Impact of high-skilled immigration on firm productivity: Evidence from Australia

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Abstract

We study the impact of an increase in the local supply of immigrants on firms' outcomes in Australia. Using restrictive employer-employee matching micro-level data covering the universe of Australian firms and workers spanning the period 2000–2018, we examine how a supply-driven increase in the share of foreign-born workers in Australian local labour markets affected firm level outcomes. To address endogeneity due to non-random settlement patterns of migrants, we employ several identification strategies. We find that the increase in the share of foreign-born workers increased the total factor productivity of local firms. Furthermore, these effects are 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.

Keywords:Immigrants, Firms, Productivity

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1 Introduction

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 restrictive employer-employee matching micro-level data of all Australian firms and workers spanning the period 2000–2018, we examine how a supply-driven increase in the share of foreign-born workers in Australian local labour markets affected firm level outcomes. To address endogeneity due to non-random settlement patterns of migrants, we employ several identification strategies. First, we exploit a plausibly-exogenous change in policy which has increased the migrant population from non-European countries. Second, we exploit another reform that has significantly expanded the entry quotas for high-skilled migrants. Third, we use a standard shift-share instrument relying on the settlement patterns of migrants across Australia in 1966. We find that the increase in the share of foreign-born workers increased the total factor productivity of local firms. Furthermore, these effects are 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.

2 Data

This section describes the key data used in our research including firms and immigrant information and explains the methodology to compute an exogenous instrument variable for immigrant inflow.

2.1 Firm-level data

We draw firm-level data for our analysis from Business Longitudinal Analysis Data Environment (BLADE). BLADE combines different firm-level datasets; therefore, it is useful for understanding firm's productivity and dynamics, business demography and characteristics. BLADE allows researchers to track the performance of actively trading businesses in Australia since 2000–01. It has rich information on turnover, employment and labour productivity. It also has insights into the size and industry distribution, and able to track entry and exit behaviours over time. In addition, BLADE provide us with business characteristics such as: export status, foreign ownership status, innovation status.

2.2 Firm-labor structure and migration flows

To measure the supply of labor, we use the Multi-Agency Data Integration Project (MADIP), collected by the Commonwealth. MADIP is a secure data asset combining information on health, education, government payments, income and taxation, employment, and population demographics (including the Census) over time. It provides whole-of-life insights about various population groups in Australia, such as the interactions between their characteristics, education, and outcomes like employment, wages (by individual's tax returns). We use the product that links MADIP with BLADE at firm and individual level.

3 Empirical specifications

Our baseline specification considers a specification indifference using the balanced panel of firms present every year between 2009 and 2018. We will regress the change in revenue per workers between 2001 and 2018 , Δy_{ir}, for a firm i in region r on the fraction of immigrants to total labour force, F_r

$$\Delta y_{ir} = \alpha + \beta F_r + \epsilon_{ir} \tag{1}$$

The fraction F_r may reflect a surge in firm's output per worker in the region y_{ir}. Therefore, we use the shift-share variable z_r in equation as an instrument for the immigration rate F_r similar to (Card, 2001) and (Kerr and Lincoln, 2010)

$$F_{rt} = F_{r0} + F_{r0} * \delta F_{0t} \tag{2}$$

where

$$F_{r0} = Migrant_{r0}/(Native_{r0} + Migrant_{r0}) \tag{3}$$

Fraction of immigrant in region r in year t is a sum of Fraction of immigrant in region r in the initial year 2000 and the product of the change in fraction of immmigrant in the whole country between the year t and 2000 and the fraction of immigrant in region r in the initial year 2000. We leverage three policy reforms in Australia to consolidate the credit of our shift-share instrument. First, there was the abandon of the White Australia policy which shifted composition in country of origin toward Asian immigrants. Second, the 1996 reform that shifted composition of education to high-skilled immigration. Third, there was a sharp rise

in number of intakes from 2001 due to the change in government.

Following Mitaritonna et al. (2017), we assume that immigrants and natives can be imperfectly substitute in a CES production function. In addition, firms might have spillover effect from from migrants' externalities in the region.

Migration may change the allocation of factors across the sector, and the firm's profits may vary across industries. Then, a migrant worker could reduce the incentive of the firm to adopt productivity-enhancing technologies. Firms also will observe and decide whether to enter or leave the industry conditional on their profit function. Moreover, due to the abundance of workers, some migrant workers might be absorbed by new entrants or future firms who will leave an industry as pointed by Dustmann and Glitz (2015). Hence, immigration may affect firm productivity, technological change, and entry and exit decision. The entry into and exit might amplify the effect of migration on production.

To account for the potential effect on entry into and exit from the sample, we use (Olley and Pakes, 1996)'s procedures. Moreover, we apply (Doraszelski and Jaumandreu, 2018)'s approach to investigate the effect of immigration on firm's labor-augmenting productivity.

4   Non-random distribution of migrants across Australia

To address endogeneity due to non-random settlement patterns of migrants, we employ several identification strategies:

- We exploit a plausibly-exogenous change in policy which has increased the migrant population from non-European countries.

- We exploit another reform that has significantly expanded the entry quotas for high-skilled migrants.

- We use a standard shift-share instrument relying on the settlement patterns of migrants across Australia in 1966.

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