

Economic Impacts of High-Skilled Immigration



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Suggested citation:

Kauhanen, Antti & DeVaro, Jed (28.10.2024).
"Economic Impacts of High-Skilled
Immigration".
ETLA Brief no. 140.
<https://pub.etla.fi/ETLA-Muistio-Brief-140.pdf>

Abstract

This brief examines the economic impacts of skilled immigration on firms, innovation, and labour markets. Research shows that skilled immigration generally has positive effects on firm performance, productivity, and innovation. Immigrant inventors play a crucial role in innovation, with evidence showing they produce a disproportionate share of patents and have positive spillover effects on native collaborators. Contrary to common fears, most studies find that skilled immigration does not negatively impact native workers' wages or employment on average. In fact, it can benefit natives with complementary skills.

The availability of skilled immigrant labour also influences firms' location decisions, with restrictions on immigration leading to increased offshoring of jobs. While the fiscal impacts of immigration are debated, traditional accounting methods suggest a positive fiscal impact for highly educated immigrants. However, these estimates often fail to account for indirect effects like productivity gains and innovation.

Overall, the evidence indicates that skilled immigration is a valuable tool for addressing productivity challenges and innovation needs, particularly in countries facing declining working-age populations.

Tiivistelmä

Osaajien maahanmuuton taloudelliset vaikutukset

Tässä muistiossa tarkastellaan osaajien maahanmuuton vaikutuksia yrityksiin, innovaatioihin ja työmarkkinoihin. Tutkimukset osoittavat, että osaajien maahanmuutolla on yleensä myönteisiä vaikutuksia yritysten taloudelliseen menestymiseen, tuottavuuteen ja innovaatioihin. Maahanmuuttajakeksijöillä on ratkaiseva rooli innovoinnissa, ja he tuottavat merkittävän osan patenteista. Toisin kuin yleisesti pelätään, useimmissa tutkimuksissa todetaan, että osaajien maahanmuutto ei keskimäärin vaikuta negatiivisesti syntyperäisten työntekijöiden palkkoihin tai työllisyyteen.

Osaavan maahanmuuttajatyövoiman saatavuus vaikuttaa myös yritysten sijaintipäätöksiin, ja tutkimukset osoittavat maahanmuuton rajoitusten lisäävän työpaikkojen ulkoistamista. Osaajien maahanmuuton vaikutuksia julkiseen talouteen on vaikea arvioida, mutta tyypillisesti käytetyt menetelmät viittaavat positiivisiin vaikutuksiin julkiseen talouteen. Näissä arvioissa ei kuitenkaan oteta huomioon välillisiä vaikutuksia, kuten tuottavuuden kasvua ja innovointia, joten ne jättävät osan hyödyistä arvioimatta.

Kaiken kaikkiaan on näyttöä siitä, että osaajien maahanmuutto on arvokas väline tuottavuushaasteisiin ja innovointitarpeisiin vastaamisessa erityisesti maissa, joissa työikäisen väestön määrä vähenee.

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KTT **Antti Kauhanen** on Elinkeinoelämän tutkimuslaitoksen tutkimusjohtaja ja taloustieteen professori Jyväskylän yliopiston kauppakorkeakoulussa.

PhD **Jed DeVaro** on California State University, East Bay:n professori.

Acknowledgements: This brief is part of the project *The attractiveness of Finland as a location for talented people and companies* funded by Business Finland.

Kiitokset: Muistio on osa Business Finlandin rahoittamaa hanketta *The attractiveness of Finland as a location for talented people and companies*.

Key words: Productivity, Innovations

Avainsanat: Tuottavuus, Innovaatiot

JEL: J61, J31, D24, O31

Wider effects of skilled immigration

This brief examines the economic literature on the effects of high skilled immigration on companies and wage earners. Work-based immigration is often feared to weaken the employment of those already in the labour market or reduce their earnings due to intensified labour market competition. However, labour migration can also affect the labour market in other ways than just increasing competition. For example, it can affect companies' productivity, financial performance and innovation. Through these channels, labour migration can increase the demand for labour in the economy. In the following, we discuss these recent research on the wider impacts of high-skilled immigration.

Firm performance

Skilled immigration may affect firm performance such as productivity and sales. This might be due to immigrants' impact on innovations or specialization of immigrants and natives in complementary tasks that increase efficiency in production.

Mitaritonna et al. (2017) study the impact of increases in immigration to France in 1995-2005 on firm outcomes. They first show that most immigration was high-skilled. To study how immigration affected firm productivity, they compare firms' productivity change in geographic locations experiencing a certain level of immigration to the corresponding productivity change experienced by firms located in geographic regions with a different level of immigration. Different regions face different inflows of immigrants because immigrants tend to move to regions where there are already immigrants from the same origin country. This approach works if a) the initial shares of immigrants across the labour market's geographic regions are not related to current firm outcomes, and b) the adjustment to previous immigration in the labour market has already occurred. Their results show that increased local supply of immigrant labour increased firm productivity, investment, and employment. The results were particularly large for lower-productivity firms.

Beerli et al. (2021) study a Swiss reform that liberalized restrictions on the use of cross-border workers. These are workers who work in Switzerland but live in an adjacent country, commuting across the border. This study again uses regional variation to study the effects on firms' productivities. The key idea is that the regions of Switzerland that are closer to the border experience much larger influxes of cross-border workers because the short distance implies low commuting costs for these workers. The results show that firms – especially those reporting skills shortages before the reform – experienced higher productivity after the reform. The reform also increased the wages of highly educated natives, although most of the immigrants were also highly educated. This means that the foreign workers were not substitutes for the native workers. This study shows that access to a large pool of highly skilled workers had wide ranging positive economic impacts.

A study from the U.S. has similar conclusions. The most important avenue for high-skilled immigration to the U.S. is the H-1B visa program. The number of such visas has been capped since the beginning of the program in the 1990s, but the demand for the visas has substantially exceeded the cap since 2014. Before 2014, H-1B visas were granted in the order that the applications were received, until the cap was reached. Since 2014, all visas have been allocated randomly among the applicants. Mayda et al. (2023) compare the financial performance of firms that relied on H-1B visa workers in the pre-rationing period (before 2014) to the financial performance of firms that did not. After 2014, the firms that have relied on H-1B visa workers faced a smaller chance of being able to hire such workers, which might hurt firm performance if the foreign labour is important for the financial performance of the firms. Their results indeed show that firms subjected to rationing of H-1B visas experience reduced employment, sales and profits.

Innovations

Bernstein et al. (2022) characterize immigrants' role in US innovation. Their results show that while only 16% of U.S. innovators are immigrants, they produce 23% of innovations, as measured by the number on patents, the economic value of patents, and the number of pat-

ent citations. They also show that immigrant inventors are important for the cross-border diffusion of ideas. Importantly, they show that immigrant inventors have positive spillover effects on their collaborator's innovation output. Koski (2024) shows that immigrant inventors are also important in Finland. According to her results, immigrant inventors were involved in 60% of Finnish patents in 2021.

Hunt and Gauthier-Loiselle (2010) study how increases in the number of college-educated immigrants affect patenting at the U.S. state level in 1940–2000. Their results show that a one percentage point increase in the population share of college-educated immigrants increases patents per capita by 9 to 18%. Beerli et al. (2021) also show that abolishment of the restrictions on the use of cross-border workers increased patenting in Switzerland. Kerr and Lincoln (2010) show that fluctuations in the number of H-1B admissions affect the patenting of immigrants in the cities and firms that rely on H-1B workers relative to cities and firms that do not rely on such workers.

Other firm-level impacts

Immigration policy may also affect the location of firms' activities. Studies have shown that restricting immigration leads to more offshoring (Glennon 2024) and that increases in immigration reduce offshoring (Olney and Pozzoli 2021). These studies show that the availability of highly-skilled workers is important for firms' location decisions. Glennon (2024) studies the U.S. H-1B program and utilizes the changes in the caps and random allocation of visas to identify the effects of the availability of high-skilled immigrants on firms' location decisions. Her results show that restrictions on H-1B immigration led to U.S. multinational firms increasing employment in foreign countries, in particular China, India, and Canada. The effects are mainly driven by R&D jobs. Olney and Pozzoli (2021) study how immigration from non-EU countries to Denmark affected firms' offshoring decisions. The results show that firms in geographical locations that received more immigrants reduced offshoring.

Employment and wages of natives

It is often feared that increases in immigration reduce natives' wages and employment rates. Economic theory shows that this outcome is likely only in the short run and when labour is homogeneous in skills. If labour supply increases through immigration and the capital stock does not change, labour productivity will decrease, which in turn decreases wages and may lead to some natives withdrawing from the labour market. However, in practice, the capital stock will not remain fixed. Firms will invest in building the capital stock in response to increased labour supply. If capital is perfectly mobile across countries, wages do not change at all. Indeed, empirical studies show that the average impact of immigration on natives' wages and employment is null or slightly positive (Edo 2019, Caiumi and Peri 2024). Positive impacts are possible if immigration increases productivity or if natives' and immigrants' skills are complementary. For example, in technology industries, immigrants may bring technical and innovative skill which, when combined with natives' knowledge of local labor markets and customer needs, enables production of better products and services.

However, the change in the average wage masks differences among groups. Immigrant inflows may reduce natives' wages and employment if the two groups' skills are substitutable in the labour market but may increase natives' wages and employment if the two groups' skills are complementary. By changing the economy's skill structure, immigration may create winners (persons with complementary skills) and losers (persons with substitutable skills). High-skilled immigration may be beneficial for all worker groups, but more research is needed (Edo 2019, p. 944).

Most researchers focusing on the impacts of the H-1B visa program do not find that immigrants would replace native workers, on average (Kerr and Lincoln 2010, Peri et al. 2015, Mahajan et al. 2024). An exception is Doran et al. (2022), who study the H-1B lotteries in 2005 and 2006. They focus on the applications that were submitted on the day that the cap for the year was reached.

Mahajan et al. (2024) use a similar setting but consider the year 2007, when all applications were subject to random allocation. They do not find evidence of substitution, and their data are more representative than those used by Doran et al. (2022).

European studies considering high-skilled immigration also do not find evidence of negative employment effects for natives, on average (Mitaritonna et al. 2017, Beerli et al. 2021, Signorelli 2024). Collectively, the research from Europe and the U.S. shows that fears that high-skilled immigration leads to large negative outcomes for natives are misplaced.

Fiscal costs of immigration

The fiscal costs of immigration are widely discussed. Unfortunately, accurate estimates of those costs do not exist. The typical analysis counts the taxes paid and public benefits received by immigrants. Such analyses are problematic because they do not account for the important indirect effects of immigration, such as the productivity and innovation effects discussed earlier. They also do not consider capital taxation, which leads to a substantial downward bias (Clemens 2022). Economic general equilibrium models account for the impacts on prices, wages, and productivity, but such models rely on many untestable assumptions.

Traditional accounting methods give the result that the fiscal impact of U.S. immigration is positive for highly-educated immigrants (Mackie and Blau 2017). Improved estimates accounting for capital taxes reveal even more positive effects (Clemens 2022).

For OECD countries, the estimates of the fiscal impact of immigration show varying results depending on the methods used and the country and time period analysed (Edo et al. 2020). However, large effects (positive or negative) are unlikely (Edo et al. 2020).

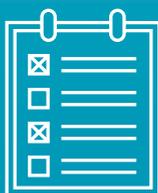
Conclusion

Availability of high-skilled labour is vital for firms, and high-skilled immigration is one way to increase the supply of skilled labour. The fears that increased immigration leads to lower wages and poorer employment opportunities for natives are largely misplaced. Studies tend to show that high-skilled immigration, on average, has either no effect or a slight positive effect on natives' wages and employment opportunities. This is because immigrant and native employees tend to be complements rather than substitutes. In other words, immigrants bring skills that, when combined with natives' skills, lead to higher productivity. Studies have also shown that high-skilled immigration leads to increased innovation and reduces offshoring. Finland needs increased productivity and more innovation, particularly given the declining working age population. High-skilled immigration is a key tool to addressing these needs.

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ETLA



Elinkeinoelämän tutkimuslaitos

ETLA Economic Research

ISSN-L 2323-2463
ISSN 2323-2463

Kustantaja: Taloustieto Oy

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