizable input market power for French firms based on the negative relationship between the share of a firm in its import markets and the prices of the imported inputs.

¹⁷If anything, the coefficient on $Share\ reg.\ labor\ market_{it-1} \times \Delta Firm-level\ Eff.\ ER_{it}$ would be higher in less labor intensive industries as the cost shares of the other factors would be typically negatively correlated with the labor intensity given the degrees of scale of the production function and typically the firms with larger employment shares are also larger in other input markets.

¹⁸The sum of observations in the estimations presented in columns (4) and (5) is smaller than the number of observations in column (3) since the labor intensity cannot be computed for some industries due to missing data.

of Table 4, respectively, which confirm that the baseline findings are not driven solely by a positive correlation between the employment share in the local market and the probability of invoicing in foreign currencies.

Decreasing returns. An alternative mechanism which would introduce rising marginal costs at the firm level is decreasing returns to scale. Combined with the variation in the exposure to foreign demand across firms, decreasing returns might lead to heterogeneity in the degree of pass-through, potentially correlated with S^l , as the firms with higher employment shares are typically more export intensive. Yet, decreasing returns would not generate heterogeneity in the pass-through of the effective exchange rate as we define since it already incorporates the export intensity of the firm. Still, our estimates might be confounded if there is measurement error in the construction of the effective exchange rates, which is likely. We test for this possibility by controlling for (log) value added, as a proxy for the size of the firm, and its interaction with the effective exchange rate. Since decreasing returns would operate via the scale of production, controlling for the effects of firm size would potentially enable us to capture the variation in pass-through rates only due to labor market power of firms. Given the extensive set of fixed effects controlled in our baseline specifications and the correlation between the employment share and the value added of the firm, the independent variation in our main variable of interest is very limited in these estimations. As seen in column 3 of Table 4, once we include these additional controls, the employment share of the firm is still strong and significant despite the limited variation utilized in this specification.

5.2 Heterogeneous effects

In this section, we report the robustness checks related to various dimensions of firm-level heterogeneity, including the important issue of the presence of the firms with establishments located in different local labor markets.

Multiproduct firms. In this part, we consider the influence of multiproduct firms on our estimates. The multiproduct firms respond to tighter market conditions by focusing on their core products and adjusting their product mix, which potentially increases firm productivity (Bernard et al., 2011, Mayer et al., 2014). Since we measure the growth rate of the unit values at the disaggregated 8-digit product level and consider the observations which are exported to the same destination at least two consecutive years, the issue of changing product composition is not expected to affect the coefficient estimates. Yet, column (4) of Table 4 shows that once we restrict our sample to the firms with one 4-digit product-destination pairs, the employment share of a firm is no longer a significant determinant of the degree of

exchange rate pass-through. Nevertheless, the main reason behind the loss of significance is not the confounding effects of product composition but the lower employment share of firms within this sub-sample.¹⁹ The single product firms are smaller in their local labor markets on average and as we have shown in section 5.3 and in line with the model predictions, the effect of the employment share on the rate of exchange rate pass-through is increasing in the employment share of firms. Column (5) presents the estimation results for single product firms with an above median value of S^l , which are very close to the baseline findings. In column (6), we report the results when the sample is restricted to the firms' core product, which is defined as the 4-digit product category which yields the highest revenue for the firm throughout the sample period. These results show that the baseline findings on the role of labor market power in exchange rate pass-through are not driven by the adjustments in the product composition of multiproduct firms and the associated changes in firm productivity and prices.

Destinations. Next, we assess the sensitivity of the main findings on the composition of the export markets of firms. In particular, we estimate the baseline specification for the export flows if the 4-digit product is exported to only one destination country. Second, we restrict our sample to the main destination of firms, which is defined as the country which accounts for the highest share in a firm's total exports over the sample period. Finally, we consider only the OECD countries as the export markets. The results presented in columns (7) to (9) of Table 4 are similar to the baseline values.

Multiregion firms. In our model, we assumed away the possibility that a firm might have establishment in different labor markets. Hence, the presence of multiregion firms is a source of measurement error in the employment share of firms in the labor market. In Appendix 7.2.1, we show that the labor supply elasticity faced by a multiregion firm posting a uniform wage rate across its establishments is given by the weighted average of labor supply elasticities of its establishments in different local labor markets where the weights are given by the payroll share of each establishment within that firm. Accordingly, we use the weighted average of employment shares of a firm across different employment zones as the proxy for the labor market power in the baseline analysis. In order to reduce the measurement error in our main variable of interest and its possible impact on the results, we estimate our baseline specifications only for firms with at least 75 percent of its workers employed in one local labor market and report the results in column (10) of Table 4.²⁰ The results are in line with the baseline findings.

¹⁹The median employment share of a firm decreases from 10.7 percent to 5.7 percent in the sample of the single product firms.

²⁰The baseline findings are not sensitive to the particular choice of the threshold level.

Table 4: Robustness to Alternative Channels

Dep. Variable	$\hat{p}_{imjt}$									
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Sample	Euro invoicing _{jmt}	Euro invoicing _{jmt}	All + Size	Single All	prod. firms Large S^l	Main product	Single dest.	Main dest.	OECD	Concentrated employment
$\hat{E}_{it}$	-0.14*** (0.05)	-0.16*** (0.04)	-1.05*** (0.22)	0.03 (0.05)	-0.61*** (0.21)	-0.05 (0.05)	-0.15 (0.13)	0.01 (0.12)	-0.15** (0.07)	-0.10** (0.05)
$S_{ijt-1}^g \hat{e}_{jt}$	0.12*** (0.03)	0.15*** (0.03)	0.17*** (0.03)	0.22*** (0.05)	0.18** (0.08)	0.25*** (0.04)	0.28 (0.30)	0.39*** (0.14)	0.32*** (0.08)	0.17*** (0.04)
$S_{it-1}^l \hat{E}_{it}$	0.64*** (0.17)	0.79*** (0.17)	0.45** (0.20)	0.14 (0.24)	0.98* (0.55)	0.37* (0.21)	1.16** (0.53)	1.26** (0.54)	0.83*** (0.26)	1.02*** (0.20)
S_{ijt-1}^g	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	-0.01 (0.01)	-0.01** (0.00)	-0.05** (0.02)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.00)
S_{it-1}^l	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.01)	-0.01 (0.01)	0.02 (0.02)	-0.01 (0.01)	-0.02 (0.02)	-0.02 (0.02)	-0.01 (0.01)	-0.00 (0.01)
θ_{it-1}	-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)	0.00 (0.01)	0.01 (0.02)	-0.01 (0.00)	0.01 (0.01)	-0.01 (0.01)	-0.01 (0.01)	-0.00 (0.00)
<i>Imp.Intensity</i>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	-0.00 (0.01)	0.00 (0.01)	0.00 (0.00)	-0.01 (0.01)	-0.00 (0.01)	-0.01 (0.01)	-0.00 (0.00)
<i>Imp.Intensity</i> $\times \hat{E}_{it}$	0.38*** (0.11)	0.43*** (0.11)	0.40*** (0.11)	0.25 (0.16)	1.25*** (0.46)	0.40*** (0.15)	0.19 (0.36)	0.07 (0.34)	0.44*** (0.17)	0.36*** (0.13)
$\ln(VA_{it-1})$			-0.00* (0.00)							
$\ln(VA_{it-1}) \times \hat{E}_{it}$			0.06*** (0.01)							
Observations	4333960	4437923	4585801	1375852	537313	2039991	438982	565561	992088	3137852
R^2	0.051	0.050	0.050	0.120	0.199	0.089	0.201	0.150	0.079	0.061

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. A sector in the goods market is defined at the 2-digit HS product level. A sector in the labor markets is defined at the 2-digit NACE industry level. See the main text for the sample restrictions in each column. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

5.3 Measurement

In this section, we address various concerns related to measurement and test the sensitivity of the main findings to our particular choices in variable construction.

Variable shares. In our baseline estimations, we use the lagged values for S^l and S^g to measure the relative sales share of a firm within French exports in a product-destination pair and employment shares in the labor market to address the issue of reverse causation. However, a serial correlation in sales and employment shares might introduce a mechanical relationship with current export prices. We address this concern by fixing the sales and employment share of a firm to the corresponding values in the first year when a firm appears in the sample and estimate the baseline specifications using fixed shares of sales and employment. Column (1) of Table 5 presents the results that are in line with the baseline estimates.

Firm entry and exit. The measurement error in the employment shares of firms is plausibly higher in the years of entry and exit due to rapid firm growth in the initial years of operation and various legislative frictions during exit. Furthermore, firm entry and exit are influenced by fluctuations in exchange rates, especially for smaller firms, which could lead to sample selection issues. In order to limit the possibility that the measurement error or sample selection due to entry and exit of firms influences our results, we estimate the baseline specifications for the firms which stay in the sample for at least 10 consecutive years. As shown in column (2) of Table 5, the coefficient estimates are very similar to the baseline estimates for this subset of firms, and the main results are unlikely to be driven by the endogenous selection of firms due to exchange rate shocks.

Semi-parametric results. Our model predicts that the degree of pass-through is increasing in the employment share of a firm in the local labor market, which we control by a linear approximation in our baseline estimations. In this part, we split the firms in our sample into four bins according to their employment share, S^l , and interact a dummy variable representing a particular quartile with the firm-level effective exchange rate to capture any nonlinear relationship between the degree of pass-through and S^l . The results are presented in column (3) of Table 5. Consistent with the model predictions, the coefficient estimate is higher for firms in the upper quartiles of the employment share distribution.

Payroll share. In our model, which leads to upward sloping labor supply curves at the firm level due to the heterogeneity of the worker-firm matches, the wage rate in efficiency units will differ while the average wage per worker is equalized across heterogeneous firms competing in the same labor market. As a result, the employment share of a firm is equal

to its payroll share in the local labor market. An alternative reason for the upward sloping labor supply curves is the preference heterogeneity of workers over differentiated jobs (Berger et al., 2022), where the employment and payroll shares of firms might not be equal due to differences in average wages across firms in equilibrium. In such an environment, the relevant variable to capture the degree of labor market power of a firm would be the payroll share. Therefore, we estimate the baseline specifications using the payroll share of a firm within the same labor market instead of its employment share. Column (4) reports the results: the coefficient estimates are almost identical when we use the payroll share instead of the employment share of a firm, highlighting that the results are not sensitive to the choice of using the employment or payroll share of a firm to capture the prevalence of its labor market power.

Measurement of S^g . A potential source of measurement error relates to the definition of the goods markets within which exporting firms compete. As our baseline measure, we use the relative sale of a firm within total French exports for each product-destination pair where the products are defined at the 2-digit level. We control for the product-destination-year fixed effects to control for the total size of the destination market; hence, our measure of goods market power captures the relevant variation in the firms' sales shares in the corresponding export market. To show that the results are robust to alternative ways of defining the goods markets, we measure the sales shares of firms at different aggregation levels. In column (5) of Table 5, we present the results for the specification where the sales shares are computed within each 4-digit product-destination pair and the coefficient estimates are similar to the baseline values.²¹

5.4 Additional analysis

Labor market regulations. The French labor market features several stringent regulations, with significant aggregate consequences, e.g. on the employment rate (Di Tella and MacCulloch, 2005). Garicano et al. (2016) highlight that many of the labor laws start to bind on firms with 50 or more employees and estimate significant welfare costs associated with real wage inflexibility. This inability of firms to adjust wages may influence our estimates, possibly with asymmetric effects following appreciations and depreciations. Although the vast majority of the observations come from exporting firms which are larger than the threshold of 50 workers and therefore operate under similar institutional features, it is still important to see the heterogeneity of the price responses in case of positive and negative demand shocks. We estimate our preferred specification for appreciations and depreciations

²¹We present the results from the main specifications with S^g measured at the 4-digit HS-destination level in Appendix 7.2.3.

Table 5: Robustness to Alternative Measures and Definitions

Dep. Variable	$\hat{P}_{imjt}$				
	(1)	(2)	(3)	(4)	(5)
	Fixed initial shares	10 consec. years	Semi- parametric	Payroll share	Disaggregated sales shares
$\hat{E}_{it}$	-0.15*** (0.04)	-0.22*** (0.05)	-0.24*** (0.05)	-0.16*** (0.04)	-0.16*** (0.04)
$S_{ij0}^g \hat{e}_{jt}$	0.19*** (0.03)				
S_{ij0}^g	0.01** (0.00)				
S_{i0}^l	0.00 (0.00)				
$S_{i0}^l \hat{E}_{it}$	0.71*** (0.17)				
$S_{ijt-1}^g \hat{e}_{jt}$		0.15*** (0.04)	0.17*** (0.03)	0.18*** (0.03)	
$S_{it-1}^l \hat{E}_{it}$		0.97*** (0.21)			0.83*** (0.17)
S_{ijt-1}^g		-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	
S_{it-1}^l		-0.01* (0.01)			-0.01 (0.01)
$\lambda_2 \times \hat{E}_{it}$			0.21*** (0.05)		
$\lambda_3 \times \hat{E}_{it}$			0.33*** (0.06)		
$\lambda_4 \times \hat{E}_{it}$			0.40*** (0.08)		
S_{it-1}^w				0.00 (0.01)	
$S_{it-1}^w \hat{E}_{it}$				0.78*** (0.16)	
$S_{ijt-1}^{g4} \hat{e}_{jt}$					0.06*** (0.01)
S_{ijt-1}^{g4}					-0.00 (0.00)
θ_{it-1}	-0.01* (0.00)	-0.01* (0.00)	-0.01* (0.00)	-0.01 (0.00)	-0.01 (0.00)
<i>Imp.Intensity</i>	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)	0.00 (0.00)
<i>Imp.Intensity</i> $\times \hat{E}_{it}$	0.47*** (0.11)	0.54*** (0.13)	0.41*** (0.11)	0.44*** (0.11)	0.44*** (0.11)
Observations	4621277	3594306	4621277	4621277	4621277
R^2	0.049	0.051	0.049	0.049	0.049

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. All specifications include sector $\times$ destination $\times$ year, sector $\times$ region $\times$ year, and firm fixed effects. Product markets are defined at the HS 2-digit level, except in column (5) where the sales share (S^{g4}) is computed within each 4-digit product-destination pair. λ_i a dummy variable which is 1 when the firm's employment share is in the i th quartile of the employment share distribution. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

and report the results in columns (1) and (2) of Table 6, respectively. It is seen that the results are significant only for the episodes of effective exchange rate appreciations. The firms dampen the effects of effective exchange rate shocks by markdown adjustments only when there is a negative demand shock, which is consistent with the prevalence of higher downward rigidity in wages. However, we should note that in the unreported analysis we find that these systematic differences in price responses are sensitive to the choice of the sample and might not be taken as strong evidence for a particular form of wage or price rigidity.²²

Recruitment costs. In our model, we assume away hiring and firing costs. In the presence of labor adjustment costs, the employment response of the firms to exchange rate shocks will be more limited and they will accommodate the exchange rate shocks by price movements to mute the change in foreign demand. Our estimates will also capture the effects of these frictions on the transmission of effective exchange rate shocks into export prices to the extent that these additional sources of labor market frictions are correlated with the employment share of a firm. This is possible, for example, when hiring costs are convex and there is serial correlation in the effective exchange rate shocks, since we proxy the labor market power of firms with their employment shares at $t - 1$. In this case, firms that faced a positive foreign demand shock in the previous period tend to have larger employment shares, and the number of new hires in the current period will be higher due to larger effective exchange rate shocks also in the current period, which leads to a positive correlation between S_{it-1}^l and the marginal cost of hiring.

While assessing the empirical relevance of the correlation between hiring/firing costs and firms' employment share is not possible since we do not observe these costs directly or do not have employer-employee matched data, comparing the employment and average wage responses might still be informative of the type of underlying frictions in the labor markets. [Garin and Silv rio \(2024\)](#) show that the elasticity of wages to *idiosyncratic* demand shocks is positive when firms face convex short-run recruitment costs (e.g. in [Stole and Zwiebel \(1996\)](#) and [Acemoglu and Hawkins \(2014\)](#)). In our model with productivity heterogeneity in worker-firm matches, the employment will respond positively to firm-specific demand shocks although average wages are equalized across firms within a local labor market, i.e. the wage elasticity to idiosyncratic demand shocks is zero and the employment elasticity is positive. In the following, we estimate the pass-through of effective exchange rate shocks into employment and wages, noting that we consider the results as suggestive since we are not able to control for the effects of goods market power as the unit of observation is a firm-year pair in these estimations. To this end, we estimate the following specification discarding firm-year pairs

²²For instance, when we consider the industries with above median labor intensity where the labor market power is expected to be more prevalent on the firms' pricing decisions, the employment share again turns out to be a strong and significant determinant of the transmission of exchange rate shocks in export prices also for depreciations.

that are in the top or bottom 5% of the distribution of growth of employment and wages:

$$\hat{l}_{it} = \beta_0^l + \beta_1^l S_{it}^l + \beta_2^l S_{it}^l \times \hat{E}_{it} + \beta_3^l \hat{E}_{it} + \gamma^l \mathbf{X}_{it}^l + \epsilon_{it}^l. \quad (25)$$

$\hat{l}_{it}$ is the employment growth of firm i in year t , and $\mathbf{X}_{it}^l$ includes the firm-level control variables in the baseline exchange rate pass-through equation and sector-region-year, and firm fixed effects. In Column 3 of Table 6, we document that firm level employment is positively correlated to idiosyncratic foreign demand shocks as expected, i.e. $\beta_1^l > 0$, and the firms with higher labor market power adjusts their employment less in response to foreign demand shocks, i.e. β_2^l is negative and significant, consistent with the endogenous labor market power mechanism. Column 4 of Table 6 replicates the same specification as above using the growth of the average wage in firm i at time t ($\hat{w}_{it}$) as the dependent variable. In this case, both the coefficient on the change in the effective exchange rate and its interaction with labor market power are insignificant, also in line with the model predictions.

Interaction of the goods and labor market power. In the theoretical part, we have shown that the exercise of labor market power will be influenced by the degree of pricing power a firm has. Namely, the firms which are dominant in their sales markets will dampen the effects of exchange rate shocks by endogenous markup adjustments. The resultant effect of international shocks on labor demand will typically be lower compared to an otherwise identical firm with limited goods market power, which in turn limits the extent of mark-down adjustments. Besides being a source of measurement error in the construction of the theoretically relevant firm-specific labor demand shocks due to exchange rate fluctuations, the interaction between the two forms of market power might be interesting to investigate in itself. Yet, it is difficult to construct the relevant firm-specific exchange rate shock since we observe the relative market share of an exporter in a product-destination rather than its actual share. As a result, we only consider the markup adjustments associated to the direct bilateral exchange rate shock to capture the confounding effects of the goods market power on the prevalence of labor market power in our main analysis. One way to address this issue is to restrict the sample to the firms, which are small in the domestic and export markets. Small firms exhibit negligible strategic complementarities in price setting (Amiti et al., 2019) and for these firms, the theoretically relevant foreign demand shock is equal to the firm-level effective exchange rate as we construct. Table 7 presents the baseline specifications for the sample of firms with a maximum market share of 5 percent in any of their sales markets including the domestic economy, i.e. $S_{ij}^g < 0.05 \forall j \in \mathcal{J}_i$.²³ Table 7 shows that our main

²³We construct the share of a firm in the domestic market by using its relative total sales. The sales share in an export market is the relative share within French exports. Hence, the actual market share of a firm is even lower than 5 percent in any of its export markets.

Table 6: Price responses to Asymmetric Shocks, responses of wage and employment

Dep. Variable	$\hat{p}_{imjt}$	$\hat{p}_{imjt}$	$\hat{l}_{it}$	$\hat{w}_{it}$
	(1)	(2)	(3)	(4)
Exch. rate change	Appreciations	Depreciations	All	All
$\hat{E}_{it}$	-0.06 (0.07)	-0.16 (0.12)	0.11** (0.04)	-0.00 (0.04)
$S_{ijt-1}^g \hat{e}_{it}$	0.13*** (0.04)	0.16** (0.07)		
$S_{it-1}^l \hat{E}_{it}$	0.88** (0.37)	-0.09 (0.40)	-0.37** (0.16)	-0.17 (0.14)
S_{ijt-1}^g	-0.01* (0.00)	-0.00 (0.01)		
S_{it-1}^l	0.00 (0.01)	0.01 (0.01)	-0.14*** (0.01)	-0.02*** (0.01)
θ_{it-1}	0.00 (0.01)	-0.02*** (0.01)	0.01* (0.00)	0.01 (0.00)
<i>Imp.Intensity</i>	0.00 (0.01)	0.00 (0.01)	0.01*** (0.00)	0.03*** (0.00)
<i>Imp.Intensity</i> $\times$ $\hat{E}_{it}$	0.44** (0.21)	0.29 (0.31)	-0.01 (0.13)	0.22* (0.12)
Observations	2842582	1745902	126829	126829
R^2	0.058	0.074	0.393	0.435

Intercept not reported. Standard errors reported in parantheses are two-way clustered at the destination-year and the firm-year level in price regressions and clustered at the firm level in employment and wage regressions. The first two specifications include sector $\times$ destination $\times$ year, sector $\times$ region $\times$ year, and firm fixed effects. The last two specifications on employment and wage responses include sector $\times$ region $\times$ year, and firm fixed effects. A sector in the labor markets is defined at the NACE 2-digit level, while the share in the goods market is computed within each 2-digit HS product-destination pair. For the last two specifications, we trim the top and bottom 5% of observations in terms of growth rates of employment and wage.

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$.

variable of interest is positive, significant and economically large. Being close to the baseline estimate, it implies that a monopsonist in a local labor market absorbs 81 percent of the effective exchange rate shock by markdown adjustments while an atomistic firm exhibits full pass-through in our preferred specification in Column (4).

Table 7: Exporters with negligible goods market power

Dep. Variable	$\hat{p}_{imjt}$				
	(1)	(2)	(3)	(4)	(5)
Sample	All	All	All	Labor intensity High	Low
$\hat{e}_{jt}$	0.05*** (0.01)	- -	- -	- -	- -
$\hat{E}_{it}$	0.10*** (0.04)	-0.04 (0.05)	-0.11 (0.07)	-0.21 (0.14)	-0.07 (0.07)
$S_{it-1}^l \times \hat{E}_{it}$	0.42*** (0.14)	0.83** (0.34)	0.81** (0.36)	1.13* (0.58)	0.84* (0.44)
S_{it-1}^l	0.00 (0.00)	-0.01 (0.01)	-0.01 (0.01)	0.01 (0.02)	-0.02 (0.02)
θ_{it-1}	0.00 (0.00)	0.00 (0.01)	-0.00 (0.01)	-0.00 (0.01)	0.00 (0.01)
<i>Imp.Intensity</i>			-0.00 (0.01)	0.00 (0.01)	-0.00 (0.01)
<i>Imp.Intensity</i> $\times$ $\hat{E}_{it}$			0.39* (0.21)	1.09** (0.45)	0.03 (0.24)
Sector $\times$ destination FE	Yes	No	No	No	No
Region FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Sector $\times$ destination $\times$ year FE	No	Yes	Yes	Yes	Yes
Sector $\times$ region $\times$ year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
Observations	1743310	1715774	1485237	924409	550525
R^2	0.004	0.078	0.078	0.072	0.122

Intercept not reported. The sample is restricted to the firms, which are small in the domestic and export markets, i.e. $S_{ij}^g < 0.05 \forall j \in \mathcal{J}_i$. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. Column (4): sample restricted to industries with above median labor intensity. Column (5): sample restricted to industries with below median labor intensity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The downside of this approach is that we omit the larger firms, which constitute a disproportionately large share in total economic activity and for which market power is predicted to be stronger, as we also show empirically in section 5.3. In order to keep the larger firms in the sample and control for the interaction of the goods and labor market power in reduced form, we also estimate the main specifications by including the interactions of

S^g , S^l , and the effective exchange rate. We present the results in Appendix 7.2.4 in Table 12, which shows that the coefficient estimate of our main variable of interest is 0.79 in our preferred specification, which is similar to the baseline estimate, and the coefficient of $S_{it-1}^l \times S_{ijt-1}^g \times \hat{E}_{it}$ is negative as expected but imprecisely estimated.

6 Conclusion

In this paper, we estimate the importance of goods and labor market power relying on the insights from the extensive literature on pass-through. We combine firm-product level international trade data and establishment level balance sheet data including the identifiers on the employment zone to be able to address some of the main empirical challenges in the estimation of the strength of goods and labor market power jointly. Using this dataset, we propose plausible definitions for the goods and labor market of a firm separately, construct theoretically sound proxies for the goods and labor market power of firms, observe their prices in different sales markets where they possibly exercise different degree of pricing power and use the variation in the firms' exposure to different export markets to estimate the effects of both forms of market power on firms' pricing behaviour using the exchange rate shocks as the source of identifying variation in firm demand.

To guide our empirical analysis, we present a model with multideestination exporters operating under segmented and imperfectly competitive goods and labor markets. Our model highlights the implications of variable markups and markdowns on the transmission of exchange rate shocks into prices. We take the model implications to the data and find robust evidence for sizable degrees of goods and labor market power for French exporters. In particular, we find that a monopsonist in its local labor market with negligible goods market power and import intensity will pass-through only about from 10 to 25 percent of an effective exchange rate shock into export prices. These large effects of labor market power on pricing decisions' of exporting firms have important implications not only for the transmission of exchange rate shocks but also for the heterogeneous effects of productivity shocks and trade policy along the firm size distribution and across regional labor markets.

7 Appendix

In this section, we provide the derivations of the theoretical results presented in Sections 2, present the details on the dataset used, the construction and definition of the main variables, various descriptives, and robustness tests, which are omitted in the main text.

7.1 Theory Appendix

7.1.1 Derivation of the labor supply equations

Each worker draws independently a vector of productivities for all firms from the following nested Fréchet distribution:

$$F(z_1, z_2, \dots, z_I) = e^{-\sum_s (\sum_{i \in I_{sr}} z_i^{-\nu})^{\frac{\phi+1}{\nu}}},$$

which represents the probability that the productivity draw of the worker is below z_i in firm i . Note that if $\phi + 1 = \nu$, we are back in the standard case with no nesting. Taking the partial derivative of F with respect to z_f gives the probability that the worker has a given draw of productivity for firm f (active in sector s region r), and at the same time a lower draw than z_i in all other firms i :

$$\frac{\partial F(z_1, z_2, \dots, z_I)}{\partial z_f} = (\phi + 1) z_f^{-\nu-1} \left(\sum_{i \in I_{sr}} z_i^{-\nu} \right)^{\frac{\phi+1}{\nu}-1} e^{-\sum_s (\sum_{i \in I_{sr}} z_i^{-\nu})^{\frac{\phi+1}{\nu}}}$$

Workers choose to work in the firm where they earn the most, i.e. in the firm where they have the highest $w_i z_i$. Fixing the draw for firm f at z_f and the draws for all other firms at $z_i \leq \frac{w_f}{w_i} z_f$ gives the probability that a worker draws z_f for firm f and that at this draw, firm f gives him the highest earnings. This corresponds to the partial derivative of F with respect to the productivity in firm f :

$$g_f(z_f) \equiv \frac{\partial F(\frac{w_f}{w_1} z_f, \frac{w_f}{w_2} z_f, \dots, \frac{w_f}{w_I} z_f)}{\partial z_f} = (\phi + 1) z_f^{-\phi-2} \left(\frac{w_f}{W_{sr}} \right)^{\nu-1-\phi} e^{-z_f^{-\phi-1} w_f^{-\phi-1} \sum_{s'} W_{s'r}^{\phi+1}}$$

where:

$$W_{sr} = \left(\sum_i w_i^\nu \right)^{\frac{1}{\nu}}.$$

The probability that a worker works for firm f is the integral over all $z_f \in (0, \infty)$ of the above expression, and the size of firm f in terms of employment is the probability that workers

want to work in f times the number of workers in the region r where the firm is located:

$$l_f = L_r \int_0^\infty g(z) dz = \left(\frac{w_f}{W_{sr}} \right)^\nu \left(\frac{W_{sr}}{W_r} \right)^{\phi+1} L_r$$

where:

$$W_r = \left(\sum_s W_{sr}^{\phi+1} \right)^{\frac{1}{\phi+1}}$$

Summing up over all firms in a local labor market sr shows that:

$$L_{sr} = \left(\frac{W_{sr}}{W_r} \right)^{\phi+1} L_r$$

.

To get to the effective labor units, we use:

$$\Lambda_f = L_r \int_0^\infty z g_f(z) dz$$

We define:

$$\begin{aligned} \varphi(z_f) &= z_f^{-\phi-1} w_f^{-\phi-1} \sum_{s'} W_{s'r}^{\phi+1} \\ \varphi'(z_f) &= -(\phi+1) z_f^{-\phi-2} w_f^{-\phi-1} \sum_{s'} W_{s'r}^{\phi+1} \\ f(x) &= x^{-\frac{1}{\phi+1}} e^{-x} \end{aligned}$$

and note that:

$$\int_0^\infty z g_f(z) dz = \left(\frac{w_f}{W_{sr}} \right)^{\nu-1-\phi} \left(\frac{w_f}{W_r} \right)^\phi \left(- \int_0^\infty f(\varphi(z)) \varphi'(z) dz \right). \quad (26)$$

With integration by substitution, we find:

$$\left(- \int_0^\infty f(\varphi(z)) \varphi'(z) dz \right) = \int_0^\infty x^{-\frac{1}{\phi+1}} e^{-x} dx = \Gamma \left(\frac{\phi}{\phi+1} \right). \quad (27)$$

Using equation (27) in (26), we obtain the equilibrium level of the labor in efficiency units

employed in firm f :

$$\Lambda_f = \Gamma \left(\frac{\phi}{\phi + 1} \right) \left(\frac{w_f}{W_{sr}} \right)^{\nu-1} \left(\frac{W_{sr}}{W_r} \right)^\phi L_r$$

7.1.2 Derivation of the firm-level pass-through equation (14)

In this part, we present the detailed derivation of the pass-through equation (14). In order to economize on notation, we drop the local labor market indices (s, r) in depicting firms as each firm is assigned to a single local labor market and we use the same index s to denote the products defining the goods markets of product-destinations (s, j) and the sectors defining the local labor markets. We first note that:

$$\hat{p}_{ij}^* = \hat{\mathcal{M}}_{ij} + \hat{\mathcal{C}}_i. \quad (28)$$

Using the equilibrium level of $\mathcal{M}_{ij}$ in (13), we obtain

$$\hat{\mathcal{M}}_{ij} = d \ln \left(\underbrace{\frac{(\rho_s (1 - S_{ij}^g) + \eta_s S_{ij}^g)}{(\rho_s (1 - S_{ij}^g) + \eta_s S_{ij}^g) - 1}}_{\mathcal{M}_{ij}^1} \right) + d \ln \left(\underbrace{\frac{(\nu - 1) (1 - S_i^l) + S_i^l \phi_s + 1}{(\nu - 1) (1 - S_i^l) + S_i^l \phi_s}}_{\mathcal{M}_i^2} \right). \quad (29)$$

The change in the markup is found by totally differentiating $\mathcal{M}_{ij}^1$:

$$\hat{\mathcal{M}}_{ij}^1 = \frac{d\varepsilon_{p_{ij}}^{q_{ij}}}{(\varepsilon_{p_{ij}}^{q_{ij}} + 1) \varepsilon_{p_{ij}}^{q_{ij}}} \quad (30)$$

$$d\varepsilon_{p_{ij}}^{q_{ij}} = (\rho_s - \eta) dS_{ij}^g \quad (31)$$

Using the market share of firm i in destination j , $S_{ij}^g = \alpha_{isj} \left(\frac{p_{ij}}{P_{sj}} \right)^{1-\rho_s}$, we find:

$$dS_{ij}^g = S_{ij}^g \left((1 - \rho) (\hat{p}_{ij} - \hat{P}_{sj}) + \hat{\alpha}_{ij} \right). \quad (32)$$

Using equation (32) in (30) and (31) yields:

$$\hat{\mathcal{M}}_{ij}^1 = \Phi_{ij} \left(\hat{p}_{ij} - \hat{P}_{sj} - \frac{1}{\rho_s - 1} \hat{\alpha}_{ij} \right), \quad (33)$$

where

$$\Phi_{ij} = \frac{S_{ij}^g}{\left(S_{ij}^g - \frac{\rho_s}{\rho_s - \eta}\right) \left(1 + \frac{\rho_s - \eta}{1 - \rho_s} S_{ij}^g\right)}. \quad (34)$$

To find the change in the markdowns, we log-differentiate $\mathcal{M}_i^2$:

$$\hat{\mathcal{M}}_i^2 = -\frac{d\varepsilon_{w_i}^{\Lambda_{isr}}}{\varepsilon_{w_i}^{\Lambda_i} (\varepsilon_{w_i}^{\Lambda_i} + 1)}, \quad (35)$$

where

$$d\varepsilon_{w_i}^{\Lambda_i} = (\phi - \nu + 1) dS_i^l \quad (36)$$

$$dS_i^l = S_i^l \nu (\hat{w}_i - \hat{W}_{sr}). \quad (37)$$

Using the goods market clearing condition at the firm level, the production function and the equilibrium allocation of labor in efficiency units, we find that

$$\hat{w}_i = \frac{1}{\nu - 1} (\hat{Q}_i - \hat{h}_i - \hat{\Lambda}_{sr}) + \hat{W}_{sr}. \quad (38)$$

Using the equations (35)-(38), the growth of the markdown reads as

$$\hat{\mathcal{M}}_i^2 = \frac{(\nu - 1 - \phi) \nu}{\varepsilon_{w_i}^{\Lambda_{isr}} (\varepsilon_{w_i}^{\Lambda_i} + 1)} \frac{S_i^l}{\nu - 1} (\hat{Q}_i - \hat{h}_i - \hat{\Lambda}_{sr}). \quad (39)$$

Log-differentiating the firm demand yields:

$$\hat{Q}_i = \sum_k \frac{q_{ik}}{Q_i} \left(\hat{\alpha}_{ik} - \rho_s \hat{p}_{ik} + (\rho_s - \eta) \hat{P}_{sk} + \eta \hat{P}_k + \hat{Y}_k \right). \quad (40)$$

Equations (28), the definition of $\mathcal{M}_{ij}$ and (33) imply that

$$\hat{p}_{ij}^* = \frac{1}{1 - \Phi_{ij}} \left(-\Phi_{ij} \left(\hat{e}_j + \hat{P}_{sj} + \frac{1}{\rho_s - 1} \hat{\alpha}_{ij} \right) + \hat{\mathcal{M}}_i^2 + \hat{\mathcal{C}}_i \right). \quad (41)$$

Plugging (41) in (40) and defining $\hat{D}_i = \sum_k \frac{q_{ik}}{Q_i} \left(\frac{\rho_s - 1 + \Phi_{ik}}{(\rho_s - 1)(1 - \Phi_{ik})} \hat{\alpha}_{ik} + \left(\frac{\rho_s \Phi_{ik}}{1 - \Phi_{ik}} + \rho_s - \eta \right) \hat{P}_{sk} + \eta \hat{P}_k + \hat{Y}_k \right)$,

we find:

$$\hat{Q}_i = \sum_k \frac{q_{ik}}{Q_i} \frac{\rho_s}{1 - \Phi_{ik}} \hat{e}_k - \sum_k \frac{q_{ik}}{Q_i} \frac{\rho_s}{1 - \Phi_{ik}} \left(\hat{\mathcal{M}}_i^2 + \hat{\mathcal{C}}_i \right) + \hat{D}_i. \quad (42)$$

Using the wage growth (38), we find the growth rate of the average cost:

$$\hat{\mathcal{C}}_i = \frac{1}{\nu - 1} \left(\hat{Q}_i - \hat{h}_i - \hat{\Lambda}_{sr} \right) + \hat{W}_{sr} - \hat{h}_i. \quad (43)$$

Then, the growth of the marginal cost of the firm is equal to

$$\hat{\mathcal{M}}_i^2 + \hat{\mathcal{C}}_i = \mathcal{K}_i \left(\hat{Q}_i - \hat{h}_i - \hat{\Lambda}_{sr} \right) + \hat{W}_{sr} - \hat{h}_i. \quad (44)$$

Plugging (42) in (44), we find

$$\hat{\mathcal{M}}_i^2 + \hat{\mathcal{C}}_i = \frac{1}{1 + \mathcal{K}_i \tilde{\Phi}_i} \left(\sum_k \frac{q_{ik}}{Q_i} \frac{\mathcal{K}_i \rho_s}{1 - \Phi_{ik}} \hat{e}_k + \hat{W}_{sr} - \hat{h}_i - \mathcal{K}_i \left(\hat{h}_i + \hat{\Lambda}_{sr} - \hat{D}_i \right) \right), \quad (45)$$

where $\tilde{\Phi}_i \equiv \left(\sum_{k \in J_i} \frac{q_{ik}}{Q_i} \frac{\rho_s}{1 - \Phi_{isk}} \right)$. Finally, combining (45), (33) and $p_{ij} = p_{ij}^*/e_j$, we obtain the pass-through equation (14) in the main text, where the error term is given by

$$u_{isj} = \frac{1}{1 - \Phi_{ij}} \left(\frac{1}{1 + \mathcal{K}_i \tilde{\Phi}_i} \left(\hat{W}_{sr} - (\mathcal{K}_i + 1) \hat{h}_i + \mathcal{K}_i \left(\hat{D}_i - \hat{\Lambda}_{sr} \right) \right) - \Phi_{ij} \left(\hat{P}_{sj} + \frac{\hat{\alpha}_{isj}}{\rho_s - 1} \right) \right). \quad (46)$$

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7.2 Online Appendix

7.2.1 Multi-region firms

In this section, we derive the optimal pricing and wage posting formula for the firms with establishments located in different local labor markets. We focus on two polar cases where the firm posts a single wage that is common across its establishments and posts possibly a different wage for each of its establishments. The profit maximization problem of the multi-region firm exporting to multiple destinations reads as:

$$\begin{aligned} \underset{p_{ij}, w_{ir}^*}{\text{maximize}} \quad & \pi_i = \sum_{j \in J_i} p_{ij} q_{ij}(p_{ij}) e_j - \sum_{r \in R_i} w_{ir}^* \Lambda_i(w_{ir}^*, \mathbf{w}_{-ir}^*) \\ \text{s.t.} \quad & Q_i = \sum_{j \in J_i} q_{ij}(p_{ij}) = \sum_{r \in R_i} f(h_i, \Lambda_{ir}(w_{ir}^*, \mathbf{w}_{-ir}^*)). \end{aligned}$$

For simplicity, we assume that all establishments of a firm has the same level productivity, h_i , and for the case of a single wage across establishments we have the additional constraint that $w_{ir}^* = w_i^* \forall r \in R_i$. Assuming that the profit maximization problem admits an interior solution and using the first order condition with respect to output prices, we obtain the standard pricing formula:

$$p_{ij} = \frac{\varepsilon_{p_{ij}}^{q_{ij}}}{1 + \varepsilon_{p_{ij}}^{q_{ij}}} \frac{\mu_i}{e_j} \quad \forall j \in J_i, \quad (47)$$

where μ_i is the marginal cost of production, which is equal to the shadow variable, and is pinned down by the first-order condition with respect to wages. First, we consider the case where the firm using the linear production technology can post different wages across different establishments. In this case, the marginal cost of production is equalized across regions and is given by:

$$\mu_i = \frac{\varepsilon_{w_{ir}^*}^{\Lambda_{ir}} + 1}{\varepsilon_{w_{ir}^*}^{\Lambda_{ir}}} \frac{w_{ir}^*}{h_i} \quad \forall r \in R_i. \quad (48)$$

Equation (48) highlights that in the absence of systematic differences in the destination markets served by the establishments of the same firm, the markdown of a firm in a local labor market should be 1-to-1 inversely proportional to the wage posted by the firm in that particular labor market. Given that the wage rate can be expressed in terms of the employment share of the establishment and the market level wage, this result has stark

implications for the distribution of establishment size and the aggregate wages in the local labor markets for a multi-region firm.

For a firm that posts the same wage rate across its establishments, the marginal cost is given by:

$$\mu_i = \frac{1 + \sum_{r \in R_i} \varepsilon_{w_i^*}^{\Lambda_{ir}} \frac{w_i \Lambda_{ir}}{w_i \Lambda_i}}{\sum_{r \in R_i} \varepsilon_{w_i^*}^{\Lambda_{ir}} \frac{w_i \Lambda_{ir}}{w_i \Lambda_i}} \frac{w_i^*}{h_i} \quad \forall i \in I. \quad (49)$$

Hence, the effective labor supply elasticity that a firm faces is equal to the weighted average of the labor supply supply elasticities that the firm faces in each local labor market where the weight of each establishment is the payroll share of the establishment in total wage payments of the firm. Based on this result, we proxy the labor market power of a firm by the payroll share weighted average of employment shares of each establishment for multi-region firms.

7.2.2 Additional descriptive tables.

Table 8: Employment zones with highest number of observations

Employment Zone	N. obs.	N. firms	Share obs.	Share firms
Paris	644469	4959	12.6%	12.2%
Lyon	329940	1770	6.5%	4.4%
Grenoble	136635	722	2.7%	1.8%
Roissy-Sud Picardie	111716	753	2.2%	1.8%
Saclay	109575	620	2.1%	1.5%
Saint-Etienne	88069	873	1.7%	2.2%
Toulouse	71245	598	1.4%	1.5%
Marseille-Aubagne	70202	545	1.4%	1.3%
Bordeaux	68634	467	1.3%	1.2%
Mulhouse	65336	492	1.3%	1.2%

Table 9: HS 2-digit products with highest numbers of observations

Product (HS 2 dig.)	N. obs.	N. firms	Share obs.	Share firms
84	643452	5995	12.6%	14.8%
85	480208	2730	9.4%	6.7%
39	317853	2693	6.2%	6.6%
90	243346	1718	4.7%	4.2%
62	232349	1473	4.6%	3.6%
33	202965	695	4.0%	1.7%
73	194074	2200	3.8%	5.4%
48	135497	1303	2.7%	3.2%
61	128898	698	2.5%	1.7%
94	120402	1732	2.4%	4.3%

Table 10: Destinations with highest numbers of observations

Destination	N. obs.
United Kingdom	508012
Switzerland	347443
United States	251748
Sweden	197562
Poland	187394
Denmark	187200
Czech Republic	140886
Morocco	128308
Tunisia	124690
Japan	107132

7.2.3 Measurement of S^g .

Table 11 presents the replication of the main results, where we test the sensitivity of the estimates to alternative definitions of the goods market and measure S_{ijt}^g at the 4-digit HS-destination level.

7.2.4 Interaction of goods and labor market power.

Table 12 replicates the baseline estimates, including the interactions of the proxies of the goods and labor market power and the effective exchange rates.

7.2.5 Using payroll shares as a proxy for labor market power.

In our model, employment and payroll shares of a firm are the same given that the average wage per worker is equalized across firms in a local labor market, which would not be the case if the workers had heterogeneous preferences over non-wage characteristics instead of productivity across firms (cf. Berger et al. (2022)). In our data set, the proxies for labor market power using employment and payroll shares are virtually the same, and the correlation between these two variables is 0.984. In this part, we test the sensitivity of the main results to the use of payroll instead of employment shares in the construction of S_i^l and report the results in Table 13, which are very similar to the baseline estimates.

Table 11: Main results with finer goods markets

Dep. Variable	$\hat{p}_{imjt}$				
	(1)	(2)	(3)	(4)	(5)
Sample	All	All	All	Labor intensity High	Low
$\hat{e}_{jt}$	0.08*** (0.01)	- -	- -	- -	- -
$\hat{E}_{it}$	0.11*** (0.03)	-0.08** (0.04)	-0.16*** (0.04)	-0.15*** (0.06)	-0.15** (0.07)
$S_{ijt-1}^{g4} \times \hat{e}_{jt}$	0.07*** (0.01)	0.07*** (0.01)	0.06*** (0.01)	0.07*** (0.02)	0.06*** (0.02)
S_{ijt-1}^{g4}	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	0.00*** (0.00)	-0.00*** (0.00)
S_{it-1}^l	-0.00 (0.00)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)	-0.02* (0.01)
$S_{it-1}^l \times \hat{E}_{it}$	0.39*** (0.09)	0.92*** (0.15)	0.83*** (0.17)	0.94*** (0.21)	0.70*** (0.23)
θ_{it-1}	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	0.00 (0.01)	-0.02*** (0.01)
<i>Imp.Intensity</i>			0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Imp.Intensity</i> $\times \hat{E}_{it}$			0.44*** (0.11)	0.56*** (0.14)	0.30* (0.16)
Sector $\times$ destination FE	Yes	No	No	No	No
Region FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Sector $\times$ destination $\times$ year FE	No	Yes	Yes	Yes	Yes
Sector $\times$ region $\times$ year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
Observations	5104948	5065621	4621277	2099957	2500578
R^2	0.003	0.049	0.049	0.052	0.068

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. A sector in the goods market is defined at the 4-digit HS product level. A sector in the labor markets is defined at the 2-digit NACE industry level. Column (4): sample restricted to industries with above median labor intensity. Column (5): sample restricted to industries with below median labor intensity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 12: Interaction between goods and labor market power

Dep. Variable	$\hat{p}_{imjt}$				
	(1)	(2)	(3)	(4)	(5)
Sample	All	All	All	Labor intensity High	Low
$\hat{e}_{jt}$	0.09*** (0.01)	-	-	-	-
$\hat{E}_{it}$	0.07** (0.03)	-0.10*** (0.04)	-0.17*** (0.04)	-0.15*** (0.06)	-0.18*** (0.07)
$S_{ijt-1}^g \hat{e}_{jt}$	0.03 (0.02)	0.13*** (0.03)	0.12*** (0.04)	0.13* (0.07)	0.14*** (0.04)
$S_{it-1}^l \hat{E}_{it}$	0.39*** (0.09)	0.88*** (0.15)	0.79*** (0.17)	0.95*** (0.21)	0.61*** (0.23)
S_{ijt-1}^g	0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.02* (0.01)	-0.00 (0.00)
S_{it-1}^l	-0.00 (0.00)	-0.00 (0.01)	-0.01 (0.01)	0.00 (0.01)	-0.02* (0.01)
$S_{it-1}^l S_{ijt-1}^g \hat{E}_{it}$	-0.43 (0.42)	-0.36 (0.39)	-0.18 (0.40)	-0.15 (0.74)	0.24 (0.57)
$S_{it-1}^l S_{ijt-1}^g$	-0.01 (0.01)	0.01 (0.01)	0.01 (0.01)	0.02 (0.02)	0.00 (0.01)
$S_{ijt-1}^g \hat{E}_{it}$	0.85*** (0.15)	0.66*** (0.17)	0.53*** (0.18)	0.10 (0.44)	0.65*** (0.20)
θ_{it-1}	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	0.00 (0.01)	-0.02*** (0.01)
<i>Imp.intensity</i>			0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Imp.intensity</i> $\times$ $\hat{E}_{it}$			0.43*** (0.11)	0.55*** (0.14)	0.31* (0.16)
Sector $\times$ destination FE	Yes	No	No	No	No
Region FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Sector $\times$ destination $\times$ year FE	No	Yes	Yes	Yes	Yes
Sector $\times$ region $\times$ year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
Observations	5104948	5065621	4621277	2099957	2500578
R^2	0.003	0.049	0.049	0.052	0.068

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. A sector in the goods market is defined at the 2-digit HS product level. A sector in the labor markets is defined at the 2-digit NACE industry level. Column (4): sample restricted to industries with above median labor intensity. Column (5): sample restricted to industries with below median labor intensity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 13: Main Results with Payroll Shares

Dep. Variable	$\hat{p}_{imjt}$				
	(1)	(2)	(3)	(4)	(5)
Sample	All	All	All	Labor intensity High	Low
$\hat{e}_{jt}$	0.09*** (0.01)	- -	- -	- -	- -
$\hat{E}_{it}$	0.11*** (0.03)	-0.08** (0.04)	-0.16*** (0.04)	-0.15*** (0.06)	-0.15** (0.07)
$S_{ijt-1}^g \hat{e}_{jt}$	0.11*** (0.02)	0.19*** (0.03)	0.18*** (0.03)	0.13** (0.07)	0.22*** (0.04)
$S_{it-1}^w \hat{E}_{it}$	0.38*** (0.08)	0.87*** (0.15)	0.78*** (0.16)	0.92*** (0.19)	0.60** (0.24)
S_{ijt-1}^g	-0.00 (0.00)	-0.00 (0.00)	-0.00 (0.00)	-0.01 (0.01)	-0.00 (0.00)
S_{it-1}^w	-0.00 (0.00)	0.01 (0.01)	0.00 (0.01)	0.01 (0.01)	-0.01 (0.01)
θ_{it-1}	0.00 (0.00)	-0.00 (0.00)	-0.01 (0.00)	0.00 (0.01)	-0.02*** (0.01)
<i>Imp.intensity</i>			0.00 (0.00)	0.00 (0.00)	0.00 (0.01)
<i>Imp.intensity</i> $\times$ $\hat{E}_{it}$			0.44*** (0.11)	0.54*** (0.14)	0.31** (0.16)
Sector $\times$ destination FE	Yes	No	No	No	No
Region FE	Yes	No	No	No	No
Year FE	Yes	No	No	No	No
Sector $\times$ destination $\times$ year FE	No	Yes	Yes	Yes	Yes
Sector $\times$ region $\times$ year FE	No	Yes	Yes	Yes	Yes
Firm FE	No	Yes	Yes	Yes	Yes
Observations	5104948	5065621	4621277	2099957	2500578
R^2	0.003	0.049	0.049	0.052	0.068

Intercept not reported. Standard errors two-way clustered at the destination-year and firm-year level are in parentheses. A sector in the goods market is defined at the 2-digit HS product level. A sector in the labor markets is defined at the 2-digit NACE industry level. S_{it-1}^w is the share of firm i in the total payroll of its local labor market in year $t - 1$. Column (4): sample restricted to industries with above median labor intensity. Column (5): sample restricted to industries with below median labor intensity. * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$