Immigrants and firms' outcomes: Evidence from France

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\section{A B S T R A C T}

In this paper we analyze the impact of an increase in the local supply of immigrants on firms' outcomes, allowing for heterogeneous effects across firms. Using micro-level data on French manufacturing firms spanning the period 1995–2005, we show that a supply-driven increase in the share of foreign-born workers in a French \textit{département} (a small geographic area) increased the total factor productivity of firms in that \textit{département}. We also find this effect to be significantly stronger for firms with low initial productivity and small size. The positive productivity effect of immigrants was also associated with faster growth of capital, larger exports, and higher wages for natives. Highly-skilled natives, in competition with immigrants, moved towards firms hiring fewer immigrants spreading positive productivity effects to those firms too.

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\section{1. Introduction}

This paper estimates the effects of an increase in the supply of immigrant workers on firm-level productivity, investments, employment and exports. We also analyze whether these effects differ across firms depending on their initial productivity and size. To this end, we use French firm-level data for the period 1995–2005. Recent papers have found indirect evidence that immigrants benefit firms' productivity. Specialization of natives and immigrants in different and complementary tasks (Peri and Sparber, 2009) may increase production efficiency. Highly skilled foreign individuals contribute to innovation and productivity growth at the local level (Kerr and Lincoln, 2010; Peri et al., 2015). There is, however, scant direct evidence of the impact of immigrants on firms' outcomes because of limited data and identification issues at the firm level. When analyzing the impact of immigration at the firm level, one has to account for the heterogeneity that drives differences in firm-specific responses to a local change in immigrant supply. Simply analyzing the correlation between immigrant workers' employment and performance of firms is likely to be uninformative of the effect of the first on the second.

New data on French manufacturing firms and an identification strategy based on country-of-origin-driven variation in the supply of immigrants across geographic areas, that we call districts (\textit{départements} in French),\textsuperscript{1} allow us to focus on firm-specific effects of an increase in the local labor supply of immigrants. In particular, with our data, we can construct multiple outcomes at the firm level and follow them over time in a longitudinal dataset. Merging firm-level data with Labor Force Survey (LFS) data we can also construct an instrument for the local change in the supply of immigrants using a shift-share

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\textsuperscript{1} France is administratively divided into 100 \textit{départements} (including overseas territories).

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method based on the pre-existing immigrants' location interacted with changes in the aggregate inflows of immigrants by country of origin.\(^2\) We also control for several time-varying, firm-level characteristics, and for firm fixed effects to reduce the remaining concerns of endogeneity and omitted variable bias.

In our paper we analyze whether hiring of immigrants and other firm-level outcomes, in response to an increase in the local supply of immigrant labor, depend on initial productivity or size. If the hiring of immigrants is concentrated among firms that are initially more productive this may promote further agglomeration and increase the heterogeneity across firms. If, instead, it benefits less productive (through cost-cutting and complementarity), it may prevent job destruction and encourage growth of employment and output of less productive firms, reducing the heterogeneity across firms. In both cases it may also affect the wage of natives in those firms.

We first show that, based on aggregate statistics, the net immigrant inflow in France during the 1995–2005 period was skill-intensive (see Section 3.2). The share of immigrants with a high school diploma or less decreased from 74% in 1995 to 58% in 2005, while those with a 3-year university diploma grew from 9% to 14% of the foreign population.\(^3\) Moreover the employment of foreign-born workers increased significantly in occupations with high cognitive and analytical content relative to those with a high manual content. Hence, the findings of this paper relate to the effects of high-skilled immigration.

We introduce two novelties relative to the existing literature. First, we focus on several firm-level outcomes such as productivity, investments and exports, which have been rarely considered in relation to immigration. Second, we allow different responses to a common increase in the local labor supply of immigrants, based on initial firm heterogeneity (in productivity and size). A supply-driven increase in immigrants in a local labor market increases the average employment of foreign-born in firms, as expected, but this effect turns out to be stronger for firms that initially had low productivity levels. We also show that firms with initially low productivity levels experience the largest positive productivity effects associated with the increase in immigrant supply. Other firms' outcomes related to productivity, such as domestic market share, exports, capital investments and probability of exiting the market are affected in similar ways by the increase in the supply of immigrants. These results are consistent with the idea that the productivity gains may be in part driven by skill-capital and skill-technology complementarity within the firm.

We find no evidence of a decline in native wages as a consequence of hiring immigrants. Rather, coherently with the higher productivity, the average wage of natives increases within a firm. Also the composition of native workers across firms changes as a consequence of immigration. Highly educated native workers are pushed into firms that hire fewer immigrants. Finally, new immigrants have a small but significant effect in reducing firm exit and their inflow increases the size of small firms relative to large firms. These differential effects and the reallocation of workers across firms imply a small average aggregated productivity effect in the local labor market, as immigration promotes the convergence of firms' productivity (and size) by stimulating small, initially less productive firms more than larger and initially more productive ones. If one were to analyze only local area effect, these rich inter-firm dynamics would be lost. We are not aware of any other study that has identified these effects.

The rest of the paper is organized as follows. Section 2 puts this paper in the context of the existing literature and introduces a simple framework to discuss the channels explored in the empirical analysis. Section 3 presents the data and stylized facts. Section 4 discusses the empirical specifications and the identification strategy and its limitations. Section 5 describes and comments on the estimates of the effects of immigration on firm outcomes. Section 6 concludes the paper.

2. Framework and literature review

While there is an abundance of studies on the effect of immigrants on the labor market outcomes of natives,\(^4\) much less is known about their firm-level effects. Recently some studies have emphasized mechanisms that would allow the absorption of immigrants within firms without a negative wage impact. Examples are the response in task specialization of native workers (Ottaviano et al., 2013; Peri and Sparber, 2009), the change in adopted production techniques (e.g. Lewis, 2011), and the growth in number of establishments (Olney, 2013). As a result, some recent studies have focused on firm-level evidence concerning the effect of immigration. Malchow-Moller et al. (2012), using data from Danish firms, find that immigrants substitute for natives within individual firms. Martins et al. (2012), using Portuguese data, find no effect of immigrants on the employment of natives at the firm level. These studies focus exclusively on the wage and employment effects of immigrants extending the classical labor market approach to firm-level data. Hatzigeorgiou and Lodefalk (2016) and Hiller (2013) consider another firm-level outcome, and analyze the effect of immigrants on firm-level exports. Ghosh et al. (2014) and Kirk et al. (2014) study the effect of a reduction in skilled immigrant visas on innovation, productivity, revenues and profits at the firm level. Ghosh et al. (2014) find a significant reduction in size and productivity for firms that heavily depend on foreign

\(^2\) Our identification method is not new, as it builds on a traditional instrument proposed by Altonji and Card (1991) and then Card (2001). We perform several tests that show our instrument to be consistent with the exclusion restriction (i.e. be valid instrument).

\(^3\) From Labor Force Survey data we know that the share of immigrants in the group of tertiary educated increased from 5.7% to 7.1% over the period 1995–2005.

\(^4\) There are several studies analyzing the labor market effect of immigration at the national and local level. Seminal studies are Card (2001), Borjas (2003) and Ottaviano and Peri (2012). Recent surveys include Longhi et al. (2005) and Lewis and Peri (2015). Edo and Toubal (2015) is a recent paper using individual level data for France which finds that immigration decreases the wage of highly educated native workers by about 1% and contributes to an increase in the wage of low-skilled workers by 0.5%.
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