Who Benefits from Immigration? Firm Responses to Immigration under Imperfect Input Markets*

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Abstract

We study how firms respond to immigration shocks and how these responses translate into adjustments in input and output market rents for firms, their workers, and their consumers. Using detailed information on French manufacturing firms (2009-2019), we estimate labor input wedges for native and foreign workers. Wedges are larger for foreign workers, consistent with firms having more labor market power over foreigners. We find that both labor types are imperfect substitutes. Immigration shocks reduce the wages of both worker types, with smaller effects for native workers. An interquartile rise in the local immigrant share reduces immigrant wages by 26% (equivalent to €3.5/hour for the average wage) and native wages by 12% (€1.8/hour), and raises labor wedges by 35% for immigrants and 14% for natives; marginal revenue products do not change, resulting in higher labor market rents for firms. Immigration thus increases firms' rents–especially from foreign workers–by shifting surplus from workers to firms. In future work, we will analyze additional firm responses with respect to profits, sales, output prices, and input quantities to quantify the overall distribution of rents between firms, their workers, and their consumers due to immigration.

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1 Introduction

The effects of immigration on labor market outcomes have long been at the center of economic and policy debates. Traditional models grounded in competitive labor markets predict that immigration influences wages and employment through changes in relative labor supply. Yet, a growing body of research suggests that this view overlooks important frictions and imperfections in wage setting (Borjas & Edo 2023, Amior & Stuhler 2023, Amior & Manning 2025). In many labor markets, including those in advanced economies, firms may possess monopsony power, enabling them to set wages below marginal products leading to wage markdowns. At the same time, workers, particularly those covered by collective agreements or with firm-specific skills, retain some bargaining power. The balance between these forces helps determine the labor wedge, i.e., the ratio of the marginal revenue product of labor to the wage (Mertens 2020, Caselli et al. 2021).

This paper investigates how immigration affects labor wedges at the firm level in the presence of imperfect labor markets. First, we provide a theoretical framework to analyze the mechanisms through which immigration affects native and immigrant labor markets and to derive the labor wedge in each market. Then, using matched employer–employee data from the French manufacturing sector for the period 2009-2019, we estimate a revenue function that includes native and immigrant workers, which are considered imperfect substitutes in production (e.g., due to language or other skills). Based on the parameters of the revenue function, we compute the marginal products of labor for native and immigrant workers, and thus the labor wedges for the two types of workers at the firm level as the ratio of the marginal product of labor to the wage. Next, we estimate the impact of immigration at the local labor market level on the labor wedge and its components using an instrumental variable (IV) approach to account for the potential endogeneity of migrants' location decisions with respect to the economic conditions of an area. The IV approach is based on a shift-share instrument in the spirit of Altonji & Card (1991) and Bartik (1991) and taken from Mitaritonna et al. (2017).

We find that an influx of immigrants in a local labor market leads to a significant reduction in immigrants' wages and an increase in the labor wedge. An increase in the share of immigrants from the 25th to the 75th percentile leads to a decrease in the mean wage of immigrant workers by 26%, equivalent to 3.5€, and leads to a 35% larger gap between the marginal product of labor and the wage of immigrant workers. A negative but smaller effect is also found for native wages. As the share of immigrants increases from the 25th to the 75th percentile of the distribution, the mean wage of natives decreases by 12%, equivalent to 1.8€, and leads to a 14% larger gap between the marginal product of labor and the wage of native workers.

In the first place, the paper is related to the literature concerning the impact of immigration in receiving countries. In particular, the paper contributes to the relatively small strand of literature studying immigration in the context of imperfect labor markets. Several papers, including Borjas & Edo (2023), Amior & Stuhler (2023), and Amior & Manning (2025), assume wage-posting by firms with some monopsony power. Borjas & Edo (2023) study the efficiency implications of market power over (undocumented) migrants. Amior & Stuhler (2023) suggest that an influx of migrants with low reservation wages can increase firms' monopsony power and drive down wages for native workers as well. Amior & Manning (2025) show that immigration increases markdowns, with implications for migrant and native wages and income distribution between firms and workers. In our paper, we also show that immigration affects migrant and native wages, but differentially, with implications for the labor wedges in the two labor markets. In addition, our approach allows for the possibility of labor wedges below one, i.e., when workers receive wages above their marginal products, in line with the empirical evidence.[1]

Another small strand of literature studies the impact of immigration on firms' outcomes. Mitaritonna et al. (2017) show that an increase in the share of foreign-born workers in a French *département* (a small regional administrative area corresponding to NUTS 3) during the period 1995-2005 increased wages for natives and the total factor productivity of firms in that

[1]Incidentally, the paper is related to a recent literature that studies two-sided market power (Alviarez et al. 2023).

département. Our results run in the opposite direction with respect to native wages due to differences in the geographical unit of analysis (local labor market vs administrative area) and time period.

The paper also contributes to the literature that estimates the labor wedge. Building on the production function approach to estimate markups (De Loecker & Warzynski 2012), an expanding literature has shown how to estimate labor wedges at the firm level (Dobbelaere & Mairesse 2013, Mertens 2020, Caselli et al. 2021, Hashemi et al. 2022). In line with Mertens (2020), and Caselli et al. (2021), the paper shows that labor wedges can vary substantially across firms and, within the same sector and local labor market, firms with labor wedges above or below one coexist.

The remainder of the paper is organized as follows. Section 2 discusses the institutional context in France. Section 3 describes the data. Section 4 provides the theoretical framework and discusses how to estimate the labor wedges and, thus, identify the impact of immigration on labor wedges. Section 5 discusses the results. Section 6 provides some conclusions.

2 Institutional context

The French labor market combines institutional features that justify modeling wage-setting as a hybrid form of both collective bargaining and monopsony mechanisms.

On the one hand, collective bargaining remains pervasive in France, with approximately 98% of employees covered by agreements negotiated at the industry (branche) level (OECD 2025). Such negotiations impose minimum wage floors and standardised pay scales within and across occupations. In addition, firm-level agreements and public-sector wage grids further constrain wage adjustments, suggesting that negotiated outcomes play a central role in wage determination. This exceptionally high coverage is not driven by union density[2], but rather by the systematic extension of sectoral collective agreements to all firms within a sec-

[2]In France, union density is among the lowest in the OECD countries; see OECD database.

tor.[3] Each year, approximately 300 new sectoral agreements on wage grids and around 600 on other employment-related topics, such as working conditions, gender equality, training, or vocational certification, are concluded (Cahuc 2022).

Importantly, these agreements become binding for all firms in a sector under the principle of favourability. The latter requires firms to comply to the sectoral wage grid, unless firm-level conditions offer better wage conditions to employees. This rule substantially limits wage bargaining at the firm level. The resulting wage grids define minimum pay by occupation, diploma, seniority, and experience, with the lowest categories typically aligned with the statutory minimum wage. Because a large portion of these sectoral minima are indexed, formally or informally, to the minimum wage, increases in the latter trigger a cascade of adjustments across wage categories (Avouyi-Dovi et al. 2013, Aeberhardt et al. 2016). This institutional framework produces two key effects relevant to our empirical model. First, it anchors sectoral wage floors, generating strong intra-sectoral wage compression and limiting the responsiveness of wages to demand shocks. Second, despite near-universal coverage, residual wage dispersion persists, reflecting heterogeneity in firm productivity, local labor-supply conditions, and firm-specific wage-setting frictions.

On the other hand, several structural and institutional features of the French labor market grant firms with some monopsonistic latitude. First, labor mobility is limited. Housing-market rigidities and weak interregional migration restrain spatial moves, and job-to-job transitions amount to around 6% annually, a rate representing nearly half that observed elsewhere in Europe (OECD 2021). Second, according to the OECD Employment Protection Legislation (EPL) indicators, France ranks among the most regulated OECD countries in terms of dismissal protection and procedural requirements (OECD 2024) in 2019. Consistent with the monopsony literature, stringent employment protection increases the opportunity costs of job mobility, thereby lengthening job tenures and weakening workers' outside options. As a result, the firm-level elasticity of labour supply declines, leading to higher wage markdowns, i.e. the

[3] Since World War II, the Ministry of labor has made the extension mechanism quasi-automatic, examining the legality of each agreement and extending it to all firms in the relevant sector upon request of the social partners.

gap between the marginal revenue product of labour and the actual wage, allowing firms to appropriate a larger share of the surplus (Bassier et al. 2020). Last, wage grids set by collective agreements are linked to diplomas and occupational categories that differ across branches, hindering wage comparability. Limited transparency, especially among SMEs, creates information asymmetries that dampen competition for labor. Consistently, wage markdowns are higher where job information is scarcer (Marinescu et al. 2021).

Overall, the French labour market combines elements of collective bargaining wage determination and monopsonistic wage-setting power. Sectoral bargaining agreements establish detailed wage grids and occupational classifications that anchor pay structures, yet limited job mobility and strong employment protection confer residual discretion to firms in setting wages. This coexistence is well documented in Caselli et al. (2021), who show substantial within sectors heterogeneity in wage setting patterns, some firms closely adhering to collectively negotiated scales while others reflect obvious degrees of monopsony power.

Given this institutional backdrop, demographic trends play an increasingly important role in shaping labour-market dynamics. Figure 1 depicts the evolution of France's demography since 1990, expressed in headcount (in thousands). The blue area corresponds to the natural population balance (births minus deaths), while the orange area represents the net migratory balance (immigration minus emigration). For decades, France stood out among European countries for its robust fertility rate and sustained natural population growth. However, the recent decline in the natural balance, visible in the marked contraction of the blue area after 2015, signals a slowdown in demographic momentum. This trend has made migration a growing driver of population growth, as evidenced by the rising relative contribution of the orange area in recent years.

Such demographic rebalancing raises important questions regarding labour-market outcomes. A greater reliance on immigration to sustain population and labour-force growth may affect labour supply, wage dynamics, and the composition of skills available to firms. Understanding the redistributive effects of these demographic trends is therefore key to assessing the

sustainability of this new demographic trajectory.

[Figure 1 about here.]

More fundamentally, the coexistence of collective bargaining and monopsonistic wage-setting has asymmetric implications for foreign workers. In sectors covered by strong collective agreements, standardised wage grids limit the scope for discrimination and generate a degree of wage compression that tends to benefit migrant employees. However, in firms enjoying greater monopsonistic latitude, foreign workers, whose mobility is presumably more constrained by administrative, linguistic, or social barriers, face weaker outside options, thus being more exposed to wage markdowns. At the firm level, wage determination ultimately reflects firm-specific practices and the composition of their workforce. Even within sectors covered by collective agreements, firms may deviate from negotiated wage grids through bonuses, individualised pay components, or selective promotion policies. In this context, differences in bargaining power, information, or contractual security between native and foreign workers can translate into persistent wage differentials. Ultimately, the question of how firms determine wages, and whether discrimination between native and foreign workers prevails, remains an empirical one.

3 Data

Firm and employee level information. The empirical analysis exploits the FARE database (Annual Structural Statistics of Companies from the ESANE scheme) maintained by the national statistical office (INSEE) and the Directorate-General for Public Finances (DGFiP). The dataset provides firm-level annual accounting information (balance sheet and income statement) inferred from tax returns and aligned with the annual sectoral survey of companies, covering fiscal years 2009 to 2019. Our sample focuses on manufacturing firms (NACE C) for which we observe key variables including total assets, fixed assets, turnover, value added, number of employees, the wage bill and the like.

We combine the above firm-level information with employer-employee data, emanating from the "Déclaration Annuelle de Données Sociales" (DADS) and, for more recent years, the "Déclaration Sociale Nominative" (DSN) system. The dataset, commonly referred to as the "Bases Tous salariés", is produced annually by INSEE and covers virtually all employees in the business sector via employers' mandatory declarations of employment, hours, remuneration, other contract characteristics. Key variables include establishment identifier, number of paid hours, gross remuneration, socio-professional category, and so on.

All computations and analyses using these microdata were performed within the CASD SD-Box secure environment. Access to some of the data used in this work was carried out in secure environments provided by CASD (Centre d'Accès Sécurisé aux Données, Ref. 10.34724/CASD). This data source's principal strength lies in its exhaustive (or near-exhaustive) coverage of salaried employment in France, enabling linked employer–employee studies, cohort tracing, job creation/destruction analysis, and wage-trajectory dynamics.

Migration data. The measure of exposure to immigration shocks at the local labor market level, as well as the instrumental variable used to address endogeneity concerns (see Section 4.3) are built using information from the population Census compiled by INSEE. In particular, the main explanatory variable exploits data that detail the population in each municipality, by migrant status. In this case, the definition used by INSEE to identify a migrant is an individual born abroad with non-French nationality and living in France. Foreign-born French citizens living in France are therefore not counted. The condition of migrant is permanent: this means that people acquiring French citizenship will continue to be counted as migrant in the data. Data for each municipality are then aggregated at the level of local labor market.

To build the instrumental variable we start from the number of foreign-born residents aged 15–65 in each municipality, by country of birth, as recorded in the 1999 Census, that is 10 years before the sample period considered in the analysis. This information –which is the basis for the *share* part of the shift-share instrument– is combined with the number of foreign-born

individuals by country of birth present in the whole France (the *shift* part of the IV). The data, also derived from the population Census, are compiled by INSEE.

In building the IV, we only consider migrants from non-OECD countries, although results are robust to the inclusion of all foreign-born residents.

Employment-area level information. The empirical analysis adds a number of characteristics of local labor markets (aka employment areas) among the control variables, since that is the main unit of observation we refer to when estimating the impact of migration on labor wedges. In particular, we include information about unemployment directly compiled by INSEE, and exploit data on local taxes at the municipal level to compute proxies for the level of income and property values at the level of employment area. In fact, because both housing costs and income levels (as well as unemployment) may affect the location decision of migrant workers, it is important to control for those factors. Lacking direct information at the level of each employment area, we use data on per capita income taxes at the municipal level to build a proxy for the level of income, and information on property tax on buildings (per household) to proxy for house prices.[4]

4 A reduced-form framework to study firm-responses to immigration shocks

This section describes a static theoretical setting, which we will utilize to study how immigration shocks affect firms' wages, employment and wage markdowns across foreign and native workers. The key aspect is that firms have differential market power over both labor types. We additionally incorporate imperfect product markets to understand how changes in firms' labor market rents pass-through to output markets, the focus remains, however, on the labor market effects. The ultimate goal of this framework is to i) connect it to the data, such that we

[4]Information concerning income taxes and municipal taxes has been retrieved from the website https://www.data.gouv.fr/.

can derive key parameters (e.g., wage markdowns, markups, substitution elasticities), and ii) to help us in interpreting the reduced form regression results from Section 5.

4.1 Theoretical setting

Production inputs and technology. Firm, i, produce output, Q_{it} in period, t, using a production function, $Q_{it} = B(L_{it}^F, L_{it}^N, K_{it}, M_{it}, \Omega)$, where L_{it}^F and L_{it}^N denotes foreign and native workers, respectively, and total labor supply equals $L_{it} = L_{it}^F + L_{it}^N$. K_{it} and M_{it} denote capital and intermediate inputs. Ω_{it} is firms' Hicks-neutral total factor revenue productivity. We specify the (empirical) revenue production function associated with this production technology in log form:

$$\begin{aligned} r_{it} = {} & \beta_K k_{it} + \beta_M m_{it} + \beta_F l_{it}^F + \beta_N l_{it}^N \beta_{KK} k_{it}^2 + \beta_{MM} m_{it}^2 + + \beta_{FF} (l_{it}^F)^2 + \beta_{NN} (l_{it}^N)^2 \\ & + \beta_{KM} k_{it} m_{it} + \beta_{KF} k_{it} l_{it}^F + \beta_{KN} k_{it} l_{it}^N + \beta_{MF} m_{it} l_{it}^F + \beta_{MN} m_{it} l_{it}^N + \beta_{FN} l_{it}^F l_{it}^N \\ & + \omega_{it}^R + \varepsilon_{it}, \end{aligned} \tag{1}$$

where smaller letters denote logs. r_{it} is (log) revenue, ω_{it}^R is a Hicks-neutral revenue productivity shock, and ε_{it} is an i.i.d. shock. In Section 4.2, we discuss the identification of the production function parameters, $\boldsymbol{\beta}_{it}$.

Product demand. We consider that firms face iso-elastic demand in their markets (industries), given by:

$$P_{it} = \Xi_{it} Q_{it}^{\frac{1}{\eta_j}}, \tag{2}$$

where P_{it} is the output price and η_j is the demand elasticity. Ξ_{it} is a demand shifter. The main purpose of specifying the demand function (and imperfect competition in output markets) is to approximate how changes in labor market rents translate to product markets. As the main focus of this paper lies on labor market effects, we deliberately rely on a simple iso-elastic demand function and parameterize the demand elasticity from the literature at -2.

Input supply. Firms face upward sloping input supply curves for each input:

$$w_{it}^X = \delta_{it}^X (L_{it}^X)^{\frac{1}{\epsilon_{it}}}, \tag{3}$$

where w_{it}^X denotes the unit price of input $X = \{N, F, K, M\}$. ϵ_{it}^X is the firm-specific input supply elasticity and δ_{it}^X is a baseline input price normalization. Specifying input market imperfections for intermediate and capital is not essential for our analysis, however, with Eq. (3) we want to highlight that our analysis (and measurement) of labor market imperfections will not require assuming exogenous input prices in other input markets (which is typically the case in previous work - e.g., Dobbelaere & Mairesse (2013), Yeh et al. (2022)).

Profit maximization and wage determination. We follow previous work and combine upward sloping labor supply curves with a bargaining setting, in which (native and foreign) workers collectively bargain with firms to determine wages and employment, considering input supply curves and product demand (e.g., Mertens (2023), Wong (2025)). We work with this slightly more complicated structure as it accounts for the observation that wages can exceed marginal revenue products, which is important in our French data and has been widely documented in other contexts (see, e.g., Card et al. (2018) or Dobbelaere & Mairesse (2013) and subsequent work). As will become clear, in our setting, firms' monopsony power from upward sloping labor supply curves, will be counteracted by workers' bargaining power (consistent with Demirer & Rubens (2025)). Firms maximize short-run profits, $\Pi_{it} = P_{it}Q_{it} - w_{it}^N L_{it}^N - w_{it}^F L_{it}^F - w_{it}^M M_{it}$.

From the first order conditions, we find:

$$\mu_{it}^X = \frac{MRP_{it}^X}{w_{it}^X} = \frac{\frac{1}{\mu_j}\frac{\partial Q_{it}}{\partial X_{it}}\frac{X_{it}}{Q_{it}}}{\frac{w_{it}^X L_{it}^X}{P_{it}Q_{it}}} = \frac{\frac{\eta_j+1}{\eta_j}\tilde{\theta}_{it}^X}{\frac{w_{it}^X L_{it}^X}{P_{it}Q_{it}}} = \frac{\theta_{it}^X}{\frac{w_{it}^X L_{it}^X}{P_{it}Q_{it}}}, \tag{4}$$

where MRP_{it}^X is the marginal revenue product of input $X = \{N, F, M\}$. $\tilde{\theta}_{it}^X$ and θ_{it}^X are the associated output and revenue elasticities of inputs, and $\mu_j = \frac{\eta_j+1}{\eta_j}$ is the price over marginal

cost markup. We use Eq. (4) to estimate wage markdowns (wedges between marginal revenue products and wages) for native and foreign workers.

Producer and consumer rents. Using these first order conditions, together with the demand function, Eq. (2), we can decompose short-run profits as:

$$\Pi = \underbrace{(\mu_{it}^N - 1)w_{it}^N L_{it}^N}_{\text{Rents from natives}} + \underbrace{(\mu_{it}^F - 1)w_{it}^F L_{it}^F}_{\text{Rents from foreigners}} + \underbrace{(\mu_{it}^M - 1)w_{it}^M M_{it}}_{\text{Rents from interm. input markets}} - \underbrace{\frac{P_{it}Q_{it}}{\eta_j}}_{\text{Product market rents}}. \quad (5)$$

Additionally, we can use Eq. (2) to write (firm-specific) consumer rents i as:

$$CR_{it} = \int_0^{Q_{it}^*} P_{it}(\tilde{Q})d\tilde{Q} - P_{it}Q_{it}, \quad \Rightarrow \quad CR_{it} = \frac{P_{it}Q_{it}}{-1-\eta_j}, \quad (6)$$

where Q_{it}^* indicates the equilibrium quantity and $\tilde{Q}$ highlights that the integration is taken over quantities as specified in the demand function, Eq. (2). Eq. (2) and (6) highlight that, once we estimated input wedges using Eq. (4), we can recover all components of firm and consumer rents within our simple framework. We will use this in our empirical analysis to understand how immigration shocks affects the firm rents (along which margin) and whether firms pass this through to consumers. (Importantly: We focus on firm-level responses and do not study the impact of reallocation dynamics.)

Substitution elasticities and relative wages. We are interested in understanding how immigration shocks (i.e., supply shocks to foreign workers) affect wages for natives, too, which will be shaped by the substitution elasticity between both labor types. We explicitly allow (do not impose) that both labor types are imperfectly substitutable, for instance, due to differences in language skills, education, or other skills. The elasticity of substitution is implied by the translog production function and we define it as the ratio of changes in relative input

quantities to changes in relative *shadow prices* of inputs (as in Mertens & Schoefer (2025)):

$$\sigma_{it} = \frac{\Delta \ln(\frac{F_{it}}{N_{it}})}{\Delta \ln(\frac{w_{it}^N \mu_{it}^N}{w_{it}^F \mu_{it}^F})}. \tag{7}$$

Equation (7) is reminiscent of the Hicksian substitution elasticity, and, in fact, Appendix XXXX show that we can also derive this equation from a CES production function, which is a special case in which σ_{it} is constant and identical across firms.[5] Expressing the elasticity of substitution in terms of shadow prices incorporates the presence of input market imperfections. As we observe quantities and prices for both labor types in the data, we can directly compute σ_{it}. Rearranging Eq. (7) allows us to interpret changes in native worker wages in response to immigration shocks through the substitution elasticity:

$$\Delta \ln(w_{it}^N) = \Delta \ln(w_{it}^F) + \frac{1}{\sigma} \Delta \ln\left(\frac{L_{it}^F}{L_{it}^N}\right) - \Delta \ln\left(\frac{\mu_{it}^N}{\mu_{it}^F}\right). \tag{8}$$

Equation (8) says that, holding relative input wedges, $\left(\frac{\mu_{it}^N}{\mu_{it}^F}\right)$, constant, a decline in foreign worker wages (e.g., due to an increase in supply of foreign workers) will lead to an equal decline in native wages if both labor types are perfect substitutes. Under less than perfect substitutes, the decline in native wages is compensated by the shift in relative labor demand toward foreign workers (with $\frac{1}{\sigma_{it}}$ as a factor). We emphasize again that we do not impose that both labor types are less than perfect substitutes (we rather estimate the substitution elasticity) and that any imperfect substitution is arguable a reflection of underlying differences in foreign and native workers characteristics (e.g., skills).

4.2 Estimating Revenue Elasticities

Identification of revenue function coefficients. To estimate input wedges we require estimates of revenue elasticities. We recover firms' revenue elasticities by estimating the revenue

[5] Using firms' first order conditions, we can also rewrite Eq. (7) in terms of input (shadow) prices or quantities and revenue (or output) elasticities: $\frac{\sigma_{it}-1}{\sigma_{it}} = \frac{1}{\sigma_{it}} \frac{\Delta \ln(\theta_{it}^F) - \Delta \ln(\theta_{it}^N)}{\Delta \ln(w_{it}^N \mu_{it}^N) - \Delta \ln(w_{it}^F \mu_{it}^F)} = \frac{\Delta \ln(\theta_{it}^N) - \Delta \ln(\theta_{it}^F)}{\Delta \ln(L_{it}^N) - \Delta \ln(L_{it}^F)}$.

production function (1). The idea to estimate revenue production functions is not new: it has already been applied in Petrin & Sivadasan (2013) and, more recently, in Hashemi et al. (2022) and Treuren (2022). The literature emphasized that common estimates of quantity production functions (output elasticities) are biased if researchers do not observe quantities and prices as it is typically the case (e.g., De Loecker et al. (2016), Bond et al. (2021)). A key advantage of estimating a revenue production function is precisely that we do not need to observe output quantities and can directly use sales as dependent variable.

A well-known identification issue in the estimation of Eq. (1) is that ω_{it}^R is unobserved to the researcher but observed by the firm. This introduces a simultaneity problem if a firm's input decisions depends on its productivity. To address this identification issue, we follow the literature (e.g., Treuren (2022)) and apply a control function approach for firms revenue-productivity. In particular, we assume that intermediate inputs are flexible and that a firm's intermediate input decision contains information on its revenue productivity. This allows us to write a firm's intermediate input demand as a function of revenue-productivity and other relevant state variables: $m_{it} = h_{it}(\omega_{it}, \boldsymbol{Y})$, where $\boldsymbol{Y}$ includes a dummy for the firm's export status, sector and region dummies, the unit cost of labor for both native and foreign workers, the weighted average share of migrants across the employment areas in which the firm operates, the firm's share in the demand for intermediate inputs, and its interaction with the quantity of the four inputs used by the firm. Labor costs and input market shares (as well as interactions) are meant to capture input price variation across firms. In fact, while we do not directly observe input prices, they may vary by firm and are possibly correlated with firm demand for input: if not accounted for, such variation would end up in the error term and our revenue function coefficients would be biased. Inverting the control function yields an expression for revenue-productivity: $\omega_{it}^R = g_{it}(m_{it}, \boldsymbol{Y}) = g_{it}(.)$. Assuming that revenue-productivity is Hicks-neutral and follows a Markov-process (Petrin & Sivadasan (2013), Treuren (2022)) implies that $\omega_{it} = \omega_{it-1} + \zeta_{it}$, where ζ_{it} denotes the innovation in revenue-productivity. We can thus rewrite the empirical

revenue production function (1) as:

$$y_{it} = \boldsymbol{\phi}'_{it}\boldsymbol{\beta} + g_{it-1}(.) + \zeta_{it} + \varepsilon_{it}, \tag{9}$$

where $\boldsymbol{\phi}'_{it}$ captures production inputs and their interactions as described in (1). After controlling for past productivity using $g_{it-1}(.)$, we only need to account for simultaneity issues resulting from unobserved revenue-productivity innovations, ζ_{it}. Consistent with previous work, we assume that firms can only adjust their flexible inputs (labor and intermediates) to contemporary productivity shocks and use lags for these flexible inputs and their interactions as instruments. We then estimate equation (9) in two steps. We first follow Ackerberg et al. (2015) and purge y_{it} from potential measurement error by projecting y_{it} on year dummies, a third order polynomial in k_{it}, b_{it}, w_{it}, and m_{it}, and a linear term in exp_{it}. In the second step, we then use the predicted value of y_{it} in equation (9) and estimate the production function separately by NACE rev. 2 two-digit industries using an IV-estimator that uses lagged values of flexible inputs as instruments for their contemporary values (Wooldridge (2009)).[6] Importantly, we run the estimation as described separately for firms with both foreign and native workers and for firms with only native workers.[7] In the latter case, we drop all variables from the revenue function that include foreign workers. We exclude the small share of firms (around 4%) with only foreign workers from the analysis.

Deriving revenue elasticities. Based on the specification in equation (1), the firm-specific factor elasticities for native and foreign workers can be computed as:

$$\theta^N_{it} = \beta_N + 2\beta_{NN}w^N_{it} + \beta_{KN}k_{it} + \beta_{MN}m_{it} + \beta_{FN}w^F_{it},$$

$$\theta^F_{it} = \beta_F + 2\beta_{FF}w^F_{it} + \beta_{KF}k_{it} + \beta_{MF}m_{it} + \beta_{FN}w^N_{it}.$$

[6] More precisely, we distinguish between 11 manufacturing sub-sectors identified by two-letter codes (e.g. CA - Food, beverages and tobacco; or CJ - Electrical equipment. Due to the number of available observations, we combine pharmaceuticals (CE) and basic chemicals (CF) into a single industry for the purpose of the estimation.

[7] We set a minimum threshold of 500 hours a year (roughly equal to 1/3 of a full time equivalent position) to classify a firm as employing a specific type of labor.

4.3 Estimating the Impact of Immigration on Firm Outcomes

Regression specification To estimate the impact of immigration shocks on firm outcomes, we run the following regression:

$$y_{it} = \beta_{IM} IM_{it-1} + x1_{EA,t-1} + x2_{it-1} + \nu_i + \nu_{rt} + \nu_{jt} + \epsilon_{it}, \tag{10}$$

where y_{it} denotes a firm-level outcome variable (e.g. the labor wedge, marginal revenue productivity or compensations for native or foreign workers). Our main explanatory variable $IM_{it} = \sum s^i_{EA,t} \frac{F_{EA,t}}{(F_{EA,t}+N_{EA,t})}$ is the weighted average of the share of foreign workers in the labor force.[8] Weights $s^i_{EA,t}$ are given by the employment share of each employment area in total firm employment.[9] Control variables include both characteristics of the employment area ($x1_{EAt}$), such as the rate of unemployment, and proxies for the level of income and the house prices, and firm-specific features ($x2_{it}$), such as firm size (total hours worked), the (weighted average) share of employment within the employment area, and the share of foreign workers in the company's labor force.[10] To reduce potential endogeneity concerns, we lag all explanatory variables by one year. Equation (10) includes a rich set of firm, industry-year, and region-year fixed effects ν_i, ν_{jt}, and ν_{rt}.[11] As we control for firm fixed effects, we identity our coefficients of interest β_{IM} from within changes.

Instrumenting migration Because migration could suffer from an endogeneity bias, in the sense that migrants choose where to settle also on the basis of local labor market conditions, we build a shift-share instrument in the spirit of Altonji & Card (1991) and Bartik (1991), taken from

[8] A foreign worker is defined as an individual not born in France, irrespective of its citizenship. Similarly, French citizens born abroad are classified as foreigners here.

[9] For firms that operate in a single employment area, IM^C_{it} represents the share of foreign workers in the labor force in that specific location.

[10] Note that the share of foreign employment within each firm $Share^F_h$ is different from the main explanatory variable IM_{it}, which is computed at the level of the employment area and thus capture the availability of foreign workers, not the specific choice of the firm.

[11] Industry here is defined as 22 two-digit NACE divisions, a finer level of detail compared to the classification used in the estimation of the revenue function.

Mitaritonna et al. (2017). We combine geographical (at the local labor market level) variation in the share of immigrants coming from specific countries, taken from the 1999 Census, with the total number of immigrants in France from each origin country to compute the imputed number of immigrants in each local labor market and year:

$$\widehat{IMM}_{EA,t} = \sum_{c} s_{EA,1999} \times IMM^{FR}_{c,t} \tag{11}$$

where $s_{EA,1999}$ is the share of origin country c for employment area EA in 1999, (i.e. $s_{EA,p} = \frac{F_{c,EA,1999}}{\sum_c F_{c,EA,1999}}$, and $IMM^{FR}_{c,t}$ is the number of immigrants from origin country c at time t in France. We then combine the imputed number of immigrants with the number of native workers in 1999 ($Natives_{EA,1999}$) to impute the share of immigrants at the local labor market level:

$$Z_{EA,t} = \frac{\widehat{IMM}_{EA,t}}{\widehat{IMM}_{EA,t} + Natives_{EA,1999}}. \tag{12}$$

This shift-share approach is a workhorse of empirical research over the years it has been applied to many different domains, from migration to technical change to import competition. A necessary condition for the IV strategy to be valid is that the initial migrant shares are exogenous (Goldsmith-Pinkham et al. 2020). We are reasonably confident in this assumption, as our construction relies on information measured more than a decade prior to the period under study and before 2004, the year of the EU enlargement to several Eastern European countries that led to a large flow of Eastern European immigrants.

5 Results

5.1 Descriptive evidence

Summary statistics. Tables 1 provides summary statistics for firms with both foreign and native workers (top panel) and for those that only employ natives (bottom panel), with the latter group representing more than 70% of the sample. As expected, firms that only employ

native workers but are much smaller than those featuring both types of labor (the mean size is 8 employees versus 59, with the median values being respectively 4.6 and 17). Firms with both worker types are located in areas with a higher migration share. Foreign workers accounts for a small share of the labor force, around 20% on average, with large variations across firms (9% at the 25-th percentile of the distribution, 27% for the 75-th percentile).

Interestingly, Table 1 shows that labor compensations for native workers are higher (the difference is larger at the median than at the mean) than those earned by foreigners, whereas companies that only employ native workers tend to pay wages that are generally lower than those observed for foreign workers (in the other groups of firms).

[Table 1 about here.]

Revenue elasticities and sector-specific firm-characteristics. The revenue function estimation delivers firm-specific and time-varying factor elasticities. Because the estimation is performed at the two-digit NACE level, and distinguishing firms with both types of labor from those that only employ nationals, Tables 2 and 3 report summary statistics for the two groups of firms and by manufacturing sector.

Estimated revenue elasticities Table 2 are comparable to those reported in previous work (see for instance Petrin & Sivadasan (2013), Caselli et al. (2021), Treuren (2022)), averaging 0.659 for intermediate inputs, 0.260 and 0.087 respectively for native and foreign labor, and 0.045 for capital, in the case of firms employing both types of labor.

Similar considerations apply to the group of firms that only employ native workers (Table 3), even if the marginal revenue product of labor is much lower (around 11 compared to 16 for the previous group). Average revenue elasticities take values that are similar to those reported in Table 2 and remain aligned with existing results in the literature, although their sum is now slightly below 1 in almost all sectors (apart from Electrical equipment).

[Table 2 about here.]

Interestingly, Table 2 shows that labor wedges for foreign workers are much larger than for native workers (on average 1.18 versus 0.97), indicating that the former group of employees cost to the firm less than their marginal contribution –a situation consistent with firms having monopsony power– while the contrary applies to native workers. Table 3 suggests that companies that only employ native workers do not enjoy monopsony power over their workforce: the avarage value of the labor wedge is well- below unity, indicating that unit labor costs are higher than the marginal revenue product of labor. This result is consistent with the strong size-gradient in firms' labor market power that has been documented in the literature (e.g., Mertens (2023)).

[Table 3 about here.]

5.2 Migration competition and labor wedges

Tables 5 and 6 reports instrumental-variable estimates of the effect of local migration shock on firms' wage-setting outcomes. The specification separates native and foreign workers and focuses on firms that employ both groups, allowing us to compare how migration affects the wedge between the marginal revenue product of labor and observed wages. All explanatory variables are lagged one year and the endogenous migration measure is instrumented using a Bartik-type shift–share strategy. The table presents the set of coefficients impacting on, respectively, the markup (defined as the ratio of marginal revenue product of labor to observed wages), on the marginal revenue product of labor itself, and on wages, alongside standard controls at the employment-area level. In this setting, the markup μ is defined as the ratio between the marginal revenue product of labor (MRP^L) and the observed wage, and is therefore a measure of the ability of companies to keep the marginal benefit of labor above its induced marginal cost. A higher μ indicates stronger monopsony power by the firm, since a larger wedge between MRP^L and w can be sustained.

Before focusing on the results, Table 4 reports the first-stage estimates used to instrument the local share of foreign workers in the employment area. In both the parsimonious and

extended specifications, the Bartik-style shift–share instrument is highly predictive of local migration flows, with large and precisely estimated coefficients that remain remarkably stable across model variants. The corresponding first-stage F-statistics comfortably exceed conventional thresholds for weak-instrument concerns, indicating strong explanatory power. Importantly, the inclusion of additional firm-level controls in the extended model does not materially attenuate the coefficient on the instrument, suggesting that the identifying variation is not driven by differences in firm size, labor-market dominance, or within-firm workforce composition. The strength and robustness of these first-stage results provide reassurance regarding the relevance of the instrument and support the validity of the subsequent second-stage estimates.

[Table 4 about here.]

In Table 5, the results show that when the share of foreign workers increases in a local labor market, firms are able to widen the gap between what workers produce at the margin and what they are paid. This effect is visible for both native and foreign employees, but is larger for the latter. Importantly, there is no evidence that immigration raises the marginal productivity of labor for either group, meaning that the growing wedge between productivity and pay is not driven by improved efficiency or better worker performance. Since the marginal revenue product of labor does not increase, the higher markup essentially reflects lower wages rather than higher productivity. In other words, firms appear able to capture a larger share of the value created by labor in places receiving more migrants.

Wages fall for both native and foreign workers in response to a higher local presence of migrants. The decline is statistically significant and larger in magnitude for foreign workers, suggesting that this group may face weaker bargaining power or fewer outside job opportunities. A simple quantification exercise shows that at the mean, a migration shock amounting to an inter-quartile change in the share of migrants within the local employment area translates into a 1.8€ decrease in the mean wage of native employees (from 16.2€ to 14.4€), and into a sizable 3.5€ decrease (15.5€ to 12.0€) in the mean wage of foreign workers.

The observed relationship between real-estate taxation and MRP^N may conceal several underlying channels. First, the positive and significant effect can be interpreted as capturing characteristics of economically dense and productive areas. Locations with higher property taxes tend to be more urban, dynamic, and subject to stronger land pressures, which attract or retain more productive firms. Several mechanisms may operate simultaneously: selection effects, as only high-performing firms can afford the fixed costs of operating in such areas; agglomeration economies, which enhance knowledge spillovers, input–output linkages, and labor market matching; and greater capital intensity induced by higher land costs, which raises labor productivity through capital–labor complementarities. In this sense, property taxation acts as a proxy for high-productivity environments where workers generate more revenues at the margin.

Taken together, these results display a picture of increased monopsony power for firms in labor markets experiencing higher inflows of migrants. Firms can persistently compensate workers below their marginal revenue product, especially foreigners, and retain the surplus as additional profit. This redistribution of income from labor to firms occurs without measurable productivity gains, suggesting that immigration affects wage-setting conditions more than efficiency itself.

[Table 5 about here.]

Table 6 extends the previous specification by adding a set of firm-specific control variables designed to capture heterogeneity in size, in the hour share on the local labor market, and the foreign share within the firm workforce. By conditioning on firm size, the firm's share of total hours worked in the local labor market (a proxy for labor-market dominance), and the internal share of foreign workers, this specification allows us to assess whether the baseline results are robust to differences in labor-market power and internal workforce structure.

A key finding from this extended specification is that incorporating firm-level controls has little impact on the magnitude or significance of the marginal effects on wages. At the mean,

a migration shock amounting to an inter-quartile change in the share of migrants within the local employment area translates into a 1.4€ decrease in the mean wage of native employees (from 16.2€ to 14.8€), and as previously estimated, into a 3.5€ decrease (15.5€ to 12.0€) in the mean wage of foreign workers. This indicates that our baseline results are not confounded by underlying heterogeneity in firm characteristics and remain robust to the introduction of additional conditioning variables. Another important finding stemming from Table 6 lies in the positive, albeit non significant at 10% level, effect of migration on the marginal revenue product of labor MRP^L. At the mean, a similar migration shock translates into a 1.8€ increase (15.9€ to 17.7€) in MRP^L. This implies that on the whole, such a shock would increase firm rents extracted from foreign workers by an impressive 5.2€ an hour.

The inclusion of these additional controls yields several noteworthy patterns. First, firm size is positively associated with the labor wedge (μ^N, the marginal revenue product of labor (MRP^N), and wages (w^N) for native workers, suggesting that larger firms benefit from productivity advantages and share part of these gains with natives. For foreign workers, however, firm size has a small but negative association with the markup and MRP^F, while wages remain largely unaffected. This asymmetry may reflect greater substitutability among foreign workers within large organizations, where foreign workers focus on lower value-adding activities.

Second, firm market share in the local labor market, measured as the firm's share of total hours worked in the employment area, exhibits strong and heterogeneous effects. For native workers, a higher labor-market share is associated with significantly lower MRP^N and wages, suggesting that firms holding a dominant position locally exert wage-setting power and do not necessarily assign native labor to tasks with higher marginal revenue. In contrast, for foreign workers, greater labor-market share is positively associated with both increased MRP^F and reduced wages w^F, indicating that dominant firms extract more surplus from foreign labor while inducing higher revenue-generating tasks. Notably, wages decline for both native and foreign workers as labor-market share increases, consistent with a monopsonistic wage-setting environment.

Finally, the internal share of foreign workers (share$_h^F$) produces a clear divergence across groups. For natives, a larger internal presence of foreign workers slightly increases the labor wedge, MRP^N, and wages, consistent with complementarities or within-firm task specialization. For foreign workers, however, the coefficients are strongly negative for both the wedge and MRP^F, with a modest negative wage effect, suggesting declining marginal contribution and bargaining power as foreign workers become more abundant internally. The negative and significant effect on wedge μ^F suggest that the hiring of foreign workers must remain limited in scope, due to the rapid decline in the revenue product of the marginal foreign worker.

[Table 6 about here.]

5.3 Firms with native workers exclusively

Table 7 reports the IV estimates for firms employing only native workers.[12] The key finding is that migration shocks at the local employment-area level (EA) do not generate significant effects, neither on the marginal revenue product of labour (MRP^N) nor on wages (w^N), in sharp contrast with those employing both native and foreign workers. Therefore, the migration coefficient on the native labor wedge (μ^N) remain insignificant.

The wedge on the material input market (μ^M) is positive and significant, suggesting that immigration may indirectly raise firms' material market rents rather than altering labour-market outcomes. Several channels may account for this effect. First, a demand-side mechanism may prevail: migration increases local population and consumption demand, prompting firms to expand output and, consequently, their demand for materials. If the supply of intermediates is sufficiently elastic, input prices rise less than proportionally, so that the marginal revenue product of materials (MRP^M) increases more than their cost (P^M). Second, a competition effect may operate through the expansion of the local pool of suppliers, including migrant-owned firms, which intensifies competition and lowers input prices. Native-only firms thus

[12] The very high first-stage statistics confirm that the Bartik-type instrument is strong.

benefit from cheaper intermediates, again raising the material-input wedge (μ^M). Finally, immigration may generate productivity spillovers through input–output linkages: by enhancing the efficiency or specialisation of upstream firms, migration improves the quality or availability of intermediate goods and services. As a result, native-only firms experience higher MRP^M even without any change in their own workforce composition. While these channels are not mutually exclusive, we cannot disentangle their relative contributions, which lies beyond the scope of this paper.

Adding firm-level controls in the extended model leaves these patterns broadly unchanged. Migration has no measurable impact on native wages or marginal revenue products, while the wedge on material input market (μ^M) remains positive and significant. The firm-level controls behave as expected: Firm size is strongly and positively associated with μ^N, MRP^N, and w^N, confirming that larger firms enjoy both productivity and wage premia; Firm market share in the local labour market has a string effect on the wage markdown, consistent with the presence of strong monopsony power for larger firms. Last, the share of foreign employment within the local area slightly raises native wages.

Altogether, for firms with only native workers, migration shocks in surrounding labour markets have no direct wage or productivity effect, consistent with the absence of within-firm exposure to migrant labour. Instead, migration appears to influence input-market rents rather than labour wedges. The contrast with mixed-workforce firms underscores that the monopsony effect of immigration operates through firms employing migrants.

[Table 7 about here.]

5.4 Migration and other firm outcomes

Work in progress

5.5 Quantifying changes in firm, worker, and consumer rents from migration

Work in progress

6 Conclusion

This paper has examined how firms in imperfect labor markets respond to immigration shocks and how these responses affect the distribution of rents between firms and workers. Combining a theoretical framework with matched employer–employee data from French manufacturing firms between 2009 and 2019, we have estimated labor wedges separately for native and immigrant workers. Our results provide clear evidence that firms possess greater market power over immigrant workers, as reflected in systematically larger labor wedges for this group.

We find that immigration shocks lower wages for both native and immigrant workers, though the effects are considerably stronger for immigrants. As a result, immigration raises labor wedges for immigrants and, to a smaller extent, natives. We find that immigration primarily shifts surplus from workers to firms rather than changing overall productivity. These findings provide empirical support for monopsonistic models of the labor market, where immigration increases firms' rents.

Taken together, our results offer a new perspective on the consequences of immigration in the presence of imperfect competition. Rather than focusing exclusively on wage and employment adjustments, our analysis highlights how immigration reshapes the distribution of rents in the economy, benefiting firms while lowering workers' share of value added. The asymmetry in the effects across worker types underscores the importance of considering heterogeneity in labor market power: immigrant workers face larger wage markdowns not because they are less productive, but because firms have greater scope to exercise monopsony power over them.

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Table 1: Summary statistics

Variable		Mean	$p25$	$p50$	$p75$
	Firms with both native and foreign workers $N = 188,044$				
Overall number of workers (headcounts)	Emp	59.081	7.840	17.030	41.217
Number of native workers (headcounts)	Emp^N	51.893	5.760	13.860	35.399
Number of foreign workers (headcounts)	Emp^F	7.188	1.229	2.700	5.849
Overall number of hours worked	L	114,367	15,664	34,003	80,053
Number of hours worked (native workers)	L^N	100,398	11,491	27,594	68,865
Number of hours worked (foreign workers)	L^F	13,969	2,438	5,315	11,393
Share of foreign workers in firms	Share^F	0.207	0.090	0.154	0.272
Share of foreign workers in employment area	Migration	0.107	0.065	0.094	0.130
Labor compensation for native workers	w^N	16.930	13.490	16.170	19.391
Labor compensation for foreign workers	w^F	16.515	12.358	14.816	18.487
	Firms with native workers only $N = 469,823$				
Overall number of workers (headcounts)	Emp	8.126	2.250	4.594	8.950
Overall number of hours worked	L	15,643	4,310	8,873	17,442
Share of foreign workers in employment area	Migration	0.072	0.040	0.064	0.093
Labor compensation for native workers	w^N	14.102	11.125	13.290	16.205

Superscripts N and F stand for natives and foreign workers. w represent the observed hourly cost of labor, in euros.

Table 2: Sectoral summary statistics for firms with both native and foreign workers

	Sector	Obs	# firms	α^M	α^N	α^F	θ^M	θ^N	θ^F	θ^K	λ	μ^N	μ^F	μ^M	MRP^N	MRP^F
CA	Food, beverages & tobacco	36804	6697	0.569	0.265	0.098	0.672	0.228	0.089	0.030	1.020	0.975	1.273	1.210	12.7	15.7
CB	Textiles, apparel, leather	10629	1711	0.576	0.298	0.094	0.622	0.282	0.092	0.021	1.018	1.007	1.345	1.063	15.3	19.0
CC	Wood & paper products; printing	15998	2453	0.600	0.284	0.067	0.650	0.252	0.054	0.020	0.976	0.952	1.030	1.104	15.6	15.4
CE	Chemicals	8074	1105	0.656	0.224	0.037	0.677	0.221	0.038	0.027	0.964	1.101	1.314	1.064	23.9	28.5
CG	Rubber & plastics	18075	2496	0.634	0.246	0.058	0.714	0.218	0.053	0.013	0.998	0.962	1.185	1.143	16.4	18.1
CH	Basic metals	40000	5409	0.568	0.298	0.074	0.629	0.251	0.064	0.039	0.982	0.899	1.062	1.124	15.3	16.6
CI	Computer, electronic & opt. products	6195	873	0.579	0.313	0.062	0.644	0.278	0.062	0.024	1.008	0.928	1.219	1.138	18.8	22.9
CJ	Electrical equipment	4895	684	0.613	0.272	0.056	0.682	0.240	0.051	0.017	0.990	0.961	1.142	1.128	17.3	18.8
CK	Machinery	10424	1506	0.619	0.273	0.051	0.669	0.252	0.049	0.017	0.988	0.957	1.135	1.093	18.2	20.2
CL	Transport equipment	5911	798	0.660	0.252	0.041	0.656	0.246	0.038	0.020	0.959	1.032	1.227	1.008	17.7	19.3
CM	Other manufacturing	28605	4552	0.536	0.321	0.090	0.568	0.294	0.082	0.013	0.957	0.990	1.174	1.106	16.9	19.3
	All manufacturing	185610	28283	0.591	0.286	0.081	0.659	0.260	0.087	0.045	1.050	0.967	1.177	1.136	16.0	18.1
	F-Statistics			1,349.2	715.0	972.6	2,708.2	1,604.9	3,419.7	3,785.5	1,1475.5	551.9	604.1	1,684.5	4,460.7	2,583.5
	R-squared			0.068	0.037	0.050	0.127	0.080	0.156	0.169	0.382	0.029	0.032	0.083	0.194	0.122

$N = 185,610$. Emp. stands for the number of workers in headcounts. Subscripts N and F stand for natives and foreign workers. α represent each factor's revenue share. θ are factor elasticities from a trans-log production function; factors $\in M, L^N, L^F, K$ are materials, native workers, foreign workers and capital; λ stands for revenue returns to scale; w represent observed hourly wage, in euros. Share$F$ represents the firm share in headcount of foreign workers. These summary statistics include firms employing both native and foreign workers, and exclude firms employing native workers exclusively.

Table 3: Sectoral summary statistics for firms with native workers exclusively

	Sector	Obs	# firms	α^M	α^N	θ^M	θ^N	θ^K	λ	μ^N	μ^M	MRP^N
CA	Food, beverages & tobacco	149,103	24,127	0.553	0.369	0.693	0.251	0.043	0.987	0.743	1.277	8.403
CB	Textiles, apparel, leather	13,315	2,135	0.574	0.372	0.682	0.302	-0.007	0.977	0.850	1.239	11.380
CC	Wood & paper products; printing	53,123	7,945	0.579	0.358	0.677	0.261	0.020	0.958	0.781	1.189	11.143
CE	Chemicals	6,675	980	0.660	0.266	0.756	0.194	0.004	0.954	0.840	1.256	14.173
CG	Rubber & plastics	30,023	4,329	0.609	0.323	0.654	0.257	0.026	0.938	0.899	1.111	13.526
CH	Basic metals	78,389	10,163	0.535	0.388	0.619	0.293	0.041	0.953	0.803	1.188	12.458
CI	Computer, electronic & opt. products	6,580	1,046	0.576	0.358	0.690	0.267	0.002	0.960	0.811	1.206	13.732
CJ	Electrical equipment	4,783	827	0.573	0.370	0.801	0.222	-0.011	1.011	0.632	1.645	9.448
CK	Machinery	17,628	2,528	0.613	0.325	0.711	0.236	0.043	0.990	0.775	1.216	12.809
CL	Transport equipment	7,798	1,127	0.635	0.311	0.730	0.252	0.005	0.987	0.859	1.169	12.401
CM	Other manufacturing	99,641	15,999	0.531	0.398	0.623	0.297	0.029	0.949	0.806	1.218	11.919
	All manufacturing	467,058	71,205	0.564	0.372	0.677	0.275	0.060	0.973	0.791	1.227	10.971
	F-Statistics		0	2,805.1	1,140.7	5,943.7	2,683.5	12,917.6	3,203.3	1,285.6	261.1	4,871.1
	R-squared			0.057	0.024	0.113	0.054	0.217	0.064	0.027	0.006	0.094

$N = 467,058$. Emp. stands for the number of workers in headcounts. Subscripts N and F stand for natives and foreign workers. α represent each factor's revenue share. θ are factor elasticities from a trans-log production function; factors $\in M, L^N, K$ are materials, native workers and capital; λ stands for revenue returns to scale; w represent observed hourly wage, in euros. These summary statistics include firms employing native workers exclusively, and exclude firms employing both native and foreign workers.

Table 4: First stage results for firms with both native and foreign workers. All variables both dependent and independent variables, are lagged one year ($t-1$). Dependent variable : Migration (EA).

	Parsimonious	Extended
Migration Z (EA)	0.222***	0.228***
	(0.00425)	(0.00451)
Income tax (EA)	-0.0188***	-0.0163***
	(0.00233)	(0.00233)
Real estate tax (EA)	0.00331***	0.00292***
	(0.000553)	(0.000576)
Unemployment rate (EA)	0.0885***	0.0891***
	(0.00829)	(0.00835)
Firm size (h)		0.0000747
		(0.0000620)
Firm market share (h)		0.0627
		(0.0503)
Share_h^F		0.000545**
		(0.000235)
Firm FE ν_i	YES	YES
Industry-year FE ν_{jt}	YES	YES
Region-year FE ν_{rt}	YES	YES
Observations	149147	138274
R^2	0.999	0.999
Adjusted R^2	0.999	0.999
Model F Statistic	856.6	460.7

Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the pre-sample period (1993–1999) with the growth in the total number of immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*.

Table 5: IV results for firms with both native and foreign workers. All explanatory variables are lagged one year ($t-1$).

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	2.226***	0.404	-1.822***	5.569***	1.565	-4.005***	0.0412
	(0.845)	(0.816)	(0.646)	(1.564)	(1.425)	(0.868)	(0.335)
Income tax (EA)	0.0148	-0.0376	-0.0525	0.0687	-0.0672	-0.136***	-0.0246
	(0.0453)	(0.0436)	(0.0362)	(0.0870)	(0.0750)	(0.0492)	(0.0191)
Real estate tax (EA)	0.0619***	0.0578**	-0.00411	0.0526	0.0379	-0.0147	0.00310
	(0.0210)	(0.0241)	(0.0193)	(0.0446)	(0.0407)	(0.0231)	(0.00990)
Unemployment rate (EA)	0.0466	0.132	0.0858	0.126	0.263	0.137	-0.0941
	(0.211)	(0.207)	(0.158)	(0.406)	(0.365)	(0.224)	(0.0896)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	149,147	149,147	149,147	149,147	149,147	149,147	149,147
R^2	-0.001	0.000	-0.001	-0.001	-0.000	-0.002	0.000
Adjusted R^2	-0.005	-0.005	-0.006	-0.006	-0.005	-0.007	-0.005
Model F Statistic	4.692	2.362	2.038	4.136	1.582	5.749	0.700
Kleib.-Paap LM Statistic	1,452.7	1,452.7	1,452.7	1,452.7	1,452.7	1,452.7	1,452.7
Cragg-Donald Wald Statistic	19,550.0	19,550.0	19,550.0	19,550.0	19,550.0	19,550.0	19,550.0
Kleib.-Paap rank Statistic	2,723.0	2,723.0	2,723.0	2,723.0	2,723.0	2,723.0	2,723.0

Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. All regressions include a full vector of firm and year fixed effects.All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same first stage equation, whose results is reported in column 1 of table 4.

Table 6: IV results for firms with both native and foreign workers with firm specific control variables. All explanatory variables are lagged one year ($t-1$).

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	2.334***	0.946	-1.388**	5.611***	1.659	-3.952***	0.163
	(0.854)	(0.824)	(0.662)	(1.569)	(1.402)	(0.893)	(0.333)
Income tax (EA)	-0.00175	-0.0293	-0.0275	0.0658	-0.0428	-0.109**	-0.0282
	(0.0447)	(0.0431)	(0.0361)	(0.0866)	(0.0732)	(0.0499)	(0.0190)
Real estate tax (EA)	0.0702***	0.0612**	-0.00901	0.0307	0.0163	-0.0144	0.00648
	(0.0207)	(0.0246)	(0.0203)	(0.0461)	(0.0412)	(0.0242)	(0.0102)
Unemployment rate (EA)	0.150	0.197	0.0469	0.141	0.156	0.0159	-0.135
	(0.211)	(0.210)	(0.160)	(0.411)	(0.365)	(0.229)	(0.0923)
Firm size (h)	0.0276***	0.0352***	0.00765***	-0.0111*	-0.00975*	0.00135	0.0181***
	(0.00420)	(0.00403)	(0.00256)	(0.00602)	(0.00563)	(0.00319)	(0.00137)
Firm market share (h)	1.140	-2.410**	-3.550***	13.40***	8.326*	-5.074***	-0.153
	(1.023)	(1.143)	(1.001)	(4.590)	(4.294)	(1.364)	(0.651)
Share_h^F	0.120***	0.138***	0.0179*	-0.665***	-0.690***	-0.0249**	0.0440***
	(0.0176)	(0.0163)	(0.0102)	(0.0212)	(0.0196)	(0.0127)	(0.00498)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	138,274	138,274	138,274	138,274	138,274	138,274	138,274
R^2	0.002	0.004	-0.000	0.017	0.022	-0.002	0.007
Adjusted R^2	-0.003	-0.001	-0.005	0.012	0.017	-0.007	0.002
Model F Statistic	17.51	20.88	3.452	145.3	179.3	5.976	34.75
Kleib.-Paap LM Statistic	1,362.3	1,362.3	1,362.3	1,362.3	1,362.3	1,362.3	1,362.3
Cragg-Donald Wald Statistic	18,744.9	18,744.9	18,744.9	18,744.9	18,744.9	18,744.9	18,744.9
Kleib.-Paap rank Statistic	2,556.8	2,556.8	2,556.8	2,556.8	2,556.8	2,556.8	2,556.8

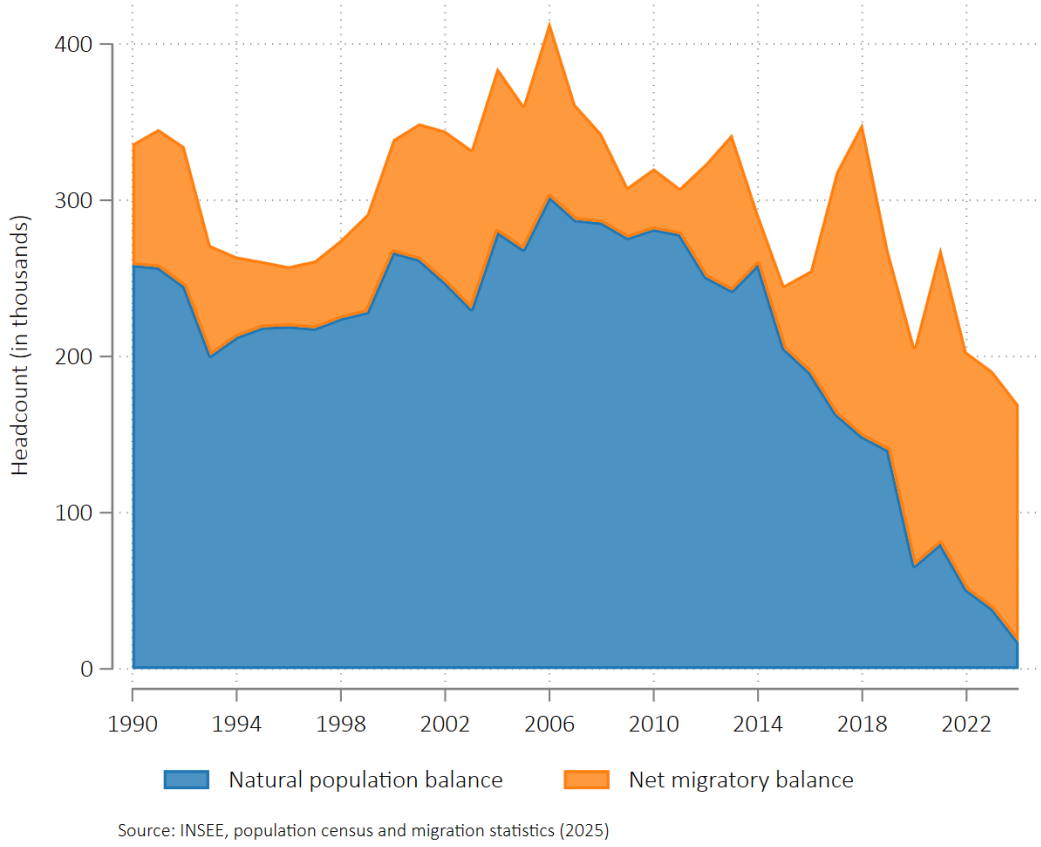
Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same first stage equation, whose results is reported in column 2 of table 4.

Table 7: IV results for firms with native workers exclusively. All explanatory variables are lagged one year $(t-1)$.

	Parsimonious model				Extended model			
	μ^N	MRP^N	w^N	μ^M	μ^N	MRP^N	w^N	μ^M
Migration (EA)	1.010^a	0.760	-0.250^a	0.904***^{na}	1.105*^{a}	0.800	-0.305^a	0.841***^{na}
	(0.651)	(0.660)	(0.419)	(0.302)	(0.659)	(0.666)	(0.449)	(0.289)
Income tax (EA)	-0.0210	-0.0128	0.00820	0.0111	-0.0299	-0.0193	0.0106	0.0173
	(0.0451)	(0.0451)	(0.0287)	(0.0190)	(0.0431)	(0.0425)	(0.0288)	(0.0181)
Real estate tax (EA)	-0.00188	-0.000911	0.000970	-0.00663	0.00725	0.0135	0.00622	-0.00209
	(0.0161)	(0.0162)	(0.0101)	(0.00706)	(0.0162)	(0.0161)	(0.0106)	(0.00653)
Unemployment rate (EA)	-0.144	-0.0931	0.0510	-0.0213	-0.161	0.00563	0.167	0.0524
	(0.186)	(0.186)	(0.115)	(0.0740)	(0.184)	(0.181)	(0.119)	(0.0702)
Firm size (h)					0.107***^{a}	0.117***^{a}	0.0105***^{a}	-0.00668***^{na}
					(0.00266)	(0.00275)	(0.00155)	(0.00104)
Firm market share (h)					8.132^a	-3.136^a	-11.27***	-7.417*^{na}
					(4.962)	(5.101)	(2.840)	(4.304)
Share$_h^F$					-0.00420^a	0.0178^a	0.0220***^{a}	-0.0327***^{na}
					(0.0128)	(0.0122)	(0.00791)	(0.00428)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES	YES
Observations	369,421	369,421	369,421	369,421	334,991	334,991	334,991	334,991
R^2	-0.000	-0.000	-0.000	-0.000	0.022	0.026	0.001	0.001
Adjusted R^2	-0.002	-0.002	-0.002	-0.002	0.020	0.024	-0.001	-0.001
Model F Statistic	1.012	0.522	0.199	2.994	263.9	294.2	8.998	17.71
Kleib.-Paap LM Statistic	4,339.4	4,339.4	4,339.4	4,339.4	3,759.5	3,759.5	3,759.5	3,759.5
Cragg-Donald Wald Statistic	75,957.1	75,957.1	75,957.1	75,957.1	67,938.5	67,938.5	67,938.5	67,938.5
Kleib.-Paap rank Statistic	7,805.3	7,805.3	7,805.3	7,805.3	6,594.4	6,594.4	6,594.4	6,594.4

Superscript a means that the corresponding estimated coefficient is significantly different at 10% level between firms with both native and foreign workers and firms with native workers only. Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. All regressions include a full vector of firm and year fixed effects. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same unreported first stage equation.

Figure 1: Sources of demographic balance in France



Source: INSEE, population census and migration statistics (2025)

Appendix A. OLS results

Table A1: OLS results for firms with both native and foreign workers. All explanatory variables are lagged one year ($t-1$).

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	0.220	-0.0730	-0.293	1.479***	0.305	-1.174***	-0.0754
	(0.270)	(0.256)	(0.191)	(0.508)	(0.456)	(0.280)	(0.0968)
Income taxes (EA)	-0.0331	-0.0490	-0.0160	-0.0290	-0.0973	-0.0683	-0.0274*
	(0.0409)	(0.0392)	(0.0324)	(0.0802)	(0.0686)	(0.0450)	(0.0165)
Real estate taxes (EA)	0.0582***	0.0569**	-0.00134	0.0452	0.0356	-0.00960	0.00288
	(0.0211)	(0.0242)	(0.0192)	(0.0446)	(0.0406)	(0.0231)	(0.00996)
Unemployment rate (EA)	0.163	0.160	-0.00292	0.363	0.337	-0.0268	-0.0873
	(0.201)	(0.198)	(0.150)	(0.388)	(0.352)	(0.212)	(0.0890)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	149,147	149,147	149,147	149,147	149,147	149,147	149,147
R^2	0.760	0.848	0.904	0.758	0.772	0.875	0.890
Adjusted R^2	0.720	0.823	0.888	0.717	0.734	0.854	0.872
F–Statistics	2.553	2.285	0.627	2.856	1.354	4.621	0.916

Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. Acronym FE stands for fixed effect. The constant is omitted for clarity. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level.

Table A2: OLS results for firms with both native and foreign workers. All explanatory variables are lagged one year ($t-1$). Unclean sample.

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	0.101	-0.179	-0.280	1.876***	0.760	-1.116***	-0.0775
	(0.288)	(0.273)	(0.190)	(0.601)	(0.552)	(0.290)	(0.0978)
Income taxes (EA)	-0.0121	-0.0274	-0.0153	-0.0573	-0.0918	-0.0345	-0.0273
	(0.0428)	(0.0411)	(0.0321)	(0.0968)	(0.0808)	(0.0535)	(0.0170)
Real estate taxes (EA)	0.0635***	0.0613**	-0.00219	0.0299	0.0229	-0.00697	0.00245
	(0.0229)	(0.0255)	(0.0191)	(0.0495)	(0.0456)	(0.0234)	(0.00992)
Unemployment rate (EA)	0.155	0.175	0.0204	0.400	0.425	0.0250	-0.0635
	(0.246)	(0.240)	(0.149)	(0.445)	(0.410)	(0.219)	(0.0890)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	151,363	151,363	151,363	151,363	151,363	151,363	151,363
R^2	0.721	0.816	0.904	0.699	0.700	0.868	0.887
Adjusted R^2	0.675	0.786	0.887	0.648	0.649	0.846	0.868
F–Statistics	2.121	1.990	0.584	3.151	1.402	3.734	0.810

Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. The constant is omitted for clarity. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level.

Table A3: OLS results for firms with both native and foreign workers with additional controls. All explanatory variables are lagged one year ($t-1$).

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	0.173	-0.173	-0.346*	1.300**	0.309	-0.991***	-0.0769
	(0.264)	(0.252)	(0.197)	(0.519)	(0.461)	(0.288)	(0.0985)
Income taxes (EA)	-0.0488	-0.0536	-0.00483	-0.0281	-0.0721	-0.0441	-0.0335**
	(0.0412)	(0.0396)	(0.0329)	(0.0807)	(0.0682)	(0.0460)	(0.0168)
Real estate taxes (EA)	0.0654***	0.0587**	-0.00673	0.0212	0.0133	-0.00790	0.00595
	(0.0208)	(0.0246)	(0.0202)	(0.0460)	(0.0411)	(0.0242)	(0.0103)
Unemployment rate (EA)	0.280	0.264	-0.0155	0.399	0.237	-0.161	-0.121
	(0.199)	(0.200)	(0.152)	(0.392)	(0.352)	(0.216)	(0.0920)
Firm size (h)	0.0279***	0.0354***	0.00750***	-0.0105*	-0.00955*	0.000927	0.0182***
	(0.00419)	(0.00403)	(0.00256)	(0.00600)	(0.00562)	(0.00318)	(0.00137)
Firm market share (h)	1.226	-2.365**	-3.591***	13.57***	8.380**	-5.192***	-0.143
	(1.012)	(1.141)	(0.996)	(4.471)	(4.261)	(1.326)	(0.648)
Share_h^F	0.121***	0.138***	0.0171*	-0.661***	-0.689***	-0.0272**	0.0442***
	(0.0176)	(0.0163)	(0.0102)	(0.0211)	(0.0196)	(0.0127)	(0.00498)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	138274	138274	138274	138274	138274	138274	138274
R^2	0.768	0.856	0.908	0.767	0.783	0.880	0.894
Adjusted R^2	0.727	0.831	0.891	0.726	0.744	0.858	0.875
F–Statistics	15.95	20.60	3.213	144.9	179.6	4.774	34.99

Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. The constant is omitted for clarity. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Firm size is the total of hours worked in the company (in logs). Firm market share is the firm share in hours worked within the employment area. Share^F represents the share of foreign workers within the company.

Table A4: OLS results for firms with both native and foreign workers with additional controls. All explanatory variables are lagged one year ($t-1$). Unclean sample.

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	0.0838	-0.236	-0.320	1.680***	0.776	-0.904***	-0.0768
	(0.285)	(0.272)	(0.196)	(0.617)	(0.562)	(0.300)	(0.0987)
Income taxes (EA)	-0.0282	-0.0319	-0.00371	-0.0688	-0.0785	-0.00974	-0.0328*
	(0.0430)	(0.0414)	(0.0326)	(0.0982)	(0.0817)	(0.0551)	(0.0174)
Real estate taxes (EA)	0.0698***	0.0622**	-0.00754	-0.000155	-0.00605	-0.00589	0.00539
	(0.0230)	(0.0262)	(0.0201)	(0.0516)	(0.0469)	(0.0246)	(0.0103)
Unemployment rate (EA)	0.224	0.235	0.0110	0.413	0.304	-0.109	-0.0971
	(0.245)	(0.241)	(0.151)	(0.455)	(0.419)	(0.223)	(0.0920)
Firm size (h)	0.0249***	0.0329***	0.00796***	-0.0103	-0.00640	0.00386	0.0178***
	(0.00462)	(0.00452)	(0.00254)	(0.00710)	(0.00682)	(0.00333)	(0.00138)
Firm market share (h)	2.288*	-1.086	-3.374***	16.83***	11.63**	-5.203***	0.128
	(1.219)	(1.418)	(1.022)	(5.342)	(5.158)	(1.357)	(0.673)
Share_h^F	0.0862***	0.103***	0.0164	-0.620***	-0.632***	-0.0122	0.0438***
	(0.0200)	(0.0187)	(0.0105)	(0.0235)	(0.0218)	(0.0130)	(0.00498)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	140,370	140,370	140,370	140,370	140,370	140,370	140,370
R^2	0.729	0.824	0.907	0.706	0.707	0.873	0.891
Adjusted R^2	0.682	0.794	0.891	0.654	0.656	0.851	0.872
F–Statistics	9.468	11.90	3.058	104.9	123.8	3.701	33.26

Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. The constant is omitted for clarity. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Firm size is the total of hours worked in the company (in logs). Firm market share is the firm share in hours worked within the employment area. Share^F represents the share of foreign workers within the company.

Appendix B. IV results on complete sample

This section replicates the main results from the regression analysis on the complete sample, that is before any trimming of outliers in terms of labor and material wedges. Results are broadly in line with those reported in the main text.

Table B1: IV results for firms with both native and foreign workers. All explanatory variables are lagged one year ($t-1$). Complete sample.

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	1.532*	-0.267	-1.799***	6.214***	2.230	-3.984***	-0.0175
	(0.900)	(0.863)	(0.648)	(1.782)	(1.646)	(0.882)	(0.334)
Income tax (EA)	0.0222	-0.0295	-0.0517	0.0466	-0.0566	-0.103*	-0.0259
	(0.0479)	(0.0462)	(0.0360)	(0.104)	(0.0876)	(0.0572)	(0.0195)
Real estate tax (EA)	0.0662***	0.0611**	-0.00504	0.0380	0.0257	-0.0123	0.00256
	(0.0228)	(0.0255)	(0.0192)	(0.0496)	(0.0457)	(0.0234)	(0.00987)
Unemployment rate (EA)	0.0708	0.180	0.109	0.146	0.339	0.193	-0.0670
	(0.255)	(0.248)	(0.157)	(0.463)	(0.424)	(0.230)	(0.0897)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	151,363	151,363	151,363	151,363	151,363	151,363	151,363
R^2	-0.000	0.000	-0.001	-0.001	-0.000	-0.002	0.000
Adjusted R^2	-0.005	-0.004	-0.006	-0.005	-0.005	-0.007	-0.005
Model F Statistic	3.127	1.818	1.959	3.885	1.462	5.258	0.594
Kleib.-Paap LM Statistic	1,472.3	1,472.3	1,472.3	1,472.3	1,472.3	1,472.3	1,472.3
Cragg-Donald Wald Statistic	20,033.7	20,033.7	20,033.7	20,033.7	20,033.7	20,033.7	20,033.7
Kleib.-Paap rank Statistic	2,768.4	2,768.4	2,768.4	2,768.4	2,768.4	2,768.4	2,768.4

Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same first stage equation, whose results is reported in column 1 of table B3.

Table B2: IV results for firms with both native and foreign workers with firm specific control variables. All explanatory variables are lagged one year ($t-1$). Complete sample.

	Native workers			Foreign workers			
	μ^N	MRP^N	w^N	μ^F	MRP^F	w^F	μ^M
Migration (EA)	1.583*	0.304	-1.279*	6.575***	2.795*	-3.780***	0.143
	(0.916)	(0.881)	(0.659)	(1.798)	(1.643)	(0.900)	(0.333)
Income tax (EA)	0.00443	-0.0201	-0.0246	0.0377	-0.0346	-0.0723	-0.0280
	(0.0471)	(0.0455)	(0.0358)	(0.105)	(0.0873)	(0.0583)	(0.0195)
Real estate tax (EA)	0.0731***	0.0634**	-0.00970	0.0109	-0.00150	-0.0124	0.00588
	(0.0228)	(0.0261)	(0.0201)	(0.0517)	(0.0470)	(0.0245)	(0.0102)
Unemployment rate (EA)	0.133	0.202	0.0692	0.117	0.182	0.0653	-0.110
	(0.256)	(0.251)	(0.159)	(0.475)	(0.433)	(0.237)	(0.0924)
Firm size (h)	0.0247***	0.0328***	0.00810***	-0.0110	-0.00668	0.00427	0.0177***
	(0.00463)	(0.00452)	(0.00255)	(0.00713)	(0.00683)	(0.00334)	(0.00138)
Firm market share (h)	2.233*	-1.106	-3.339***	16.65***	11.55**	-5.097***	0.120
	(1.230)	(1.420)	(1.025)	(5.469)	(5.205)	(1.392)	(0.676)
Share_h^F	0.0849***	0.102***	0.0172	-0.624***	-0.634***	-0.00976	0.0437***
	(0.0200)	(0.0187)	(0.0105)	(0.0236)	(0.0219)	(0.0130)	(0.00498)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES
Observations	140,370	140,370	140,370	140,370	140,370	140,370	140,370
R^2	0.001	0.002	-0.000	0.009	0.011	-0.002	0.007
Adjusted R^2	-0.004	-0.003	-0.005	0.004	0.006	-0.007	0.002
Model F Statistic	10.09	11.71	3.231	105.0	123.3	4.988	33.06
Kleib.-Paap LM Statistic	1,391.3	1,391.3	1,391.3	1,391.3	1,391.3	1,391.3	1,391.3
Cragg-Donald Wald Statistic	19,183.0	19,183.0	19,183.0	19,183.0	19,183.0	19,183.0	19,183.0
Kleib.-Paap rank Statistic	2,613.5	2,613.5	2,613.5	2,613.5	2,613.5	2,613.5	26,13.5

Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same first stage equation, whose results is reported in column 2 of table B3.

Table B3: First stage results for firms with both native and foreign workers. All variables both dependent and independent variables, are lagged one year ($t-1$). Dependent variable : Migration (EA). Complete sample.

	Parsimonious	Extended
Migration Z (EA)	0.223***	0.229***
	(0.00423)	(0.00447)
Income tax (EA)	-0.0188***	-0.0163***
	(0.00231)	(0.00231)
Real estate tax (EA)	0.00327***	0.00288***
	(0.000548)	(0.000571)
Unemployment rate (EA)	0.0889***	0.0898***
	(0.00821)	(0.00825)
Firm size (h)		0.0000714
		(0.0000607)
Firm market share (h)		0.0600
		(0.0496)
Share_h^F		0.000576**
		(0.000232)
Firm FE ν_i	YES	YES
Industry-year FE ν_{jt}	YES	YES
Region-year FE ν_{rt}	YES	YES
Observations	151,363	140,370
R^2	0.999	0.999
Adjusted R^2	0.999	0.999
Model F Statistic	870.0	471.4

Robust standard errors are reported in parentheses. * $p \leq 0.1$, ** $p \leq 0.05$, *** $p \leq 0.01$. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth in the total number of immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*.

Table B4: IV results for firms with native workers exclusively. All explanatory variables are lagged one year ($t-1$). Complete sample.

	Parsimonious model				Extended model			
	μ^N	MRP^N	w^N	μ^M	μ^N	MRP^N	w^N	μ^M
Migration (EA)	1.419*	1.132	-0.288^a	0.888***^{a}	1.182	0.843	-0.340^a	0.822***^{a}
	(0.743)	(0.749)	(0.420)	(0.302)	(0.754)	(0.757)	(0.450)	(0.288)
Income tax (EA)	-0.00887	-0.00196	0.00690	0.0115	-0.0257	-0.0164	0.00936	0.0166
	(0.0528)	(0.0527)	(0.0289)	(0.0190)	(0.0504)	(0.0496)	(0.0289)	(0.0181)
Real estate tax (EA)	0.00272	0.00497	0.00225	-0.00611	0.0115	0.0186	0.00714	-0.00168
	(0.0191)	(0.0192)	(0.0102)	(0.00705)	(0.0191)	(0.0191)	(0.0107)	(0.00652)
Unemployment rate (EA)	-0.0715	-0.0330	0.0385	-0.0308	-0.145	0.0168	0.162	0.0432
	(0.221)	(0.221)	(0.116)	(0.0740)	(0.219)	(0.216)	(0.120)	(0.0703)
Firm size (h)					0.126***^{a}	0.137***^{a}	0.0107***^{a}	-0.00727***^{a}
					(0.00336)	(0.00340)	(0.00154)	(0.00102)
Firm market share (h)					14.39**^{a}	2.428	-11.97***^{a}	-7.339*^{a}
					(6.542)	(6.171)	(2.745)	(4.063)
Share$_h^F$					-0.0195^a	0.00307^a	0.0226***	-0.0312***^{a}
					(0.0152)	(0.0146)	(0.00790)	(0.00426)
Firm FE ν_i	YES	YES	YES	YES	YES	YES	YES	YES
Industry-year FE ν_{jt}	YES	YES	YES	YES	YES	YES	YES	YES
Region-year FE ν_{rt}	YES	YES	YES	YES	YES	YES	YES	YES
Observations	371,936	371,936	371,936	371,936	337,173	337,173	337,173	337,173
R^2	-0.000	-0.000	-0.000	-0.000	0.021	0.024	0.001	0.001
Adjusted R^2	-0.002	-0.002	-0.002	-0.002	0.019	0.022	-0.001	-0.001
Model F Statistic	1.155	0.693	0.227	2.813	223.5	252.2	9.639	18.80
Kleib.-Paap LM Statistic	4,360.0	4,360.0	4,360.0	4,360.0	3,777.0	3,777.0	3,777.0	3,777.0
Cragg-Donald Wald Statistic	76,397.9	76,397.9	76,397.9	76,397.9	68,395.5	68,395.5	68,395.5	68,395.5
Kleib.-Paap rank Statistic	7,864.3	7,864.3	7,864.3	7,864.3	6,650.5	6,650.5	6,650.5	6,650.5

Superscript a means that the corresponding estimated coefficient is significantly different between firms with both native and foreign workers and firms with native workers only. Robust standard errors are reported in parentheses. * p $\leq$ 0.1, ** p $\leq$ 0.05, *** p $\leq$ 0.01. All regressions include a full vector of firm and year fixed effects. All year fixed effects are specific to the industry and the region. (EA) means that the variable is measured at the level of the local employment area. (h) means that variables are measured in the number of hours worked. Migration (EA) is the share of foreign workers in employment area. Income taxes is the income tax per capita in the employment area of interest. Real estate taxes (EA) is the average real estate tax per household. Unemployment rate is measured at the employment area level. Endogeneous variable Migration (EA) is instrumented using the Bartik (1991) instrument combining geographical variation in the share of country-specific immigrants during the presample period (1993–1999) with the growth rate of total immigrants in France from each origin country. Information about country origins comes from the annual labor market survey *Enquête Emploi*. All regressions share the same unreported first stage equation.