

# Skilled immigration: A solution to labor shortages?

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France experienced a sharp increase in labor shortages in the early 2000s. Between 2003 and 2007, the share of occupations with more job offers than qualified applicants doubled from 15% to 30%. To address these recruitment difficulties, which are concentrated in technical professions, the French government introduced a decree in 2008 to facilitate the hiring of non-European workers with relevant qualifications. This policy brief summarizes the lessons to be learned from the effects of this policy.

The reform has allowed employers to hire more workers in the targeted professions and has increased the number of jobs filled. It has thus fulfilled its mission of reducing shortages. This has led to a fall in wages in these occupations, but this decline has affected foreign nationals much more than French employees. Firms that were previously constrained by shortages in these occupations have increased their size and turnover, but do not appear to have increased either their productivity or their level of capital investment. The effects on aggregate growth in the sector and employment zone were positive but short-lived, raising the question of what tools are needed to sustain the benefits.

- The hiring of foreign workers in the target occupations increased by more than 50% as a result of the reform, the hiring of French workers remained unchanged, and total employment in these occupations increased by about 1.4%.
- The average wage of foreign workers in the target occupations fell by 3.3%, while the average wage of French workers in these same occupations did not change. The starting salary of foreigners fell by 14% and that of the French by 7%.
- On average, the companies affected by the reform increased by about 1.4% in size, and by 1.3% in turnover and value added. There was no significant effect on productivity or capital investment.



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The rapid growth of new production technologies has created a rising demand for jobs with a strong technical component, a demand that is growing faster than the national workforce with the necessary qualifications. To meet these requirements, many industrialized countries have implemented policies to attract skilled workers, in a global competition for talent. Recent years have also seen the emergence of movements opposing these measures, in an effort to protect domestic workers from competition with migrants. Despite the importance of this debate in the political arena, studies that have examined the effect of these reforms remain scarce.

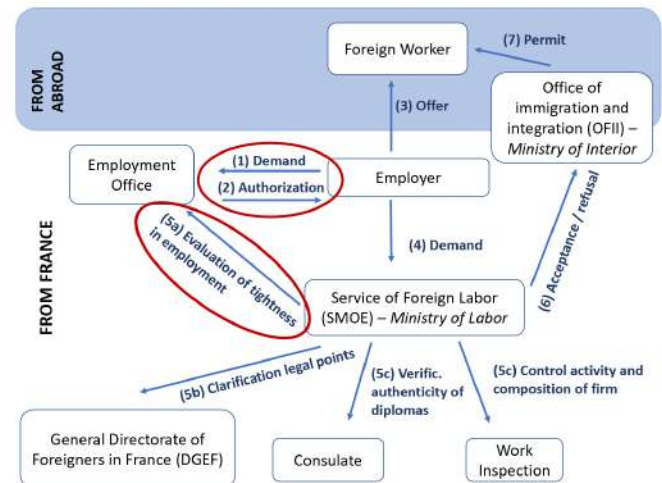
Despite an unemployment rate consistently above 7% since the early 1980s, France is not exempt from labor shortages in some key areas.<sup>1</sup> To facilitate companies' access to these scarce skills, the government introduced a decree in 2008 to simplify the hiring of foreign workers for a list of occupations experiencing shortages.<sup>2</sup> This policy brief assesses the effectiveness of this policy as well as the potential costs to resident workers of increased competition in the labor market.<sup>3</sup>

## The 2008 decree

In France, labor law gives priority to resident workers and European Union nationals. If an employer wishes to hire a non-EU national who does not have a work permit – either because they reside abroad or because they are in France on a student visa – they must complete an administrative procedure that can be lengthy and costly (Figure 1).

In January 2008, the French government issued a decree relaxing the procedure for hiring foreign workers for a list of 30 occupations suffering from labor shortages, with the objective of facilitating companies' access to these key skills. In particular, the reform abolishes two steps in the process. First, the employer no longer needs to prove that they have conducted a thorough search with the French employment agency (Pôle Emploi) before receiving authorization to make an offer to a non-European candidate. Second, the employment situation test, which consists of verifying that the occupation is experiencing a shortage at the time of the offer, is no longer required. Box 1 details

Figure 1: Application for first hire of a non-European worker



Source: OECD (2017). Recruitment of immigrant workers: France 2017. Interpretation: Procedure applying to non-European workers without work authorization in France. The official processing time is set at two months. In red, the two stages made more flexible by the reform.

the criteria used to measure tensions in the labor market and to define the list of occupations selected by the reform.

This decree is part of a larger effort to reform France's economic immigration policy. In particular, the task force in charge of the reform established at the same time an expanded list of occupations for which hiring conditions have been relaxed for nationals of European countries subject to transitional regulations.<sup>4</sup> This second list includes the 30 occupations open to all non-EU nationals and adds 120 additional occupations selected on the basis of the same criteria related to market tensions. The fact that both lists include occupations that are similar in terms of their exposure to labor shortages allows for comparisons that are useful for understanding the effects of the reform (this method is detailed in Box 2).

## Technical professions are targeted by the reform

The 30 occupations covered by the reform represent about 10% of private-sector employment in France. Figure 2 describes the distribution of this employment by major occupational categories.

The three largest categories are technicians, engineers, and intermediate administrative and commercial professions (about 70% of employment covered by the reform). In terms of specific skills, the most important are electricity and electronics, mechanics and metalworking, con-

<sup>4</sup>At the time of the reform, these countries include Bulgaria and Romania, which joined the EU in 2007 but did not immediately gain access to free movement of workers.

<sup>1</sup>INSEE unemployment data according to the ILO definition.

<sup>2</sup>Decree of January 18, 2008 concerning the issuance, without opposition regarding the employment situation, of work permits to foreigners who are not nationals of a member state of the EU, of another state party to the EEA, or of the Swiss Confederation, JORF n°0017 of January 20, 2008, Text n°9. ([Link legifrance](#)).

<sup>3</sup>It should be noted that an alternative policy to deal with labor shortages would be to increase the supply of training in the relevant areas. Evaluating the effect of such an alternative policy, and the trade-off between these two possible solutions, is beyond the scope of this study and is not considered here, but it remains important to ask how these two types of measures could best be combined.

**Box 1 : Measuring shortages in each profession**

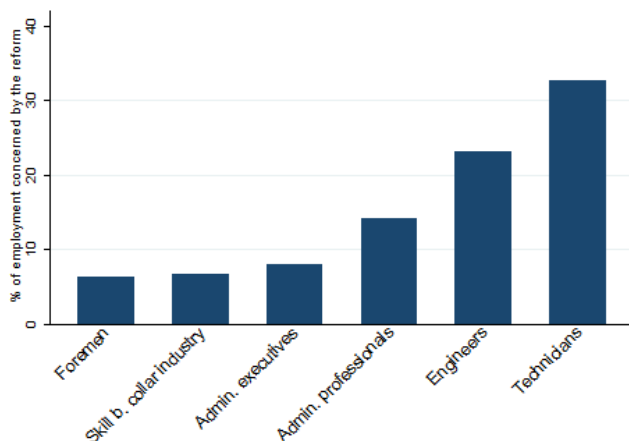
In France, there are two main ways to assess labor shortages in each occupation or sector. The first is to use surveys on labor requirements conducted among company managers. The second is based on the stress indicators collected by Pôle Emploi, which are calculated on the basis of the characteristics of its published job offers and registered job seekers. The authors of the reform selected the occupations on the basis of this second set of measures, which are available on a quarterly basis for each detailed category of occupations and for each geographical area. The criteria used are as follows:

**List of tension indicators considered by the reform**

- Ratio between the number of job offers and the number of applicants with the necessary skills.
- Number and recent evolution of job offers.
- Number and recent evolution of job seekers.
- Turnover rate of job seekers at the end of the month.
- Share of long-term contracts among job offers.

The reform's list of 30 occupations was initially determined at the national level. In a second phase, each region selected a sub-sample of this initial list on the basis of the market tensions observed at the local level. However, in addition to the use of these criteria, the list was finalized following negotiations with social partners, including unions and employer associations, which sometimes considered factors other than the indicators mentioned here.

**Figure 2: Occupational categories affected by the reform**

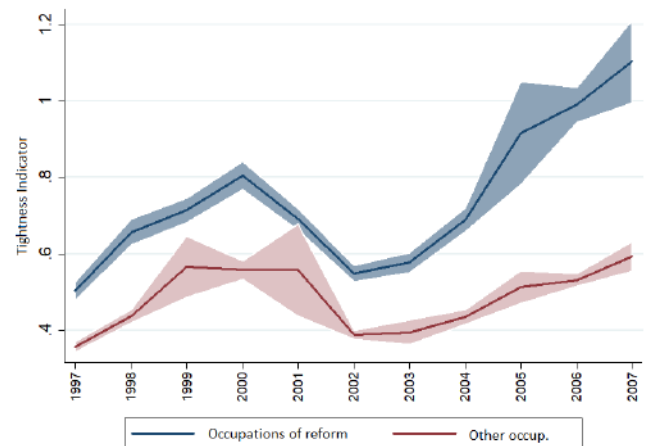


Notes: Graph obtained from data in the French employment survey (Enquête Emploi). Interpretation: The figure shows the distribution of employment under the reform by major occupational categories. Categories with less than 5% of employment related to the reform are excluded.

struction work, and information technology. These are occupations with a strong technical component, which require a higher level of specialization than that provided by secondary education.

The targeted occupations are characterized by a structurally higher level of labor market tension than other jobs in the same occupational categories, as described in Figure 3. In addition, these occupations experienced a sharp increase in labor shortages in the four years preceding the reform, reaching a tension level of more than 1, which means that on average there are more job offers available than qualified job seekers to fill them.

**Figure 3: Evolution of level of tension**



Notes: Graph obtained from stress indicators collected by Pôle Emploi (see Box 1). Interpretation: The figure shows the evolution of the average level of labor market tension in the reform professions in relation to other professions in the same occupational categories (*cadres/managers* and intermediate professions). The colored area represents the 95% confidence interval. A tension level greater than 1 indicates that there are more job offers than applicants with the necessary skills in the occupation.

**Limited effects on French workers**

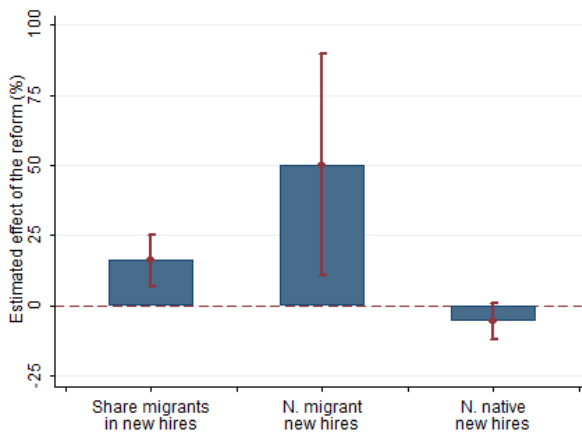
The stated objective of the reform was to increase companies' access to a workforce with rare and highly sought-after skills. Has it been able to increase employment in these occupations? Has it generated increased competition for workers already in the country?

From the point of view of the classical economic model, this reform can be seen as a positive shock to the supply of workers in the labor market. Thus, one would expect an increase in employment and a decrease in wages for workers in these occupations. To empirically evaluate

these effects, we adopt a "difference-in-differences" empirical strategy (see Box 2). This allows us to analyze the effect of the reform on employment and wages in the target occupations, by comparing their evolution before and after the reform with that of a group of control occupations.

Figure 4 shows the estimated effect of the reform on hiring during the three years following the reform. The share of foreign workers among new hires in the occupations concerned increased by about 16% compared to the pre-reform level. The number of foreign workers hired in these occupations increased by 50%, while the number of French workers hired in these same occupations remained stable. These results confirm that companies have taken advantage of lower administrative costs by hiring more immigrant workers, without affecting work opportunities for French workers.

Figure 4: Effect of reform on hiring

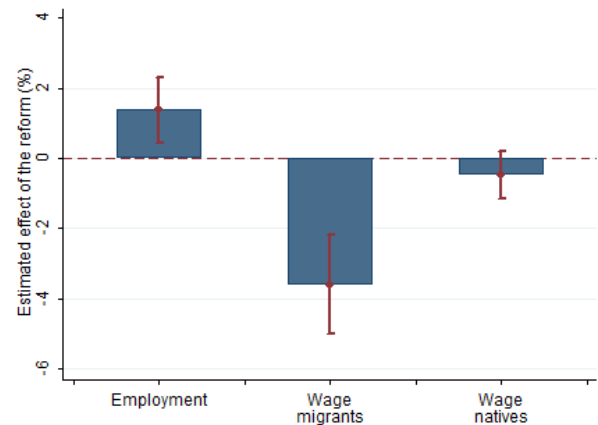


Notes: This graph is obtained using DMMO-EMMO data and shows the effect of the reform estimated using the regression presented in Box 2 on the hiring variables. Interpretation: The vertical bars represent the 95% confidence interval. The value should be interpreted in terms of growth relative to the pre-reform average for the first three years after the reform. For example, the reform increased the share of foreigners in hiring for the reform occupations by about 16%.

Figure 5 shows the effect on employment and on the average wage of foreign and French workers. Employment in these occupations has increased by about 1.4%, which suggests that the reform has partly reduced the problem of shortages. Applying this result directly to the initial level of tension observed, this corresponds to a decrease of about 4% in the level of tension as a result of the reform.<sup>5</sup> The analysis of wages shows that the reform had a negative impact on the wages of foreigners in these occupations (by about -3.3%) while the average wage of French workers was not significantly affected. By restricting the analysis to entry-level wages – which are more likely to react in the short term – we observe downward pressure on wages of both French and foreign workers. Nevertheless, the decline in hiring wages for migrants

is twice as strong as for nationals (-14% versus approximately -7%).<sup>6</sup> This result is surprising because it shows that foreign employees are much more exposed to increased competition than French employees, despite the fact that they are hired in the same type of occupation.

Figure 5: Effect of reform on employment and wages



Notes: This graph is obtained using DADS data and shows the effect of the reform estimated using the regression described in Box 2 on the employment and wage variables. Interpretation: The vertical bars represent the 95% confidence interval. The value should be interpreted in terms of a percentage effect relative to the pre-reform average. For example, the reform increased employment in the reformed occupations by about 1.5%.

Analysis of the mechanisms that may explain this differential impact reveals the presence of two related explanatory factors.<sup>7</sup> The first is that, even within a given occupation, French and immigrant workers retain a comparative advantage by specializing in different tasks. For example, among industrial technicians, it is possible that French workers specialize more in supervisory and communication tasks, while foreigners are more likely to be involved in tasks related to the operation of machines.<sup>8</sup> These differences in comparative advantage mean that foreigners residing in France are more directly exposed to competition from new immigrants than are national workers, which may explain the greater decline in their wages. The second explanatory factor is related to differences in bargaining power. Immigrants on economic visas are closely tied to their employers, as any change of firm must be accompanied by a new visa application. This constraint gives the employer more power to lower the wages of foreigners because they are limited in their mobility. In contrast, French workers are much freer to change employers, and consequently retain greater bargaining power over their wages.

<sup>6</sup>Results are available in the reference article.

<sup>7</sup>Results on the mechanisms are available in the reference article.

<sup>8</sup>Peri & Sparber (2009) show in the US context that immigrants specialize more in manual and physical tasks, while nationals tend to specialize in language and communication tasks. We show that new migrants have a production role more similar to that of foreigners already in the country than to that of the French.

<sup>5</sup>This result is obtained by subtracting the number of jobs created from the number of vacancies in the numerator of the tension indicator.

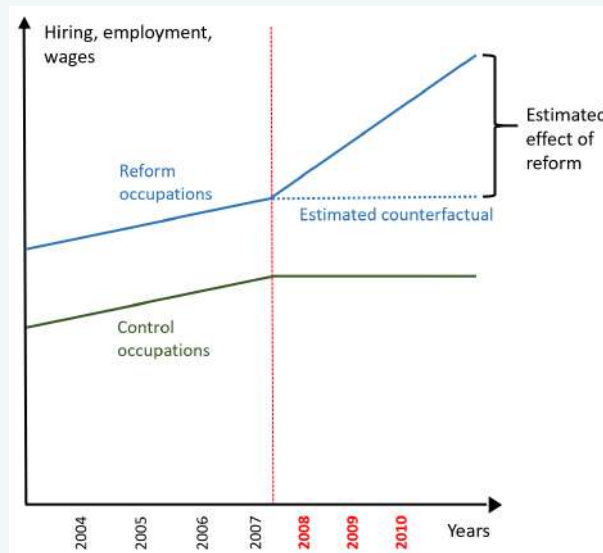
**Box 2 : Empirical strategy for assessing the effect of competition on workers**

**Empirical strategy:** The empirical analysis is based on a difference-in-differences strategy in which the group of 30 occupations affected by the reform (treatment group) is compared to the group of occupations included in the extended list that is open only to Romanian and Bulgarian nationals (control group). The main assumption underlying this approach is that employment and wages in the treatment occupations would have evolved similarly to the control occupations in the absence of the reform, making the control occupations a good counterfactual (see Figure A). This assumption is justified by the fact that both lists are defined on the basis of the same stress indicators and are therefore subject to comparable labor shortages, but while the treated occupations are open to all foreign nationals as of 2008, the control occupations are liberalized to a much lesser extent. The regression model adopted is as follows:

$$Y_{o,i,t} = \beta_0 + \beta_1 D_o + \beta_2 D_o * Post_t + \beta_3 X_{o,i,r,s,t} + \epsilon_{o,i,t}$$

$Y_{oit}$  represents the hiring, job supply, and wages of French and foreign workers observed in occupation  $o$ , establishment  $i$  and year  $t$ .  $D_o$  is an indicator that takes the value of 1 for the group of treated occupations and 0 for the control occupations.  $\beta_2$  is the coefficient associated with the interaction between the treatment indicator  $D_o$  and the post-reform period  $Post_t$ , and it allows for the estimated policy effect to be captured.  $X_{o,i,r,s,t}$  is a matrix of control variables that includes the level of tension observed for each occupation and region prior to the reform, the size of the establishment prior to the reform, and several levels of fixed effects. The analysis is restricted to private-sector establishments with at least 20 employees and the period considered is 2004-2010.

**Figure A - Representation of the empirical strategy**



**Databases used:**

- Déclaration et l' Enquête sur les Mouvements de Main d'Oeuvre (DMMO-EMMO).
- 1/12th sample from Déclarations des Données Sociales (DADS).
- Tension indicators produced by Pôle Emploi.

**Mixed results on company performance**

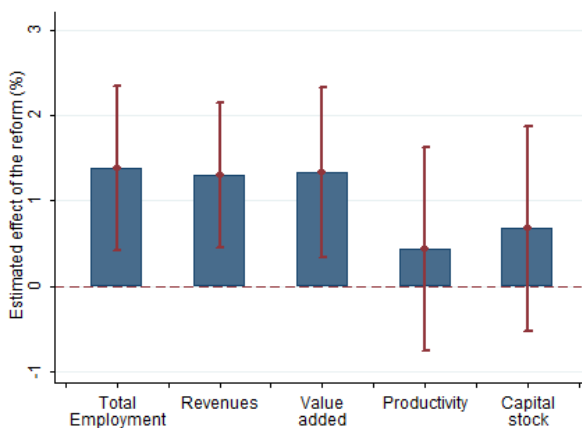
To obtain a comprehensive assessment of the effectiveness of this policy, we can ask whether it has had beneficial effects on the performance of firms that were previously constrained by shortages in these occupations. This makes it possible to indirectly assess the extent of the costs that these tensions impose on the functioning of the

economy. Two possible scenarios can be distinguished. In the first, firms were able to cope with the shortage in certain skills by adapting their production methods; for example, by investing in industrial machinery capable of doing some of this work, or by training workers in these trades themselves. In this scenario, it is expected that the reform will not have had a very large impact on their overall performance, but rather an effect of readjusting production patterns. In the second scenario, the shortage in these skills was a source of real bottlenecks in the

production process. If this were the case, we would expect the reform to have had a considerable effect on the growth capacity of the affected firms. To determine which of these scenarios corresponds to reality, we compare the evolution of firms' performance according to their level of exposure to the reform, or in other words, according to the level of tension in the target occupations that firms face in their sector and employment zone (this empirical approach is detailed in Box 3).

Figure 6 shows the results obtained on the main indicators of company performance. These effects were measured three to four years after the introduction of the decree. A firm with an average level of exposure to the reform experienced an increase of about 1.4% in size and about 1.3% in turnover and value added. The reduction of labor shortages in the relevant technical skills has thus enabled company activity to grow substantially. However, we can also see that there was no significant effect on firm productivity – at least not after three to four years – and no significant increase in capital investment.

Figure 6: Effect of reform on firm performance



Notes : This graph is obtained using DADS data cross-tabulated with FICUS-FARE data and shows the effect of the reform estimated using the regression set out in Box 3 on firm performance variables. Interpretation: The vertical bars represent the 95% confidence interval. The value should be interpreted in terms of the percentage effect for a firm at the average exposure level. Thus, the reform increased the size of a firm at the average exposure by about 1.3%.

These average effects, measured on all single-establishment firms in the private sector, mask significant heterogeneity.<sup>9,10</sup> In particular, this reform has favored the growth of small and/or young firms. Large firms, even when located in a sector and a zone particularly affected by the shortage, do not seem to react by hiring more workers in the occupations targeted by the reform. This may be because they already had the means to access foreign labor by paying high administrative costs, and thus were relatively less constrained by the administra-

tive hurdles removed by the reform. Less productive firms, and those located in less dynamic areas, experience a larger than average improvement in performance, and even show productivity gains. This suggests that the reform has helped to reduce inequalities in performance between different actors in the private sector.

The last part of the analysis consists of examining whether these positive effects remain visible at a more aggregate level, or whether the policy has simply helped some actors at the expense of others, resulting in a zero-sum game. To do so, we apply the same empirical strategy described in Box 3, but we analyze the effect on the total performance of the sector and the employment zone. These results show that the positive effects on job growth and turnover are initially visible at the aggregate level, but disappear after the first two years, while the affected firms continue to benefit. The reason for this difference is that by allowing the most vulnerable firms to survive more, the reform has indirectly increased the barriers to entry for new firms. In the most exposed sectors and employment zones, we measure an increase in the survival rate, which is accompanied by a decrease in the rate of new business creation by roughly the same amount. These latest results therefore reveal the limits of this policy in terms of its ability to generate aggregate benefits for the entire economy.

## Conclusion

The results of these two studies suggest that easing the administrative costs of hiring non-European workers can be an effective way to counter labor shortages in certain technical occupations that are valuable for economic growth. Increasing competition for workers already in the country mostly penalizes foreigners who arrived in previous waves of immigration, rather than French workers. Ultimately, firms requiring these skills to operate experience improved performance, indicating that shortages were a source of real bottlenecks. Nevertheless, the benefits at the aggregate level are short-lived for the sector and employment area, as support for the most vulnerable firms already in the market generates a decline in the rate of new business creation.

One potential criticism of the policy is that the list has never been updated – at the time of writing of this policy brief – even though the occupations experiencing labor shortages have changed since 2008. To maximize its effectiveness, one solution would be to implement a periodic review process, similar to the system in place in the United Kingdom, for example.

In the longer term, we can ask whether a policy based solely on attracting foreign labor might not reduce the incentives for adapting the education system to train more students in these skills. This question requires further

<sup>9</sup>This excludes firms – usually larger ones – that have multiple establishments. This exclusion is due to data limitations, as explained in Box 3.

<sup>10</sup>Results are available in the reference article.

### Box 3 : Empirical strategy for assessing the effect on firm performance

**Empirical strategy:** The empirical analysis is based on a difference-in-differences strategy with a continuous treatment that compares the evolution of the performance of firms according to the level at which they were exposed to the policy. A given firm is more exposed to the reform the more it was constrained by the shortage in the relevant occupations. To define the level of constraint at the level of each employer, it would be necessary to observe the extent of its unfilled demand in these skills. Since the latter is, by definition, unobservable, we define exposure to the reform according to the level of tension in the target occupations observed in the sector and employment zone in which each firm operates ( $Tension_{zs}$ ):

$$Tension_{zs} = \sum_{o=1}^{30} \omega_{ozs} \Theta_{or}$$

where  $\Theta_{or}$  represents the observed tension indicator in occupation  $o$  and in region  $r$  during the years before the reform, and  $\omega_{ozs}$  represents the importance of occupation  $o$  for jobs in employment zone  $z$  and sector  $s$ . This measure of exposure to the reform is then used in the following regression model:

$$Y_{i,z,s,t} = \beta_0 + \beta_1 Tension_{z,s} * Post_t + \beta_2 \mathbf{X}_{i,z,s,t} + \epsilon_{i,z,s,t}$$

where  $Y_{i,z,s,t}$  represents the performance of firm  $i$  active in employment zone  $z$  and sector  $s$  in year  $t$ .  $\beta_1$  covers the differential effect of the reform according to the prior level of exposure  $Tension_{z,s}$ , and  $\mathbf{X}_{i,z,s,t}$  introduces a series of control variables including the evolution of tensions in unaffected occupations, and fixed effects by firm ( $i$ ), by employment zone interacted with sector ( $z, s$ ), and by sector interacted with year ( $s, t$ ). The identification hypothesis is therefore based on the fact that firms active in the same sector and located in employment zones with tension levels that differ in the reform occupations, but which are similar for all other jobs, would have evolved in a comparable manner in the absence of the policy. The analysis is restricted to single-establishment private-sector firms with more than 10 employees.<sup>a</sup>

#### Databases used:

- Postes des Déclarations des Données Sociales (DADS).
- Company accounting results (FICUS-FARE).
- Tension indicators produced by Pôle Emploi.

<sup>a</sup>Multi-establishment companies are excluded because it is not possible to define a single sector and employment zone for them. In addition, it is not possible to perform the analysis at the establishment level because FICUS-FARE performance data are only reported at the aggregate level.

analysis beyond the scope of this study.

## Author

Sara Signorelli is a PhD student at the Paris School of Economics and is affiliated with the Labor Chair.

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The arguments developed here are taken from the following articles:

Sara Signorelli. Do Skilled Migrants Compete with Native Workers? Analysis of a Selective Immigration Policy. 2020. (halshs-01983071v3)

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