International Competition and Rent Sharing in French Manufacturing

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ABSTRACT

The paper investigates the impact of import competition on rent-sharing between firms and employees. First, by applying recent advances in the estimation of price- costs margins to a large panel of French manufacturing firms for the period 1993-2007, we are able to classify each firm into labor- and product-market regimes based on the presence/absence of market power. Second, we concentrate on firms that operate in an efficient bargaining framework to study the effect of import penetration on workers' bargaining power. We find that French imports from other OECD countries have a negative effect on bargaining power, whereas the impact of imports from low wage countries is more muted. By providing firm-level evidence on the relationship between international trade and rent sharing, the paper sheds new light on the effect of trade liberalization on the labor market.

KEY WORDS

Firm heterogeneity; import competition; mark-up; wage bargaining.

JEL

F14; F16; J50.

1 Introduction *

One of the most striking trend of developed economies over the most recent decades is the fall of the labor share in value added (Karabarbounis & Neiman 2014). This decrease appears as a threat to the sustainability of economic growth and is concomitant with secular stagnation and the rise of inequalities, itself threatening social cohesion. Explanations for the rise of these secular trends remain, to date, scant and speculative.

Autor et al. (2017) argue that the rise of superstar firms may explain the fall of the labor share in value added. Larger firms increase their market share in world GDP (Mayer & Ottaviano 2008) and, since they are more capital intensive, this leads to a mechanical fall of the labor share in GDP. An alternative explanation is that increases in intangible investments naturally leads to increased inequality (Haskel & Westlake 2018). The winners of an intangible economy are those with the skills to master the new economy, whereas the losers are supposedly less-educated people. In turn, this pattern accelerates polarization, deteriorates social cohesion and encourages profound frustration among the excluded. In a similar vein, (Koh et al. 2016) argue that the decline in the labor share is entirely due to investment in intangible capital. Whereas national accounts are based on a traditional Cobb-Douglas vision of production with constant elasticity of substitution between labor and capital, intangible investments increase the demand for skilled labor, implying that capital and labor must be more than mere Cobb-Douglas substitutes. Last, (De Loecker & Eeckhout 2017) view in the alleged secular trends the expression of increased market distortions in the output and factor markets. The presence of market power, the authors argue, has enormous welfare implications. Imperfect competition implies lower quantities produced, decreasing labor demand and higher prices, lowering consumer welfare. The observed decreasing trend in the labor share, together with a corresponding decreasing user cost of capital, reflects the increase of abnormal profit actually captured by the larger companies.

In this paper, we pursue another line of explanation. Our working assumption is that globalization may have played a significant role in explaining this fall. Indeed, the decrease in communication and transportation costs has undoubtedly made it possible for low-wage countries to compete on the same markets with higher wage countries. This led to a substantial relocation of industrial activities from established economies – typically Western Europe, North America and Japan – towards emerging economies – typically the BRIICS.[1] Our intuition is that trade liberalization has reduced the bargaining power of workers, thereby dragging down the share of value added accruing to labor.

The impact of trade liberalization on labor market outcomes, represents a classical research question in international economics. As such, a vast literature exists, both theoretical and empirical, that tackles it from different angles, alternatively looking at developed

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[1] BRIICS countries include Brazil, Russia, India, Indonesia, China, and South Africa.

or developing countries, wage levels and wage inequality, skill premia and unemployment. Early studies dating back to the 1990s tend to find little direct effect of trade on labor market outcomes, and convey the broad message that technical change plays a much more prominent role in explaining job losses and wage polarization in industrial countries. However, more recent studies that take into account outsourcing and offshoring, in addition to the standard import competition mechanism, tend to give more relevance to trade-related explanations (Dumont et al. 2012). The effect of international trade on workers's bargaining power remains however a much less studied phenomenon.

More recently the focus has shifted on the relationship between trade and earnings inequality (see for instance Amiti & Davis 2011, Harrigan et al. 2016, Helpman et al. 2017). This line of research finds that trade magnifies within-sector differences among firms, a dynamics that is reflected into workers' wages. Indeed much of the increase in inequality occurs within sector and occupation, and it is driven mainly by between-firm dispersion (Helpman et al. 2017). Within this research area, a number of works have focused on the so-called "China syndrome" Autor et al. (2013), using Chinese WTO accession as the key driver of trade-induced changes. Results tend to support the notion that imports from low-wage countries is triggering a hollowing-of-the- effect on labor market whereby job are increasingly polarized at the bottom and at the top of the distribution, while typical "middle-class" positions tend to disappear (see for instance Utar 2014, for a study on the Danish labor market).

A key mechanism that translates firm performance into earnings is (collective) bargaining, which, especially in Europe, plays a key role in wage determination (Venn 2009). However, an noted by Carluccio et al. (2015) empirical evidence on how bargaining influences the relationship between trade and wages is scarce.

We contribute to this literature by (jointly) estimating a firm-level measure of market power on both the product and the labor market. While the methodology in itself is not new, so far it has been only applied to industry-level data (Dobbelaere & Mairesse 2013, Dobbelaere et al. 2015). To the best of our knowledge, this is the first paper that uses it to derive a firm-level measure of rent-sharing.[2] Then, we use this information to investigate the impact of import penetration on workers' bargaining power, distinguishing between imports from industrial and emerging countries.

In so doing, we complement recent evidence by Carluccio et al. (2015) who use administrative info on the existence of firm and industry-level wage agreements to study the impact of exports and offshoring on French manufacturing wages. Using data for 2005–2009 they find that firms with collective bargaining agreements display higher elasticity of wages with respect to export and offshoring. At the same time, wage gains associated with collective bargaining are similar across worker categories, so that the between-firm dimension of wage inequality is confirmed to matter more than the within-firm component.

[2] Dobbelaere & Kiyota (2017) are working in parallel on a similar application.

Our contribution, therefore, stems from two key aspects: i) we look at imports rather than exports; ii) we use a continuous measure of bargaining power, rather than administrative information on the existence of a wage agreement. The focus on import rather than on export addresses an important policy question that is associates with the recent raise of protectionist sentiments in several industrial countries, both Europe and beyond. Most of the recent literature that looks at the relationship between rent sharing and trade based on firm-level evidence has been interested in whether the gains associated with exports are captured by some firms only, or by some workers within some firms. On the contrary, we investigate the potential loss in bargaining power linked to import penetration. In other words, we ask whether import competition, especially from low-wage countries, acts as a discipline device in the labor market. From a methodological point of view, we claim that being able to classify firms into different labor market regimes based on their behavior, rather than on the mere existence of a firm-level agreement with the workers, provides us with additional information that has not been exploited so far.

Other papers exists that explore the impact of import competition on wage bargaining, yet all of them are conducted at the level of the industry, assuming homogeneous behavior within a sector. This notwithstanding, they still represent an interesting starting point and an important reference for our empirical results.

Dumont et al. (2006) analyze evidence for five European countries during 1994–1998. First they estimate sector-level bargaining power from firm microdata, then they investigate its determinant looking in particular at labor composition, R&D intensity, outsourcing practices, market structure and imports from both OECD and emerging economies. For what concerns trade variables, results suggest that only imports from OECD countries have a significant effect on rent sharing.

A similar result emerges from a study on the UK performed by Boulhol et al. (2011). The empirical approach is similar: the authors first estimate both markups and bargaining power (by sector, year and size class), and then regress them on a series of covariates among which one finds the share of imports from both industrial and developing countries in total demand. As before, only imports from high-income countries seem to matter.[3]

Closer to our own approach, at least in spirit, is the work by Abraham et al. (2009) who analyze the price and wage setting behavior of Belgian manufacturing firms in the period 1996–2004, and distinguish between import competition from four country groups, namely EU-15, new EU members, other OECD countries, and the rest of the world. Their model assumes that increased economic integration reduces firms' price-cost margins and thus lowers the size of the rent to share with workers. As a result, workers' bargaining power is reduced. Although Abraham et al. (2009) use firm-level data, they still assume that markups and bargaining power are the same for all firms within the same industry. Their findings suggest that import competition puts pressure on both markups and bar-

[3] Boulhol et al. (2011) assume that all firms/sectors are engaged in an efficient bargaining wage setting.

gaining power, especially when there is increased competition from low wage countries. The authors conclude that trade integration is associated with wage moderation, which should then yield a positive effect on employment.

Moreno & Rodriguez (2011) address a similar question by looking at the hypothesis that import reinforces market discipline both on product and labor markets. Using a small sample of around 2,000 Spanish firms over the period 1990–2005 they look at both markups and bargaining power, looking at whether import competition affects both the size of economic rents (measured by the Lerner's index) and their distribution between firms and workers. They find a negative effect of import competition on the Lerner's index, that is larger for firms producing final goods. This is consistent with the notion that imports of final goods are more directly in competition with domestic production and therefore put particular pressure on local firms. From the point of view of rent sharing, Moreno & Rodriguez (2011) find that bargaining power is smaller for producers of final and homogeneous goods. Interestingly, this paper presents a first attempt to estimate markups at the firm level, applying the methodology developed by Roeger (1995) to each firm.[4]

An interesting extension to the standard theoretical setup that assumes homogeneity among workers is offered by Dumont et al. (2012), who explicitly model bargaining between firms and two types of unions, representing high- and low-skilled workers. The model's implications are then brought to the data using information on Belgian firms. The authors study the determinants of bargaining power at sectoral level, and find that while the bargaining position of high-skilled workers is not affected by either technical change or globalization, low-skilled workers are negatively affected by imports from non-OECD countries (where the wage differential is likely to be larger), offshoring activities, and the presence of foreign affiliated in Central and Easter European countries.

2 Market Imperfections

2.1 Modeling joint market imperfections

Similar to Dobbelaere & Kiyota (2017), we develop a production function based approach to measure firm-year specific market imperfections.[5] Let Q be firm output as follows: $Q_{it} = Q_{it}(K_{it}, L_{it}, M_{it})$, where subscripts i and t stand for firm i at time t, K is capital, and L and M represent labor and materials, respectively. Capital K is assumed to be dynamic, whereas all remaining production factors are static. In this framework, we

[4]Roeger's methodology is amended to allow for labor market imperfections as in Crépon et al. 2005. Moreno & Rodriguez (2011) run firm-level regressions that have between 9 and 15 observations each for a subsample of 885 firms, and then focus on the distribution of markups rather than on the specific firm-level values.

[5]The methodology we use is based on Dobbelaere & Mairesse (2013) and Dobbelaere et al. (2015), and its presentation draws heavily on Dobbelaere & Kiyota (2017).

assume the followings: (i) $Q(\cdot)$ is twice differentiable and continuous; (ii) firms produce homogeneous good industry and compete in quantities as in an oligopolistic Cournot; (iii) firms are price takers on the market for materials M; (iv) the competitive regime characterizing the labor market is firm-specific; (v) firms maximize short-run profits π. The short-run profit maximization problem reads

$$\pi_{it}(Q_{it}, L_{it}, M_{it}) = P_t Q_{it} - w_{it} L_{it} - p^M_{it} M_{it} \tag{1}$$

Maximisation of eq. (1) with respect to Q yields the following first-order condition:

$$\frac{P_t}{(C_Q)_{it}} = \left(1 + \frac{s_{it}}{\epsilon_t}\right)^{-1} = \mu_{it} \tag{2}$$

where $(C_Q)_{it}$ represents the marginal costs ($\frac{\partial C}{\partial Q} = w\frac{\partial L}{\partial Q} + p^M \frac{\partial M}{\partial Q}$), s_{it} represents firm i's market share and ϵ represent the price elasticity of demand. Parameter μ represents the price cost margins.

Firms are price takers on the market for materials. The optimal output choice for M_{it} satisfies the first-order condition $\frac{\partial \pi_{it}}{\partial M_{it}}$:

$$p^M_{it} = (Q_M)_{it}\, P_t \left(1 + \frac{s_{it}}{\epsilon_t}\right) \tag{3}$$

The term on the left-hand side of eq. (3) represents the marginal cost of material, which must equalize the left-hand term, the marginal revenue, that is, the marginal output of materials $\frac{\partial Q_{it}}{\partial M_{it}}$, noted $(Q_M)_{it}$ multiplied by the non-competitive price $P_t \left(1 + \frac{s_{it}}{\eta_t}\right)$. Inserting eq. (2) into eq. (3), multiplying both sides by $\frac{M_{it}}{Q_{it}}$ and rearranging terms yields:

$$\theta^M_{it} = \mu_{it} \alpha^M_{it} \tag{4}$$

where the numerator $\theta^M_{it} = \frac{\partial Q_{it}(M_{it})}{\partial M_{it}} \frac{M_{it}}{Q_{it}}$ represents the output elasticity of material M_{it} and the denominator $\alpha^M_{it} = \frac{p^M_{it} M_{it}}{P_t Q_{it}}$ is the share of material M_{it} in total sales. If product and factor markets are perfect, the price to marginal cost ratio equalizes unity. Conversely if product markets only are imperfect, then $\frac{\theta^M_{it}}{\alpha^M_{it}} \neq 1$.

Firm's optimal demand for labor depends on the regime of its labor market. Dobbelaere & Mairesse (2013) distinguish among three regimes: perfect-competition right-to-manage bargaining (PR), efficient bargaining (EB), and static partial-equilibrium monopsony power (MO).

Under the PR regime, firms and workers all behave as price takers on the labor market. As in the market for materials, the firm's short-run maximization problem leads to the following equality:

$$\theta^L_{it} = \mu_{it}\alpha^L_{it} \quad (5)$$

where the numerator θ^L_{it} represents the output elasticity of labor L_{it} and the denominator α^L_{it} is the labor share L_{it} in total sales.

An important implication is that if all factor markets are perfect, the markup derived from material must yield the same value as the markup derived from labor: $\frac{\theta^L_{it}}{\alpha^L_{it}} = \frac{\theta^M_{it}}{\alpha^M_{it}}$. However, imperfections in the labor market will yield $\frac{\theta^L_{it}}{\alpha^L_{it}} \neq \frac{\theta^M_{it}}{\alpha^M_{it}}$. Hence under assumptions (iii) and (iv), the wedge between the two ratios will be used to infer imperfections.

Under efficient bargaining EB, risk-neutral firms and workers negotiate simultaneously on optimal wage w and employment L in order to maximize their joint surplus. Following McDonald & Solow (1981), and leaving subscripts i and t for clarity, the generalized product is written as:

$$\Omega_{EB} = \Big[wL + (\bar{L} - L)\bar{w} - \bar{w}\bar{L}\Big]^{\phi}\Big[PQ - wL - p^M M\Big]^{1-\phi} \quad (6)$$

where $\bar{w}$ and $\bar{L}$ are the competitive levels of wages and unemployment ($0 < L < \bar{L}$), respectively, and ϕ is the degree of bargaining power of the trade unions (the workers) during the yearly negotiations, also called the absolute extent of rent sharing. Firms decide simultaneously on wages and the level of employment, by maximizing eq. (6) with respect to w and L. Appendix A shows that this program leads to the following equality:

$$\theta^L = \mu\Big(\alpha^L - \gamma(1 - \alpha^L - \alpha^M)\Big) \quad (7)$$

where $\gamma = \frac{\phi}{1-\phi}$.

An important implication of eq. (A12) is that, provided that we can measure the output elasticities of labor θ^L and material θ^M, together with their shares in total sales α^L and α^M, it is then possible to retrieve a measure of γ and thereby a measure of the unions' bargaining power ϕ which is firm-year specific.

Under monopsony power MO, labor supply may be less that perfectly elastic and is increasing with wages w. Such elasticity may stem from various factors, ranging from idiosyncratic – heterogenous – preferences of workers with respect to their professional environment, implying that workers view firms as imperfect substitutes. Under MO, firms act as price makers and are constrained to set a single wage which applies to all workers. The monopsonist firm's maximization program leads to the following equality:

$$\theta^L = \mu\alpha^L\Big(1 + \frac{1}{\epsilon^L_w}\Big) \quad (8)$$

where ϵ^L_w represent the wage elasticity of labor supply. Eq.(8) implies that the ratio of the output elasticity og labor θ_L over the labor share in total sales must be equal to the firm's markup on the product market μ augmented by their monopsony power on the labor market $\frac{1}{\epsilon_w^L}$. Eq.(8) implies that it is possible to estimate the wage elasticity of labor supply.

Taking stocks of the above, the structural model allows to characterize market imperfections on the product and labor markets. The strongest working assumption is to assume that on the market for materials firms are price takers. If the assumption holds, the wedge between the output elasticity of material (θ^M) and the share of materials in revenue (α^M) is due to imperfections on the product market. In other words, the ratio $\frac{\theta^M}{\alpha^M}$ provides information on the price-marginal cost ratio, i.e. unobservable economic markups.

Now if the product market only is imperfect but the two factor markets are perfect, then we should observe strictly the same value for the ratio concerning the output elasticity of labor (θ^L) and the share of materials in revenue (α^L). Any gap between the two ratio $\frac{\theta^M}{\alpha^M}$ and $\frac{\theta^L}{\alpha^L}$ provides us with information on the degree of market imperfection on the labor market. In particular, Dobbelaere & Mairesse (2013) define a joint market imperfection parameter $\psi_{it} = \frac{\theta^M_{it}}{\alpha^M_{it}} - \frac{\theta^L_{it}}{\alpha^L_{it}}$, whose sign provides us with information on the presence of labor market imperfections:

1. *Efficient Bargaining* (EB, $\psi > 0$). Firms and risk-neutral workers bargain over wages and employment level. It is straightforward to show that $\psi = \mu\gamma\left[\frac{1-\alpha^L-\alpha^M}{\alpha^L}\right]$
2. *Perfect competition - Right-to-manage* (PR, $\psi = 0$). The labor market is coined as operating under perfect competition.
3. *Monopsony* (MO, $\psi < 0$). Firms enjoy *monopsony* power and set wages by choosing the number of employees, in which case $\psi = -\mu\frac{1}{\epsilon_w^L}$

Based on the joint market imperfection parameter ψ, Dobbelaere & Mairesse (2013) identify six different regimes – each being a combination of the types of competition on both the product and the labor market – in which they classify each industry. Table (1) presents the various combinations of joint market imperfections.

[Table 1 about here.]

2.2 Estimating joint market imperfections

To compute the markup μ_{it}, we need to compute both θ^X_{it} and α^X_{it}, with $(X = L, M)$, per firm and per time period. Although computing α^X_{it} is straightforward, the estimation of θ^X_{it} is more demanding.

A key choice involves the functional form of $Q(\cdot)$. The most common candidate is the Cobb-Douglas framework. This functional form would yield an estimate of the output elasticity of labor that would be common to the set of firms to which the estimation pertains: $\hat{\theta}^L_{it} = \hat{\theta}^L$, hence, $\hat{\theta}^L_{it} = \hat{\theta}^L_{jt}$ for all firms i and j, $i \neq j$, included in the estimation sample. It follows that the heterogeneity of firm markups and the ratio of the output elasticity of labor on its revenue share would simply reflect heterogeneity in the revenue share of labor: $\mu^L_{it} = \frac{\theta^L}{\alpha^L_{it}}$. Therefore, our choice is to use the translog production function because it generates markups whose distribution is not solely determined by heterogeneity in the revenue share of labor. The production function reads:

To obtain consistent estimates of the output elasticity of labor θ^L_{it}, we restrict our attention to production functions with a scalar Hicks-neutral productivity term and with technology parameters that are common across firms. Thus, we have the following expression for the production function:

$$Q_{it} = F(K_{it}, L_{it}, M_{it}; \mathbf{B}), \tag{9}$$

where $\mathbf{B}$ is a set of technology parameters to be estimated. Let smaller cases denote the log-transformed values of the variables and with subscript for simplicity, the translog production function reads as:

$$\begin{aligned} q_{it} &= \beta_K k_{it} + \beta_L l_{it} + \beta_M m_{it} \\ &+ \beta_{KL} k_{it} l_{it} + \beta_{KM} k_{it} m_{it} + \beta_{LM} l_{it} m_{it} \\ &+ \beta_{KK} k^2 + \beta_{LL} l^2 + \beta_{MM} m^2 + \omega_{it} + \varepsilon_{it} \end{aligned} \tag{10}$$

where smaller cases indicate the log transform, ω is a measure of the true productivity, and ϵ is true noise.[6]

The estimation of vector $\mathbf{B}$ is challenged by the correlation of variable inputs L and M with the productivity term ω_{it}, which is known by the entrepreneur but not by the econometrician. The resulting endogeneity of inputs would yield inconsistent estimates for the coefficients in $\mathbf{B}$. To overcome the problem of endogeneity, we use the control function approach originally developed by Olley & Pakes (1996) and extended by Levinsohn & Petrin (2003) and Ackerberg et al. (2015). Among the different estimators that are available we follow the Wooldridge-Levinsohn-Petrin (WLP) procedure derived by Wooldridge (2009) and implemented by Petrin & Levinsohn (2012). This approach uses inputs to control for unobserved productivity shocks (as in Levinsohn & Petrin 2003), and tackles potential endogeneity by introducing lagged values of specific inputs as proxies for productivity. Moreover, the WLP estimator does not assume constant returns to scale and it is robust to the Ackerberg et al. (2015) criticism of the Levinsohn & Petrin (2003) methodology. Last,

[6]Note that we recover the Cobb Douglas (CD) production function in logs when omitting higher-order terms ($\beta_{KK} k^2, \beta_{LL} l^2, \beta_{MM} m^2$) and the interaction terms.

it has been routinely applied in the empirical literature to estimate production functions (e.g. De Loeacker et al. 2016).

We assume that productivity is a function of a second-order polynomial in the logarithms of lagged capital and materials. In addition, following De Loecker (2013), we include in the productivity process a dummy for export status to control for the potential effects of international trade on productivity.

2.3 Characterizing Market Imperfections in French Manufacturing

We use a panel database of French firms covering the 1994-2007 period. Data come from the annual survey of companies (EAE) led by the statistical department of the French Ministry of Industry on all manufacturing sectors. The survey covers all French firms with at least 20 employees in the manufacturing sectors. EAE data provide information on the financial income and balance sheet, from which we retrieve data on sales (corrected for stock variations), value added, labor, number of hours worked, capital stock, and materials. Appendix B provides more information on the data and the series of deflators used in this paper.

[Table 2 about here.]

Table (2) displays the factor shares in total sales of labor L and materials M. It also shows the results of the Wooldridge industry-specific estimation for both the translog and the Cobb-Douglas estimations, for all manufacturing and by industry. The sample contains almost 200,000 manufacturing companies of at least 20 employees. The factor shares conform to the usual manufacturing characteristics that materials represent most of the costs (61% in total sales for all manufacturing), whereas labor costs represent on average one third of the total sales (33% for all manufacturing). The translog factor elasticities θ^M and θ^L amount to .630 and .268, respectively. The overall manufacturing firms operate near constant returns to scale $\lambda = .967$, although λ appears to be significantly below unity. Taking average shares α^M and α^L, it immediately follows that there is, on average, product markups above unity μ^M and that the dominant labor regime should be efficient bargaining.

The preliminary remarks should not conceal the fact that there is substantial heterogeneity across industries in the parameter estimates. The capital output elasticities θ^K are suspiciously negative in *Electric and Electronic Equipment* and in *Printing and Publishing.* Concerning the functional form of the production function, the Cobb-Douglas estimates corroborate our preliminary remarks. One major difference is that under a Cobb-Douglas setting, returns to scale are systematically below those of the translog specification, except in *Pharmaceuticals* and in *Printing and Publishing.*

Having obtained firm-year specific output elasticities, we can now compute the various parameters characterizing product and labor market imperfections. Table (3) displays the average values of the price markup μ, parameters ψ and γ, rent sharing ϕ and the elasticity of labor supply with respect to wages ϵ_w^L. Because ϕ is computed exclusively for firms belonging to the Efficient Bargaining regime and ϵ_w^L is computed only for firms belonging to the monopsony regime, the observations underlying the two statistics do not overlap. Focusing on the translog estimates, the markup across all industries and over the time period is 11%, a value that is similar in magnitude to Bellone et al. (2014), which amounts to 14.8%. The computed markups are significantly smaller, however, than the average of 29% provided by Dobbelaere et al. (2015) for French companies.[7] Not surprisingly, economic markup are also of a smaller magnitude than accounting markups reaching 23%.[8] Last, the overall computed means conceal substantial cross-industry heterogeneity. For example, sectors such as *Automobile*, *Metallurgy*, *Mineral Industries* and *Textile* seem to operate in very competitive markets whereas sectors like *Electronics* enjoy significant markups.

Turning to labor markets imperfections, a positive ψ parameter implies that on average, labor markets operate under the efficient bargaining regime. We observe that the absolute extent of rent sharing ϕ amounts to 0.553. Hence under EB, profits are shared almost equally between the shareholders and workers, the latter obtaining 55% of the overall profit.[9] The elasticity of labor supply with respect to wages ϵ_w^L reaches 3.7, implying that a one-percent increase in wages entails a 3.7 percent increase in labor supply. Table (3) exhibits substantial cross-industry variations in both ϕ and ϵ_w^L. Cobb-Douglas estimates produce a higher level of rent sharing for workers and a lower elasticity of labor supply.

[Table 3 about here.]

To classify each firm-year observation in a specific regime, we proceed as follows. Let $\mu^L = \frac{\theta^L}{\alpha^L}$. First, we compute the confidence intervals (CI) at 90% level for each firm-level measure of μ^M and μ^L in a classical fashion ($\mu_{it}^X < \hat{\mu}_{it}^X \pm z \times \sigma_{\mu_X,it}$) where X stands for either M or L, $z = 1.64$ and $\sigma_{\mu_X,it}$ is given by:

$$(\sigma_{\mu_X,it})^2 = (\alpha_{it}^X)^{-2} \cdot \left[\sum_w w_{it}^2 \cdot (\sigma_x)^2 + 2 \cdot \sum_{x,z,x\neq z} x_{it} \cdot z_{it} \cdot cov_{xz} \right] \tag{11}$$

where $w = \{1, l, k, lk\}$ and $x, z = \{m, lm, mk, lmk\}$ when $X = M$ and $w = \{1, m, k, mk\}$ and $x, z = \{l, lm, lk, lmk\}$ when $X = L$, where lower cases denote the log transformed

[7] Although the data source is the same (EAE), the difference comes from essentially two effects. First, the time period considered are different: 1986 to 2001 for Dobbelaere et al. (2015), 1995 to 2007 in our case. The former period includes years before the establishment of the single market in 1993, whereas the single markets has been shown to have a significant pro-competitive effect driving down markups significantly (see Bellone et al. 2009). Second, we use the WLP estimator whereas Dobbelaere et al. (2015) rely on system GMM estimators developed by Blundell & Bond (1998)

[8] The operating margin rate is measured at the firm level as the ratio of operating income over value added.

[9] This ratio is higher than the one found in Dobbelaere et al. (2015) for France, reaching 0.423.

variables of capital K, labor L and materials M. Second, and consistently with the above classification, the comparison of the two confidence intervals allows us to classify the labor market in which each firm operates:

1. EB: *Efficient Bargaining.* If lower bound for the 90% CI μ_{it}^{M} exceeds the upper bound of the 90% CI for $\mu_{it}LM$, then μ_{it}^{M} is significantly greater than μ_{it}^{L}: $\mu_{it}^{M} > \mu_{it}^{L} \Rightarrow \psi_{it} > 0$, at 90% level.

2. PR: *Perfect competition - Right-to-manage.* If the two confidence intervals overlap, then μ_{it}^{M} is not significantly different from μ_{it}^{L}: $\mu_{it}^{M} = \mu_{it}^{L} \Rightarrow \psi_{it} = 0$, at 90% level.

3. MO: *Monopsony.* If lower bound for the 90% CI μ_{it}^{L} exceeds the upper bound of the 90% CI for μ_{it}^{M}, then μ_{it}^{M} is significantly lower than μ_{it}^{L}: $\mu_{it}^{M} < \mu_{it}^{L} \Rightarrow \psi_{it} < 0$, at 90% level.

Classifying firms as operating under perfect or imperfect product market is now straightforward. Using the confidence interval for μ^{M}, firms are coined as operating in perfect markets if the lower bound of the 90% CI is below unity. Based on eq. (11), Table (4) displays the distribution of firm-year observation across the six regimes.

[Table 4 about here.]

We see that there is substantial heterogeneity both across and within different sectors. Looking at the whole economy, around 41% of firm-year observations operate under imperfect competition on the product market, implying price-to-marginal cost ratios significantly greater than unity. This fraction varies from a lower bound of 1% for *Textiles* to a higher bound of almost 100% for *Electric and electronic equipment* and *Printing and publishing*. As for the labor market, efficient bargaining represent nearly 54% of firm-year observations, followed by right-to-manage (37%). Firms enjoying monopsony power on the labor market represent less than 10% of observations. The single most common joint regime is the IC-EB combination, whereby firms enjoy some degree of market power on product market while the extra rent is shared with workers. This regime accounts for 36% of the sample, closely follows by perfect competition on both markets (PC-PR regime, amounting to 34%).

It is worth noting that the relatively large standard errors associated with the fixed-effects IV estimations of the translog production function results in wide confidence intervals for the the markup μ and the joint market imperfection parameter Ψ. This results in a inflate participation to the PC-PR regime. In fact, unreported OLS results characterized by lower standard errors – albeit plagued by endogeneity issues – produce a significantly smaller faction of firms operating under perfect competition on both markets.

Table (4) also suggests the presence of widespread variations also within each sector. In fact, while in most of the sectors it is possible to identify a prominent regime, in several cases, there at least a second, and often a third, relevant regime that covers a significant fraction of firm-year observations. For instance, 57.% of observations within *Clothing and Footwear* are classified as PC-PR, while 17% belong to the IC-EB regime and another 19% to PC-EB. Likewise, In *Metallurgy, Iron and Steel* the most common regime (PC-PR) covers 45% of observations, 32% are classified as PC-EB and 15% as PC-MO. Hence, characterizing all firms within a sector as belonging to the same regime would imply a significant loss of information and conceal substantial heterogeneity across firms active in the same sector.

[Figure 1 about here.]

Last, Figure (1) displays the the evolution of rent sharing $\hat{\phi}$ (top panel), price cost margins $\hat{\mu}$ (middle panel) and total factor productivity $\hat{\omega}$ (bottom panel). Solid lines indicates arithmetic averages and dashed lines denote weighted averages using employment shares for $\hat{\phi}$ and market shares for $\hat{\phi}$ and $\hat{\mu}$. Concerning rent sharing $\hat{\phi}$, we observe a sharp change in constant in 2002 and 2003. This must reflect the business cycles, when the burst of the dot.com economy resulted in a slowdown of economic growth, mechanically increasing the labor share in sales. The weighted average is lower than the arithmetic mean, implying the bigger firms redistribute less of their rent to workers. In the same vein, the evolution of markups shows an upward trend when focusing on the arithmetic mean, but is lower and dynamically flat for the weighted average. This is in line with the findings of De Loecker & Eeckhout (2017), although this contradicts various models of imperfect competition where firms with larger market shares have higher markups. Last, the productivity trend is positive for both the unweighted and weighted means. The fact that the weighted average exceeds the unweighted mean is due to the fact that more productive firms enjoy larger market shares. This implies the presence of allocative efficiency (Olley & Pakes 1996), the idea that the market selects the more efficient companies.

3 Rent Sharing and International Trade

3.1 Econometric Setting

We now focus on the estimation of the effect of international competition on rent sharing. Our intuition is that foreign competition may act as a discipline device in the labor market, encouraging firms to retain part of the rent –for example in order to invest in new production tools– at the expense of wages. This in turn would reduce rent sharing as defined in this paper.

The choice of focusing exclusively on rent sharing implies that we only consider firms operating in the efficient bargaining labor market regime. Unlike previous work where all firms are assumed to engage in rent-sharing (e.g. Crépon et al. 2005, Abraham et al. 2009, Boulhol et al. 2011, Dumont et al. 2012), the methodology illustrated in Section 2.3 allows us to identify firms that do so, and to distinguish them from from others that either are price takers on the labor market, or enjoy some degree of monopsony power. However, this more precise identification of the relevant firms to analyze comes at a potential costs: since the measures of market imperfections that stand behind the classification into different market regimes are firm-year specific, it is possible that our estimation produces labor-market regimes which change frequently from one year to the next. From an economic point of view, this should not be the case, simply because firms need to be able to ensure the workers' collaboration in the long run. From an econometric viewpoint, the danger is to select observations randomly interrupting the time series of companies. Table (5) displays the short (from $t-1$ to t), middle (from year $t-5$ to year t) and long (from year $t-10$ to year t) run transition matrices across the three labor-market regimes EB, PR and MO. Focusing on all panels, we observe that the diagonal elements of the matrix dominate all matrices, implying that firms tend to remain in the same regime: 90% of firms remain in EB from one year to the following, 86% from year $t-5$ to year t and a substantial 84% from year $t-10$ to year t. Hence when focusing on rent sharing exclusively, we are essentially selecting panels (i.e. firms), not observations.

[Table 5 about here.]

Our baseline regression model reads as:

$$\hat{\phi_{it}} = \beta_0 + \beta_1 IMP_{it-\tau} + \mathbf{BX} + \nu_i + \rho_t + e_{it}, \tag{12}$$

where subscripts i and t stand for firm i at year t. Parameters ν and ρ represent the firm and the year fixed effects to account for idiosyncratic differences across firms in their relationship with workers and for temporal shocks common to all companies in the sample. Variable IMP_{it} is import penetration. It is firm-year specific because we make use of firm sales by industry at the four digit level:

$$IMP_{it} = \sum_k \frac{S^d_{k,it} \times IMP_{kt}}{\sum_k S^d_{k,it}} \tag{13}$$

where IMP_{kt} is import penetration for sector k at year t, that is, total imports over domestic demand (total value added plus imports minus exports), variable S denotes sales by firm i at year t in sector k. Superscript d denote domestic sales. We have two additional remarks. First, we set parameter $\tau = (0; 1; 3)$ to estimate eq. (12) using different lags to account for inter-temporal adjustments by firms in their labor relations. Second, one could argue that lumping together imports of intermediate and final goods may provide an inaccurate picture of foreign competition. Importing intermediates goods may actually benefit French firms since companies can source inputs at lower prices. Hence, we only consider final goods (as identified in the BEC classification, plus passenger cars) in our measure of imports.

Vector **X** is a series of control variables. First, we include total factor productivity ω defined as the translog residual. We also control for size defined as the number of employees. We introduce two variables characterizing the local labor market, which are employment growth at the level of the employment area, and a measure of firm's relative size on the local labor market, that is, the share of employees working for firm i in the employment area. We expect their effect on rent sharing to be positive and negative, respectively. Last we introduce a measure of capital intensity to control for the production technology, where we hypothesize that more capital intensive companies are less prone to rent sharing. Tables (6) and (7) present the summary statistics together with the correlation matrix of the remaining 55,524 observations operating under the EB regime.

[Table 6 about here.]

[Table 7 about here.]

The estimation of eq.(12) raises three difficulties. The first challenge is that of selection bias. Not all firms operate under the EB regime, implying that for companies operating under PR or MO, we do not observe $\hat{\phi}$.

The second challenge is endogeneity of imports. Following a common strategy in the recent literature (see for instance Autor et al. 2013, Hummels et al. 2014, Ashournia et al. 2014), we instrument import competition to account for a possible omitted variable bias stemming from factors that simultaneously affect both French imports and a firm's bargaining power vis-a-vis its workers. In eq. (13), French imports from source country s in any given 4-digit sector k are then substituted with country s exports to all other counties minus France.[10]

To simultaneously address the issues of endogeneity and selection in a panel data setting, we follow Semykina & Wooldridge (2010) and adapt their methodology to a case of an unbalanced panel. Their approach entails a first step where, for each time t a probit model is estimated where time means of all endogenous variables are included (à la Mundlak 1978).[11] Form the results of the probit model, we retrieve the inverse Mill's ratio (IMR).

The second step in the Semykina & Wooldridge's (2010) procedure requires the estimation of a fixed-effect two-stage least squares model augmented with the inverse Mill's

[10]Similar results are obtained using a limited number of non-EU countries, as done by Dauth et al. (2014).

[11]In the selection equation, we augment the right-hand-side of Eq. (12) with (the log of) average variable production costs and a measure of product market concentration (the Herfindhal-Hirschmann index at the industry level).

ratio (FE-2SLS). A standard t-test on the coefficient of the IMR can be used to test for selection bias: if the IMR is not significant, than there is no selection bias and the FE-2SLS is consistent. Otherwise, Semykina & Wooldridge (2010) show that a pooled-OLS augmented with the time-means of all exogenous variables following Mundlak (1978) delivers consistent results, as long as the time means are computed on the entire sample, and not only on the "selected observations" (in our case, not only on firms classified under an EB labor-market regime). Semykina & Wooldridge (2010) also suggest an alternative specification whereby the IMR is interacted with time dummies, in order to allow for a richer (time-varying) correlation structure. Standard errors can then either be adjusted analytically, or obtained by means of block-bootstrapping: we take this second route as it allows us to address a third econometric concern.

The third econometric challenge lies in the fact that we do not directly observe some of the variables but rather work with estimates. In particular, the left-hand side variable is an estimate of rent sharing $\hat{\phi}$. As argued by Ashraf & Galor (2013), a least square estimator would yield inconsistent estimates of their standard errors as it fails to account for the presence of a generated dependent variable. This inadvertently causes wrong inferences in favor of rejecting the null hypothesis. To overcome this, we rely on a two-step block-bootstrapping algorithm to estimates the standard errors as follows.[12] A random sample of firms –not observations– with replacement is drawn from the original dataset (181,901 observations). The Wooldridge (2009) estimator of the translog production function is then applied on the block-bootstrapped sample, allowing us to compute a new measure of rent sharing ($\hat{\phi}$) for the 55,524 companies that are originally classified under EB, as well as a new measure of productivity ($\hat{\omega}$). Eq.(12) is then estimated on firms belonging in the EB regime and least-squares estimations are repeated 1,000 times. The standard deviations in the sample of 1,000 observations of coefficient estimates represent the bootstrap standard errors of the point estimates of these coefficients. Block-bootstrapping allows us to hit two birds with a stone, as it also yields corrected standard errors in presence of selection and endogeneity (Semykina & Wooldridge 2010).

Altogether, we report three sets of results: the fixed-effect two-stage estimator (FE-2SLS), the Semykina & Wooldridge (2010) estimator (SW-POOL-1) and the Semykina & Wooldridge (2010) estimator with interacted IMR (SW-POOL-2).

3.2 Results

Table (8) reports results from a specification, which includes imports of consumption goods from all countries in the world (lagged one year). For each specification, we run the three estimators FE-2SLS, SW-POOL-1 and SW-POOL-2 on 1,000 bootstrapped samples

[12] Lewis & Linzer (2005) advocate the use of Feasible Generalized Least Squares to compute an estimate of the variance of the estimated variable. Although we did rely on the FGLS estimator, this solution proved unfeasible due to the fact the estimated variance is negative. This is a common pitfall of the proposed method.

to estimate the simulated standard errors. As a general comment, strong significance of the inverse Mill's ratio in the FE-2SLS estimation suggests that selection into the efficient bargaining regime is indeed not random: as a result, the FE-2SLS estimator is not consistent and we should primarily rely on the pooled OLS estimator proposed by Semykina & Wooldridge (2010).

We find a negative relationship between total imports of consumption goods and rent sharing in all three specifications. However, significance is found only in the FE-2SLS specification, whereas the Semykina & Wooldridge (2010) estimator substantially inflates the standard errors, leading us to reject the hypothesis that foreign competition significantly affects sharing.

[Table 8 about here.]

We now turn to the other control variables. The features of the local employment area behave as expected when significant: employment growth increases workers' bargaining power across all estimators, whereas the firm's share of employment in the local labor markets increases the bargaining power of companies, lowering ϕ (FE-2SLS estimator exclusively). Capital intensity conforms to our intuition: more capital intensive companies are less exposed to workers' bargaining power. Moreover, workers in larger firms do not seem to enjoy a stronger bargaining power. Although the sign is positive, lack of significance indicates that the effect of size on bargaining power is not very strong. This comes as a surprise, since data about unionization in France show that the share of workers belonging to a union is strongly correlated with size, being as low as 5% within small private firms with less than 50 employees, while reaching 14.4% among large enterprises with more than 200 employees (Pignoni 2016). Last, higher productivity is associated with a lower degree of rent sharing.[13]

To further investigate the potential impact of import penetration on bargaining power, we take stock of the existing literature, which has suggested that such an effect may depend on the countries from which imports are sourced.

The explore the heterogeneous effect of imports on French workers, in Table (9) we introduce two additional specifications: the first distinguishes between imports from OECD and low-wage countries (lagged one year); the second singles out imports from China (as opposed to imports from other low-wage countries and OECD members), to check whether such country has a specific effect on workers' bargaining power.[14] Since other regressors behave consistently with the results commented in Table (8), we focus exclusively on the import penetration variables.

[13]This negative effect does not stem from a mechanic algebraic relationship between ω and ϕ. In fact, it can be shown that $\frac{\omega}{\theta X} < 0$, with $X = (K, L, M)$ whereas $\frac{\phi}{\theta L} < 0$ and $\frac{\phi}{\theta M} > 0$. We conclude that the direction of the relationship between productivity and bargaining power is undetermined: $\frac{\omega}{\phi} \lessgtr 0$.

[14]Low-wage countries are taken from Bernard et al. (2006).

Looking at the left panel first, we observe a negative relationship between import penetration from OECD countries and rent sharing, that is consistent across the three different estimators. On the contrary, competition from low-wage countries does not seem to have a significant impact on workers' bargaining power. One possible explanation is that French firms whose competitors are mainly located in other OECD countries are likely to confront with imported goods featuring similar levels of quality and technology, and being produced with similar cost structures. As a result, it is more difficult to escape competition by upgrading quality, and containing (labor) costs becomes imperative. Conversely, consumption goods imported from low-wage countries are likely to target a lower quality segment of the market and not to be in direct competition with French production.

Hence, our results confirm that import penetration has a differential effect based on where competition comes from: the negative effect of imports from OECD countries on bargaining power is in line with the existing sector-level evidence presented, for instance, by Dumont et al. (2006) or Boulhol et al. (2011).

The absence of any effect of competition stemming from low wage countries is somewhat surprising. One would expect firms to respond to price competition by lowering their production costs, including wages. Also, workers' and unions' fear about the impact of import competition on jobs may put downward pressure on rent-sharing. Yet an alternative explanation could be that firms choose to escape competition by improving quality, innovating, and moving upscale. In this attempt, they hire more skilled labor, which typically enjoys a stronger bargaining power. This is consistent with empirical evidence put forward by Monfort et al. (2008) on restructuring in the Belgian textile sector, by Bugamelli et al. (2010) on Italian firms following the introduction of the euro, and by Bloom et al. (2016) on twelve European countries after China's accession to the WTO. The absence of string direction as depicted in Table (9) suggests that the two strategies –entering into price competition or escaping it by raising quality– coexist in French manufacturing.

[Table 9 about here.]

The magnitude of the coefficient associated with OECD competition suggests a sizable effect of import penetration on bargaining power. While the size of the coefficients (ranging from -0.953 to -1.408) seems very large, we need to consider that the coefficient reflects the effect on rent sharing for a one-unit change in import penetration, i.e. from a sector entirely protected to a sector where all domestic consumption is served by imported goods. This benchmark is clearly unrealistic and not particularly informative. It is then straightforward to conclude that a one percentage-point increase in import penetration is associated with a reduction of 0.0095–0.0141 percentage points in rent sharing. Although statistically significant, this in turn is an economically minor effect.

To better grasp an idea of the effect of foreign competition, we compute the marginal effect on rent sharing of increasing import penetration from zero to the mean value.[15] Focusing on the SW-POOL-1 estimator, this implies that OECD import penetration moves from zero to 5.3%, and such a change reduces rent sharing by 7.5 percentage points. At the mean, this represents a drop in ϕ from 0.55 to 0.475. Other estimators deliver result that range between -5% to -6.9% and still represent a substantial fall in the degree of bargaining power enjoyed by workers. The effect of competition from low wage countries is not only statistically less significant (apart in the case of the FE-2SLS estimator, whose consistency is however not guaranteed since the IMR is significant and thus implies the presence of nonrandom selection), but also economically much weaker given the smaller amount of imports coming from those countries. Altogether, these results suggest that French workers and firms are particularly sensitive to competition from advanced countries.

The right panel of Table (9) singles out China from other low wage countries, in order to see whether the large Asian country has a specific effect on bargaining power. We find that although the effect of Chinese imports is negative across estimators, it fails from being significant in two out of three cases (FE-2SLS and SW-POOL-1), and the value of the estimated coefficient appears to be rather volatile. The same holds for the positive effect of imports from low-wage countries other than China, which is significant in the last column of Table 9. This difference in sign between Chinese and other low-wage countries, suggests that competition stemming from China may be different in nature. Overall, once we distinguish imports from three different sources, estimates of the import penetration coefficients become much less precise. The effect of imports from OECD countries remains the most stable in magnitude, although it fails to be significant at the 10% level when using the SW-POOL-2 estimator ($p - value = 0.136$). The impact of moving from zero to the mean value of import penetration from OECD countries remains in the same range as before, i.e. it entails a fall in rent sharing of around 5–7%.

[Table 10 about here.]

As a last robustness check, Table (10) presents results with contemporaneous imports (left panel) and imports lagged 3 years (right panel). Looking at contemporaneous imports, we find, again, a negative and significant effect of OECD imports when using the Semykina & Wooldridge's estimators but with a lower magnitude with respect to Table (9). Looking at the SW-POOL-1 estimator, the coefficient is half as big (in absolute value) that the corresponding value reported in Table 9 when imports are lagged one year. This is not surprising, since wage negotiations between unions and firms occur once a year in France, and the median duration of wage agreements is around 10-12 months (Avouyi-Dovi et al. 2013). Hence we should expect a lag in the response of the French labor market to a change

[15]The large degree of heterogeneity and skewness in the distribution of import penetration implies that computing a one standard deviation change around the mean value, would push import penetration into negative territory (the standard deviation is larger than the mean, as documented in Table 6). Hence, we rely on a change from zero to either the mean value.

in foreign competition. Moreover, the effect fades away rather quickly, for we observe no effect when lagging OECD imports three years.

The effect of imports from low-wage countries on rent sharing is, again, more volatile across lags and across estimators. It is positive and significant for contemporaneous imports in the SW-POOL-2 estimator, whereas negative and significant for imports lagged three years in the FE-2SLS estimator. More than a time effect per se, our intuition is that competition from low wage countries may have had a differentiated effect on firms. As previously mentioned, firms' response to increased price competition from low wage countries may have led some firms to compress wages to re-gain some price competitiveness, while others may have opted for climbing up the quality ladder in order to escape competition. Firms' reaction is likely to depend both on firm-specific factors, but also on industry characteristics: for example, firm operating in high-technology sectors may react differently from those engaged in low-tech activities.

4 Conclusion

This paper exploits recent advances in the estimation of firm-level markups to classify firms into different market regimes, based on the presence of imperfections in both the product and the labor market. In particular, we are able to distinguish between firms that take the wage rate as given, those enjoying monopsony power, and companies engaging in rent sharing with their workers. Using a large sample of French manufacturing firms, we show that there is substantial heterogeneity in firm behavior both across and within industries, so that being able to properly account for firm-level differences provides us with relevant information, and allows us to move one step further with respect to the existing literature based on industry-level data.

Focusing on firms classified into an *efficient bargaining* regime, the methodology adopted in the paper allows for the estimation of workers' bargaining power. Then, we relate this index to a firm-level measure of import competition from different countries, to investigate how globalization affects the labor market in an industrial economy such as France. In so doing, we shed new light on the role played by collective bargaining as a mechanism that links firm performance into earnings and, in particular, on how it influences the relationship between trade and wages (evidence on which is still very scarce Carluccio et al. 2015).

We find that, controlling for a number of firm-level characteristics such as productivity and size, import competition has an heterogeneous effect on workers' bargaining power depending both on the source of imports and the characteristics of the firm. More in detail, imports from OECD countries are negatively correlated with rent sharing, whereas competition from low-wage countries (and China) does not significantly affect the bargaining power of French workers, at least in the period under investigation (1994–2007) .

Obviously, these results do not necessarily carry over to the post financial crisis period. Additional research on the most recent years would shed light on the actual impact of China and other low wage countries on rent sharing in France.

The approach followed in the paper, which provides us with a firm-level measure of rent-sharing, can be used in several different applications: in particular, the possibility to link firm-level results with detailed information on employees (e.g. their composition in terms of occupations, skills, educational attainments) represents an ideal extension of the work that would further contribute to our understanding of the (within-firm) effect of import competition on different types of workers.

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Appendix A. Measures of market imperfections

Similar to Dobbelaere & Kiyota (2017), we develop a production function based approach to measure firm-year specific market imperfections. Let Q be firm output as follows: $Q_{it} = Q_{it}(K_{it}, L_{it}, M_{it})$, where subscripts i and t stand for firm i at time t, K is capital, and L and M represent labor and materials, respectively. Capital K is assumed to be dynamic, whereas all remaining production factors are static. In this framework, we assume the followings: (i) $Q(\cdot)$ is twice differentiable and continuous; (ii) firms produce homogeneous good industry and compete in quantities as in an oligopolistic Cournot; (iii) firms are price takers on the market for materials M; (iv) the competitive regime characterizing the labor market is firm-specific; (v) firms maximize short-run profits π. The short-run profit maximization problem reads

$$\pi_{it}(Q_{it}, L_{it}, M_{it}) = P_t Q_{it} - w_{it} L_{it} - p^M_{it} M_{it} \tag{A1}$$

where P_t is the price of the homogenous goods, w represents the cost of labor and p^M represents the price of material. Firms decide on optimal quantities of output Q, material M and labor L.

The optimal output choice for Q_{it} satisfies the first-order condition $\frac{\partial \pi_{it}}{\partial Q_{it}} = 0$:

$$\frac{P_t}{(C_Q)_{it}} = \left(1 + \frac{s_{it}}{\epsilon_t}\right)^{-1} = \mu_{it} \tag{A2}$$

where $(C_Q)_{it}$ represents the marginal costs ($\frac{\partial C}{\partial Q} = w\frac{\partial L}{\partial Q} + p^M \frac{\partial M}{\partial Q}$), s_{it} represents firm i's market share and ϵ represent the price elasticity of demand.

Firms are price takers on the market for materials. The optimal output choice for M_{it} satisfies the first-order condition $\frac{\partial \pi_{it}}{\partial M_{it}}$:

$$p^M_{it} = (Q_M)_{it}\, P_t \left(1 + \frac{s_{it}}{\epsilon_t}\right) \tag{A3}$$

The term on the left-hand side of eq. (A3) represents the marginal cost of material, which must equalize the left-hand term, the marginal revenue, that is, the marginal output of materials $\frac{\partial Q_{it}}{\partial M_{it}}$, noted $(Q_M)_{it}$ multiplied by the non-competitive price $P_t\left(1 + \frac{s_{it}}{\eta_t}\right)$.

Inserting eq. (A2) into eq. (A3), multiplying both sides by $\frac{M_{it}}{Q_{it}}$ and rearranging terms yields:

$$\theta^M_{it} = \mu_{it}\alpha^M_{it} \tag{A4}$$

where the numerator $\theta^M_{it} = \frac{\partial Q_{it}(M_{it})}{\partial M_{it}} \frac{M_{it}}{Q_{it}}$ represents the output elasticity of material M_{it} and the denominator $\alpha^M_{it} = \frac{p^M_{it} M_{it}}{P_t Q_{it}}$ is the share of material M_{it} in total sales. If product and factor markets are perfect, the price to marginal cost ratio equalizes unity. Conversely if product markets only are imperfect, then $\frac{\theta^M_{it}}{\alpha^M_{it}} \neq 1$.

Firm's optimal demand for labor depends on the regime of its labor market. We distinguish three regimes: perfect-competition right-to-manage bargaining (PR), efficient bargaining (EB), and static partial-equilibrium monopsony power (MO). Under the PR regime, firms and workers all behave as price takers on the labor market. The firm's short-run maximization problem satisfies the first-order condition $\frac{\partial \pi_{it}}{\partial L_{it}} = 0.$:

$$w = (Q_L)_{it}\ P_t\ \left(1 + \frac{s_{it}}{\epsilon_t}\right) \tag{A5}$$

Inserting eq. (A2) into eq. (A5), multiplying both sides by $\frac{L_{it}}{Q_{it}}$ and rearranging terms yields:

$$\theta^L_{it} = \mu_{it}\alpha^L_{it} \tag{A6}$$

where the numerator θ^L_{it} represents the output elasticity of labor L_{it} and the denominator α^L_{it} is the labor share L_{it} in total sales. An important implication is that if all factor markets are perfect, the markup derived from material must yield the same value as the markup derived from labor: $\frac{\theta^L_{it}}{\alpha^L_{it}} = \frac{\theta^M_{it}}{\alpha^M_{it}}$. However, imperfections in the labor market will yield $\frac{\theta^L_{it}}{\alpha^L_{it}} \neq \frac{\theta^M_{it}}{\alpha^M_{it}}$. Hence under assumptions (iii) and (iv), the wedge between the two ratios will be used to infer imperfections.

Under efficient bargaining EB, risk-neutral firms and workers negotiate simultaneously on optimal wage w and employment L in order to maximize their joint surplus. Following McDonald & Solow (1981), and leavin subscripts i and t for clarity, the generalized product is written as:

$$\Omega_{EB} = \Big[wL + (\bar{L} - L)\bar{w} - \bar{w}\bar{L}\Big]^{\phi}\Big[PQ - wL - p^M M\Big]^{1-\phi} \tag{A7}$$

where $\bar{w}$ and $\bar{L}$ are the competitive levels of wages and unemployment ($0 < L < \bar{L}$), respectively, and ϕ is the degree of bargaining power of the trade unions (the workers) during the yearly negotiations, also called the absolute extent of rent sharing. Eq.(A7) simply states that under EB, part of the profit is captured by the unions as a result of their bargaining power. Maximization of eq. (A7) with respect to w and L yields, respectively:

$$w = \bar{w} + \gamma\Big[\frac{PQ - wL - p^M M}{N}\Big] \tag{A8}$$

where $\gamma = \frac{\phi}{1-\phi}$, and

$$w = R_L + \phi\Big[\frac{PQ - R_L L - p^M M}{N}\Big] \tag{A9}$$

where R_L represent the marginal revenue of labor $\frac{\partial PQ(L)}{\partial L}$.

Efficient bargaining is achieved by simultaneously solving eq. (A8) and eq. (A9). The equilibrium condition is given by:

$$R_L = \bar{w} \tag{A10}$$

Eq.(A10) provides us with all wage-employment pairs known as the contract curve. It states that the firm's decision about the firm hire workers until the marginal revenue R_L equalizes the non-bargaining marginal cost w. In other words, the firm hires workers until the marginal revenue product of labor equalize the alternative wage of the worker is fired.

Let R_Q and Q_L denote marginal revenue and marginal product of labor, respectively. Provided that $R_Q = C_Q$, one can write markup $\mu = \frac{P}{R_Q}$ in equilibrium, where P is the output price. The marginal revenue of labor reads: $R_L = R_Q \times Q_L = \frac{PQ_L}{\mu}$. Observe that output elasticity of labor $\theta^L = Q_L \times \frac{Q}{L}$. Combining this with eq. (A10), under EB, the output elasticity of labor is:

$$\theta^L = \mu \times \frac{\bar{w}L}{PQ} = \mu\bar{\alpha}^L \tag{A11}$$

where $\bar{\alpha}^L$ represents the labor share evaluated at the reservation wage. Multiply eq. (A8) by L and divide through by PQ yields $\alpha^L = \bar{\alpha}^L + \gamma(1 - \alpha^L - \alpha^M)$, combine it with eq. (A11) to obtain an expression for the output elasticity of labor under EB:

$$\theta^L = \mu\Big(\alpha^L - \gamma(1 - \alpha^L - \alpha^M)\Big) \tag{A12}$$

An important implication of eq. (A12) is that, provided that we can measure the output elasticities of labor θ^L and material θ^M, together with their shares in total sales α^L and α^M, it is then possible to retrieve a measure of γ and thereby a measure of the unions' bargaining power ϕ which is firm-year specific.

As Dobbelaere & Kiyota (2017) write, the above model assume that the supply of labor is infinite, so that a a marginal reduction in wages would result in an immediate withdrawal of all workers from the markets. However, under monopsony power MO, labor supply may be less that perfectly elastic and is increasing with wages w. Such elasticity may stem from various factors, ranging from idiosyncratic – heterogenous – preferences, work environment, implying that workers view firms as imperfect substitutes. Under MO, then, firms are constrained to set a single wage which applies to all workers. The monopsonist firm's objective is then to maximize the following short-run profit:

$$\pi(Q, L, M) = PQ - w(L)L - p^M M \tag{A13}$$

Maximization of eq. (A13) with respect to labor gives the following first-order condition:

$$\frac{\partial Q}{\partial L} P\Big(1 + \frac{s_{it}}{\epsilon_t}\Big) = w\Big(1 + \frac{1}{\epsilon_w^L}\Big) \tag{A14}$$

where ϵ_w^L represent the wage elasticity of labor supply. Eq.(A14) states that the marginal revenue valued at the non competitive price must equalize the marginal cost wage valued at the marginal employee. Because $(1 + \frac{1}{\epsilon_w^L})$ is greater than unity, eq. (A14) implies that the marginal wage applies to all workers already hired in the company. Inserting eq. (A2) into eq. (A14), multiplying both sides by $\frac{L_{it}}{Q_{it}}$ and rearranging terms yields:

$$\theta^L = \mu \alpha^L \Big(1 + \frac{1}{\epsilon_w^L}\Big) \tag{A15}$$

Appendix B. Data Appendix

All nominal output and inputs variables are available at the firm level. Industry level information is used for price indexes, number of hours worked and depreciation rates of capital.

Output. Our Output variable, Q, is value added deflated by sector-specific price indexes for value added. These indexes are available at the 2-digit level published by INSEE (French Office of Statistics).

Labor. We define our labor variable, L, as the number of effective workers multiplied by the the number of hours worked in a year. The annual series for worked hours are available at the 2-digit industry level and provided by *GGDC Groningen Growth Development Center*. This choice was made because there are no data on hours worked in the EAE datasets.

Capital input Capital stocks, K, are computed using information on investment and book value of tangible assets (we rely on book value reported at the end of the accounting exercise), following the traditional permanent inventory methodology:

$$K_t = (1 - \delta_{t-1})\, K_{t-1} + I_t \tag{B1}$$

where δ_t is the depreciation rate and I_t is real investment (deflated nominal investment). Both investment price indexes and depreciation rates are available at the 2-digit industrial classification from the INSEE data series.

Intermediate inputs. Intermediate inputs, M, are defined as purchases of materials and merchandise, transport and travel, and miscellaneous expenses. They are deflated using sectoral price indexes for intermediate inputs published by INSEE.

Revenue shares. To compute the revenue share of labor, we rely on the variable *wages and compensation.* This value includes total wages paid to salaries, plus social contribution and income tax withholding.

Figure 1: Evolution of rent sharing $\hat{\phi}$ (top panel), price cost margins $\hat{\mu}$ (middle panel) and total factor productivity $\hat{\omega}$ (bottom panel). Solid lines indicates arithmetic averages and dashed lines denote weighted averages using employment shares for $\hat{\phi}$ and market shares for $\hat{\phi}$ and $\hat{\mu}$

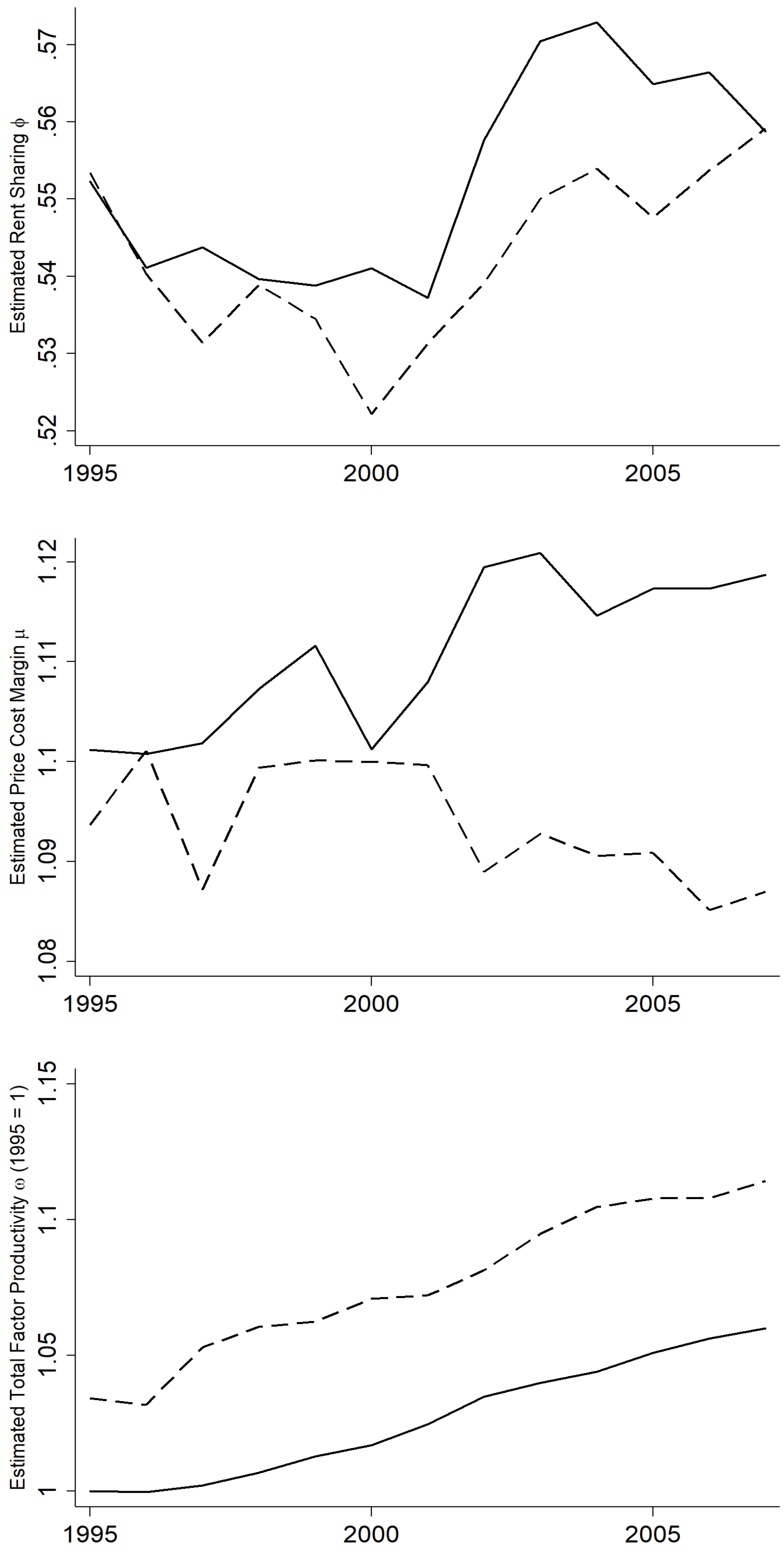

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Table 1: Product and labor market regimes

	product market	
labor market	perfect competition	imperfect competition
perfect competition	PC-PR	IC-PR
efficient bargaining	PC-EB	IC-EB
monopsony	PC-MO	IC-MO

Table 2: Output Elasticities $\hat{\theta}$ for K, L and M and the corresponding scale economies $\hat{\lambda}$. translog and Cobb-Douglas specifications using the Wooldridge estimator.

			Shares		translog estimates				Cobb-Douglas estimates			
Industry	♯ Obs.	♯ firms	α^L	α^M	$\hat{\theta}^K$	$\hat{\theta}^L$	$\hat{\theta}^M$	$\hat{\lambda}$	$\hat{\theta}^K$	$\hat{\theta}^L$	$\hat{\theta}^M$	$\hat{\lambda}$
All manufacturing	181,901	21,526	0.331	0.613	0.071	0.268	0.630	0.967	0.068	0.228	0.632	0.928
Automobile	5,085	597	0.262	0.703	0.066	0.201	0.684	0.946	0.071	0.165	0.674	0.910
Chemicals	19,301	2,212	0.264	0.681	0.065	0.195	0.720	0.977	0.084	0.161	0.690	0.934
Clothing and footwear	11,062	1,527	0.450	0.512	0.098	0.405	0.537	1.025	-0.010	0.272	0.777	1.039
Electric and Electronic components	7,754	960	0.327	0.617	0.022	0.229	0.711	0.952	0.050	0.216	0.641	0.907
Electric and Electronic equipment	9,240	1,198	0.372	0.585	-0.037	0.243	0.837	1.081	-0.028	0.227	0.862	1.061
House equipment and furnishings	11,622	1,457	0.337	0.635	0.076	0.246	0.682	0.997	0.086	0.226	0.610	0.922
Machinery and mechanical equipment	31,744	3,694	0.335	0.616	0.056	0.282	0.643	0.977	0.058	0.263	0.605	0.926
Metallurgy, Iron and Steel	34,666	3,881	0.353	0.574	0.120	0.294	0.496	0.902	0.118	0.236	0.515	0.869
Mineral industries	7,981	904	0.314	0.637	0.114	0.256	0.594	0.946	0.094	0.232	0.591	0.918
Pharmaceuticals	4,459	555	0.239	0.677	0.067	0.148	0.746	0.957	0.047	0.097	0.873	1.017
Printing and publishing	14,346	1,629	0.345	0.576	-0.008	0.275	0.773	1.070	-0.005	0.253	0.768	1.017
Textile	10,278	1,254	0.332	0.612	0.137	0.295	0.486	0.900	0.146	0.221	0.425	0.792
Transportation machinery	2,782	332	0.337	0.616	0.089	0.296	0.654	1.033	0.084	0.278	0.589	0.951
Wood and paper	11,581	1,326	0.276	0.671	0.067	0.260	0.626	0.933	0.066	0.224	0.602	0.892

Superscript *tl* stands for the translog specification. Supercript *cd* stands for the Cobb-Douglas specification. All estimations were executed by industry.

Table 3: Joint Markets Imperfections Estimates, per industry

Industry	♯ Obs.	♯ firms	translog estimates					Cobb-Douglas estimates				
			$\hat{\mu}$	$\hat{\psi}$	$\hat{\gamma}$	$\hat{\phi}$	$\hat{\epsilon}_w^L$	$\hat{\mu}$	$\hat{\psi}$	$\hat{\gamma}$	$\hat{\phi}$	$\hat{\epsilon}_w^L$
All manufacturing	181,901	21,526	1.110	0.311	2.085	0.553	3.761	1.171	0.389	3.037	0.636	1.943
Automobile	5,085	597	1.018	0.222	2.395	0.591	2.305	1.035	0.307	3.244	0.668	1.095
Chemicals	19,301	2,212	1.096	0.336	1.693	0.505	3.583	1.089	0.375	2.338	0.573	2.176
Clothing and footwear	11,062	1,527	1.192	0.396	2.808	0.619	2.672	1.350	0.176	5.737	0.774	1.178
Electric and Electronic components	7,754	960	1.205	0.530	2.475	0.600	2.592	1.136	0.384	3.069	0.641	1.607
Electric and Electronic equipment	9,240	1,198	1.642	0.955	3.409	0.684	2.321	1.530	0.785	3.389	0.666	1.783
House equipment and furnishings	11,622	1,457	1.127	0.403	2.387	0.592	2.690	1.084	0.351	3.309	0.664	1.576
Machinery and mechanical equipment	31,744	3,694	1.078	0.244	1.818	0.527	5.348	1.094	0.249	2.828	0.622	2.762
Metallurgy, Iron and Steel	34,666	3,881	0.933	0.091	1.471	0.484	4.084	1.095	0.460	2.720	0.621	2.075
Mineral industries	7,981	904	0.994	0.179	1.707	0.507	2.845	1.106	0.299	3.353	0.668	1.210
Pharmaceuticals	4,459	555	1.159	0.498	2.104	0.559	1.411	1.355	0.777	2.391	0.592	0.703
Printing and publishing	14,346	1,629	1.454	0.621	2.514	0.602	3.168	1.407	0.496	2.883	0.628	2.243
Textile	10,278	1,254	0.899	-0.018	2.092	0.522	2.231	1.154	0.654	3.907	0.701	0.893
Transportation machinery	2,782	332	1.119	0.238	2.079	0.587	1.466	1.100	0.227	3.898	0.723	1.077
Wood and paper	11,581	1,326	0.976	0.087	1.531	0.493	2.462	1.020	0.164	2.887	0.636	1.610

Superscript *tl* stands for the translog specification. Superscript *cd* stands for the Cobb-Douglas specification. All estimations were executed by industry. Average values for $\hat{\psi}$, $\hat{\gamma}$ and $\hat{\phi}$ were computed for companies belonging to the efficient bargaining regime (EB) only. Average values for $\hat{\epsilon}_w^L$ were computed for companies belonging to monopsony regime (MO) only.

Table 4: Regime classifcation, by industry

Industry	♯ Obs.	PC-PR	PC-EB	PC-MO	IC-PR	IC-EB	IC-MO
All Manufacturing	181,901	33.8	17.2	7.8	3.1	36.3	1.7
Automobile	5,085	61.5	22.4	5.3	1.1	9.2	0.4
Chemicals	19,301	19.6	19.6	3.2	4.3	51.4	1.8
Clothing and footwear	11,062	57.3	19.3	2.7	1.5	17.1	2.1
Electric and Electronic components	7,754	11.4	11.6	2.1	2.6	67.8	4.5
Electric and Electronic equipment	9,240	0.4	0.0	0.1	2.2	97.2	0.04
House equipment and furnishings	11,622	23.0	25.3	2.0	2.7	44.5	2.4
Machinery and mechanical equipment	31,744	17.5	10.2	8.0	5.5	56.2	2.6
Metallurgy, Iron and Steel	34,666	44.8	31.6	15.3	0.9	6.7	0.7
Mineral industries	7,981	63.3	18.4	7.9	3.2	5.6	1.6
Pharmaceuticals	4,459	41.8	32.0	7.0	2.6	14.9	1.6
Printing and publishing	14,346	0.8	0.0	0.1	7.6	91.0	0.5
Textile	10,278	75.8	4.1	19.2	0.4	0.2	0.4
Transportation machinery	2,782	74.7	8.8	3.3	2.8	9.9	0.4
Wood and paper	11,581	57.9	15.6	16.3	1.3	5.8	3.1

Table 5: Transition matrices for labor market regimes

		EB	PR	MO	Total
EB	$(t-1)$	79,379	7,234	1,411	88,024
		90.18	8.220	1.600	100
PR	$(t-1)$	8,244	40,033	3,722	51,999
		15.85	76.99	7.160	100
MO	$(t-1)$	1,191	3,784	11,700	16,675
		7.140	22.69	70.16	100
Total		88,814	51,051	16,833	156,698
		56.68	32.58	10.74	100
EB	$(t-5)$	39,995	4,641	1,473	46,109
		86.74	10.07	3.190	100
PR	$(t-5)$	8,906	17,874	2,690	29,470
		30.22	60.65	9.130	100
MO	$(t-5)$	1,293	3,414	4,641	9,348
		13.83	36.52	49.65	100
Total		50,194	25,929	8,804	84,927
		59.10	30.53	10.37	100
EB	$(t-10)$	10,504	1,326	550	12,380
		84.85	10.71	4.440	100
PR	$(t-10)$	3,155	4,427	895	8,477
		37.22	52.22	10.56	100
MO	$(t-10)$	432	975	952	2,359
		18.31	41.33	40.36	100
Total		14,091	6,728	2,397	23,216
		60.70	28.98	10.32	100

[a] EB: Efficient baigaining; PR: Perfect competition Right-to-manage; MO: Monopsony power

Table 6: Summary statistics

	Obs	Mean	S.D.	Min	Max
Rent sharing $\hat{\phi}_{it}$	55,524	0.550	0.197	0.001	0.950
Price cost margins $\hat{\mu}_{it}$	55,233	1.241	0.275	0.813	3.000
Import penetration (all countries)$^{(a)}$	55,498	0.077	0.173	0.000	1.000
Import penetration from LWC$^{(b)}$ (incl. China)	55,498	0.014	0.046	0.000	0.503
Import penetration from China	55,498	0.008	0.029	0.000	0.319
Import penetration from OECD	55,498	0.053	0.113	0.000	0.814
Import penetration from LWC (excl. China)	55,498	0.006	0.024	0.000	0.351
Size (log of employees)	55,524	4.121	0.922	1.609	10.260
translog residual ω (TFP)	55,524	1.573	0.754	0.087	3.746
Employment growth in EA	55,524	0.007	0.125	-1.942	1.704
Firm share of employment in EA	55,524	0.355	0.368	0.000	1.000
Capital intensity	55,524	-4.294	0.974	-14.282	-0.327

[a] Import Penetration are weighted using the firm-specific share of sales at the 4-digit level in 1995, the initial year of the sample period.
[b] Acronyms. LWC: Low wage countries. EA: Employment area

Table 7: Correlation Matrix. N = 54,498

		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
(1)	Rent sharing $\hat{\phi}_{it}$	1.000											
(2)	Price cost margins $\hat{\mu}_{it}$	0.106	1.000										
(3)	Import penetration (all countries)$^{(a)}$	0.072	0.069	1.000									
(4)	Import penetration from LWC$^{(b)}$ (incl. China)	0.071	0.025	0.854	1.000								
(5)	Import penetration from China	0.058	0.012	0.798	0.901	1.000							
(6)	Import penetration from OECD	0.063	0.085	0.959	0.689	0.687	1.000						
(7)	Import penetration from LWC$^{(b)}$ (excl. China)	0.066	0.034	0.686	0.843	0.527	0.498	1.000					
(8)	Size (log of employees)	-0.091	0.005	0.025	0.005	-0.001	0.031	0.011	1.000				
(9)	translog residual ω (TFP)	-0.160	-0.321	-0.207	-0.155	-0.141	-0.207	-0.129	-0.076	1.000			
(10)	Employment growth in EA	-0.022	0.003	-0.006	-0.009	-0.010	-0.004	-0.006	-0.002	-0.021	1.000		
(11)	Firm share of employment in EA	-0.030	-0.013	0.035	0.015	0.040	0.043	-0.020	0.229	0.011	0.025	1.000	
(12)	Capital intensity	-0.345	-0.222	-0.190	-0.184	-0.134	-0.166	-0.195	0.228	-0.005	-0.010	0.026	1.000

[a] Import Penetration are weighted using the firm-specific share of sales at the 4-digit level in 1995, the initial year of the sample period.
[b] Acronyms. LWC: Low wage countries. EA: Employment area

Table 8: Import penetration and bargaining power in France. Dependent variable. Rent sharing $\hat{\phi}_{it}$

	Total imports		
	FE-2SLS	SW-POOL-1	SW-POOL-2
Import penetration (all countries, $t-1$)$^{(b)}$	-0.723**	-1.123	-0.952
	(0.314)	(1.937)	(1.345)
Size (log of employees)	0.026	0.005	0.021
	(0.021)	(0.054)	(0.041)
translog residual $\hat{\omega}_{it}$ (TFP)	-0.362***	-0.283***	-0.306***
	(0.080)	(0.086)	(0.082)
Employment growth in EA$^{(a)}$	0.015***	0.018**	0.019***
	(0.004)	(0.009)	(0.007)
Firm share of employment in EA	-0.020**	0.009	0.011
	(0.008)	(0.028)	(0.023)
Capital intensity	-0.012	-0.027**	-0.017
	(0.009)	(0.014)	(0.015)
Inverse Mill's Ratio	-0.288***	-0.216	YES
	(0.062)	(0.174)	
Observations	45,315	47,745	47,745
R-squared	0.121	-0.225	-0.055

Block-bootstrapped standard errors in parenthesis (1,000 replications). *** p<0.01, ** p<0.05, * p<0.1. All regressions include a full vector of unreported year fixed effects. Number of companies: 8,917.

FE-2SLS uses the fixed effect two-stage least square estimator with selection. SW-POOL 1 uses the Semykina & Wooldridge (2010)'s estimator. SW-POOL-2 uses the Semykina & Wooldridge (2010)'s estimator with inverse mill's ratio interacted with time dummies. Instruments are import variables using imports towards all OECD countries except France on consumption goods.

(a) EA: Employment area

(b) Import Penetration are weighted using the firm-specific share of sales at the 4-digit level in 1995, the initial year of the sample period.

Table 9: Import penetration and bargaining power in France. Dependent variable. Rent sharing $\hat{\phi}_{it}$

	Imp. from OECD & LWC[a]			Imp. from OECD, LWC & China		
	FE-2SLS	SW-POOL-1	SW-POOL-2	FE-2SLS	SW-POOL-1	SW-POOL-2
Import penetration from OECD $(t-1)$	-0.953**	-1.408*	-1.307*	-0.920**	-1.372*	-1.113
	(0.405)	(0.769)	(0.747)	(0.39)	(0.764)	(0.75)
Import penetration from LWC (incl. China, $t-1$)	-0.624**	-0.189	0.180			
	(0.297)	(0.316)	(0.283)			
Import penetration from China $(t-1)$				-1.331	-0.259	-4.963*
				(4.132)	(2.527)	(2.968)
Import penetration from LWC (excl. China, $t-1$)				0.176	0.181	9.915*
				(7.817)	(4.949)	(5.879)
Size (log of employees)	0.032	0.025	0.035	0.024	0.020	0.017
	(0.020)	(0.032)	(0.033)	(0.019)	(0.029)	(0.029)
translog residual $\hat{\omega}_{it}$ (TFP)	-0.364***	-0.291***	-0.307***	-0.360***	-0.286***	-0.277***
	(0.081)	(0.076)	(0.078)	(0.078)	(0.07)	(0.068)
Employment growth in EA[a]	0.016***	0.019***	0.020***	0.015***	0.019***	0.017***
	(0.004)	(0.005)	(0.005)	(0.004)	(0.005)	(0.005)
Firm share of employment in EA	-0.023***	-0.003	-0.002	-0.022***	-0.005	0.009
	(0.008)	(0.008)	(0.008)	(0.009)	(0.008)	(0.008)
Capital intensity	-0.012	-0.026***	-0.019*	-0.013	-0.026***	-0.019*
	(0.009)	(0.009)	(0.010)	(0.009)	(0.009)	(0.010)
Inverse Mill's Ratio	-0.304***	-0.238***	YES	-0.279***	-0.219***	YES
	(0.058)	(0.090)		(0.056)	(0.08)	
Observations	45,315	47,745	47,745	45,315	47,745	47,745
R-squared	0.121	-0.027	0.061	0.117	0.018	-0.352

Block-bootstrapped standard errors in parenthesis (1,000 replications). *** p<0.01, ** p<0.05, * p<0.1. All regressions include a full vector of unreported year fixed effects. Number of companies: 8,917.
FE-2SLS uses the fixed effect two-stage least square estimator with selection. SW-POOL 1 uses the Semykina & Wooldridge (2010)'s estimator. SW-POOL-2 uses the Semykina & Wooldridge (2010)'s estimator with inverse mill's ratio interacted with time dummies. Instruments are import variables using imports towards all OECD countries except France on consumption goods.
(a) Acronyms. LWC: Low wage countries. EA: Employment area
(b) Import Penetration are weighted using the firm-specific share of sales at the 4-digit level in 1995, the initial year of the sample period.

Table 10: Robustness checks: Experimenting for different lags of import variable. Dependent variable. Rent sharing $\hat{\phi}_{it}$

	Contemporaneous imports			Imports lagged 3 years		
	FE-2SLS	SW-POOL-1	SW-POOL-2	FE-2SLS	SW-POOL-1	SW-POOL-2
Import penetration from OECD	-0.420	-0.704*	-0.629*	-1.345	-1.184	-0.965
	(0.271)	(0.379)	(0.377)	(1.213)	(6.124)	(5.477)
Import penetration from LWC$^{(a)}$ (incl. China)	-0.080	0.269	0.507*	-1.981**	-1.410	-0.833
	(0.285)	(0.266)	(0.264)	(0.915)	(4.815)	(3.99)
Size (log of employees)	-0.008	0.015	0.022	0.066**	0.001	0.012
	(0.017)	(0.024)	(0.024)	(0.029)	(0.133)	(0.115)
translog residual $\hat{\omega}_{it}$ (TFP)	-0.321***	-0.273***	-0.287***	-0.399***	-0.292**	-0.307**
	(0.073)	(0.068)	(0.07)	(0.087)	(0.13)	(0.125)
Employment growth in EA$^{(a)}$	0.009**	0.013***	0.013***	0.001	0.026	0.025
	(0.004)	(0.005)	(0.005)	(0.004)	(0.025)	(0.02)
Firm share of employment in EA	-0.021***	-0.011	-0.008	-0.022**	0.018	0.016
	(0.007)	(0.007)	(0.007)	(0.009)	(0.081)	(0.071)
Capital intensity	-0.016*	-0.026***	-0.020**	0.012	-0.030	-0.023
	(0.009)	(0.008)	(0.009)	(0.01)	(0.045)	(0.039)
Inverse Mill's Ratio	-0.211***	-0.177**	YES	-0.303***	-0.211	YES
	(0.062)	(0.083)		(0.065)	(0.381)	
Observations	52,964	55,496	55,496	31,529	33,675	33,675
R-squared	0.115	0.273	0.301	0.143	-0.030	0.134
Number of companies		9,857			7,146	

Block-bootstrapped standard errors in parenthesis (1,000 replications). *** p<0.01, ** p<0.05, * p<0.1. All regressions include a full vector of unreported year fixed effects.
FE-2SLS uses the fixed effect two-stage least square estimator with selection. SW-POOL 1 uses the Semykina & Wooldridge (2010)'s estimator. SW-POOL-2 uses the Semykina & Wooldridge (2010)'s estimator with inverse mill's ratio interacted with time dummies. Instruments are import variables using imports towards all OECD countries except France on consumption goods.
(a) Acronyms. LWC: Low wage countries. EA: Employment area
(b) All regressors on import penetration are instrumented using imports towards all OECD countries except France on consumption goods. Import Penetration are weighted using the firm-specific share of sales at the 4-digit level in 1995, the initial year of the sample period.

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