



Policy Brief

PROGRESS, PATENTS, AND KNOWLEDGE FLOWS: THE IMMIGRATION ADVANTAGE

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EXECUTIVE SUMMARY

This brief explores how migration impacts macroeconomic growth, innovation, and tax revenue. It also surveys migrant entrepreneurship trends and the impact of remittances on origin countries. The brief argues that immigration can be an advantage for recipient countries. However, this depends on (1) how countries navigate short-term political pressures in favor of long-term economic benefits; (2) insulating migration policies from electorally driven discourse; and (3) communicating the benefits of migration through a pragmatic, data-driven approach.

INTRODUCTION

This policy brief analyses the economic effects of migration looking at five pillars: (1) macroeconomic growth, (2) innovation, (3) tax revenue, (4) entrepreneurship, and (5) remittances. The brief also surveys the risks policy-makers face when instituting migration reform. The analysis will draw examples from developed and developing economies, providing a diversified regional focus to show trends and offer general suggestions of how countries can design successful migration policies.

PILLAR 1: MACROECONOMIC GROWTH

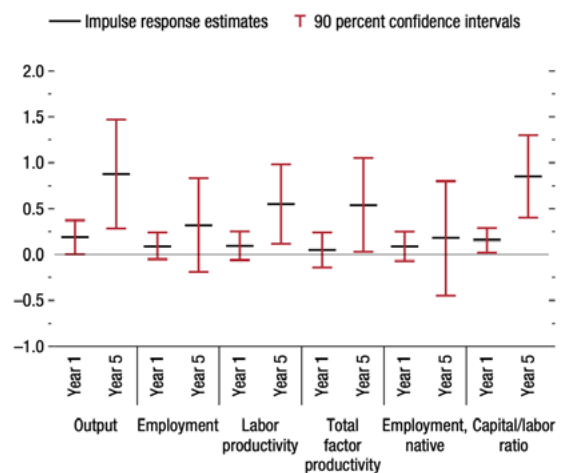
Macroeconomic growth brings progress and improves living conditions. This section covers studies of the impact on macroeconomic growth of three migration-related variables: (1) immigration flows; (2) immigrant stocks (as a share of the population); and (3) immigration policy orientation (closed vs. open).

Regarding flows, Piazza et al. (2020) report mixed results depending on the country’s level of development. In developed economies, their analysis of six macroeconomic ratios over a five-year period shows that large-scale immigration waves contribute to economic growth in the long run. They find that a 1% increase in migration inflow increases GDP by almost 1%. Likewise, a 1% increase in migration inflow increases employment by 0.4% and labor productivity by 0.5%.

They find no evidence of local employment decreasing over the five-year period. In fact, a 1% increase in migration inflow actually increases native employment by 0.2%. This occurs principally because, as migrants arrive, native workers move to more specialized and complex tasks, gaining from specialization of labor.

The outlook is different for developing countries faced with large-scale immigration waves. Specifically, Piazza et al. (2020) look at Colombia, Jordan, and Lebanon, each of which had a migration wave equivalent to at least 4% of the population. Migrants in these countries face higher obstacles to formal employment, which relegates them to the informal sector or excludes them from the labor force entirely. Moreover, these economies were already suffering from “negative spillover effects in neighboring countries” that left them vulnerable to negative migration shocks (Piazza et al. 2020, 92). Therefore, the positive results for migration to developed economies are not observed in developing economies struggling to absorb large numbers of migrants.

Figure 4.17. Macroeconomic Effects of Migrant Inflows in Advanced Economies (Percent)

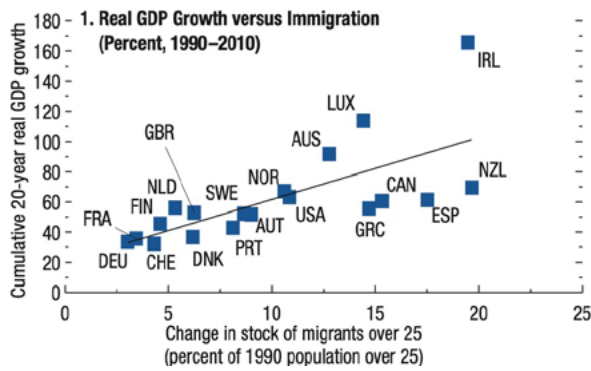


Source: Piazza et al. (2020), 90

Regarding stocks, wealthy countries that have historically hosted a higher percentage of immigrants over time exhibit stronger GDP growth. Vesperoni et al. (2017) plot the migrant population as a percentage of total population against GDP growth in 18 OECD countries over 25 years. They find that, for the period 1990 - 2010, countries that increased their migrant stock had higher GDP growth over the long term.

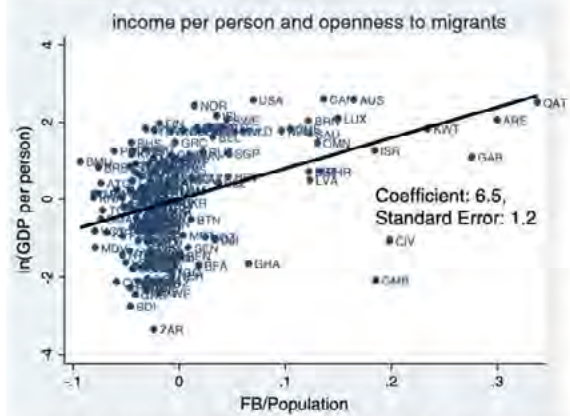
Regarding policy orientation, Ortega and Peri (2014) study the effects of open vs. closed immigration policies on macroeconomic performance in 188 countries. They rank these countries on the openness of their immigration policies using closely associated estimator variables. Here they note that if a country with policies at the 10th percentile of openness were to adopt policies at the 90th percentile of openness, their long-run income per capita would increase by 70%.

Figure 4.16. Determinants of Migration

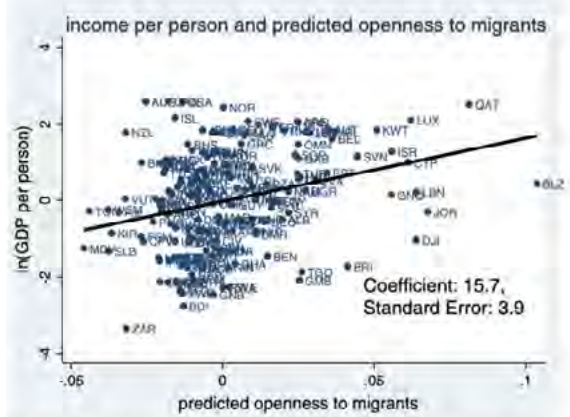


Source: Vesperoni et al (2016), 186

A) MSH and GDP per person



B) Gravity-predicted MSH and GDP per person



Note: The scatterplot shows each variable after adjusting for logarithm of population and area. The predictor for immigration share used is the linear gravity predictor.

Source: Ortega and Peri (2014), 239.

Openness to migration plays an active role in “accounting for cross-country differences in income per capita” when isolating for other variables (Ortega and Peri 2014, 232). The authors argue that a 1% increase in immigration as a percentage of the total population increases the host country’s per capita average income by 6%. Enhanced productivity is the principal factor allowing long-term income growth. This effect appears to hold across levels of development.

One of the most interesting findings from this analysis is that countries should pursue migration openness **even if current macroeconomic performance is slow** because growth will follow. Waiting for the economy to improve before adopting open immigration policies will delay potential macroeconomic growth.

By contrast, mass deportations are likely to have a considerable negative impact on growth, causing short-term labor market shocks that provoke shortages and/or inflationary pressures as natives demand higher wages to substitute for migrant labor (American Immigration Council 2024).

PILLAR 2: INNOVATION

Innovation is a complicated concept to measure, but it plays a critical role in increasing economic productivity. One common indicator of innovation is patents. This section analyzes studies that examine (1) the impact of migration on patent filings; and (2) the complex relationship between mobility and human capital.

Bahar et al. (2022) analyze the relationship between work-related migration reforms and patent filings by multinational enterprises (MNEs) in 15 countries across development levels from 1990 to 2016. They find that when countries encourage inventor mobility by adopting open immigration policies, the patents filed by MNE subsidiaries in that country increase. Specifically, a 1% increase in Global Mobile Inventors causes a 1.8% increase in patents filed.

They find the opposite effect when countries adopt reforms that discourage inventor mobility by adopting closed immigration policies. Here they estimate that each negative reform decreases patents filed by MNE subsidiaries in that country by 24%. They find, moreover, that negative reform has stronger marginal effects than positive reform, signaling that countries that actively discourage immigration have destructive effects on innovation levels.

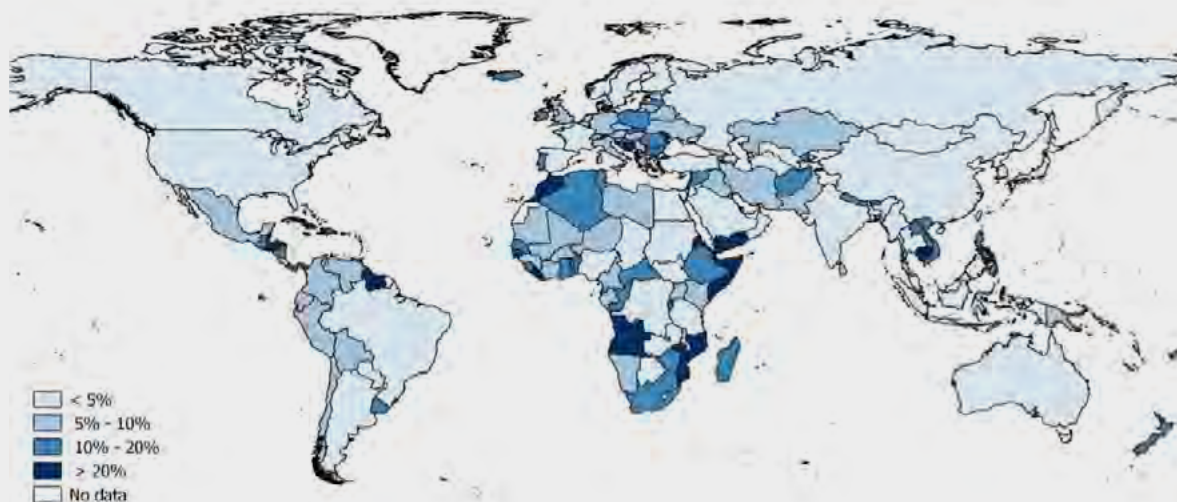
These results are not limited to developed countries. The authors find that at least half of the global knowledge production in emerging markets is caused by positive migration reform. These economies have benefited from welcoming highly educated individuals who have consistently filed patents with benefits that spread through the host country. Likewise, the research highlights the clear relationship between policies that deter human mobility through closed immigration policies and the detrimental effects on local knowledge production.

At a more local level, Buchardi et al. (2021) analyze the effect of immigration on patents in the United States by looking at county-level data. The authors use simple regression models to estimate the positive and negative effects over a five-year period to look for the closest causal relations, controlling for momentary economic downturns. They find that a 1% increase in immigration caused a 1.7% increase in patents filed by individuals in the area. Neighboring counties also have measurable increases in patent filings, signaling that the initial benefits expand beyond the site of immigration.

Moreover, the increased patent filings attributable to immigration spill over into productivity and wage growth for native workers. Because innovation follows a virtuous circle, “the positive impact of higher innovation and labor productivity on wages gradually builds over time and becomes dominant” (Buchardi et al. 2021, 33). An important caveat is that immigrants’ education level is one of the most important predictors for patent filings and, relatedly, local wage increases.

In a survey of patents filed in eight developed economies, Lissoni and Miguelez (2024) find that highly-educated immigrants make an especially notable contribution to innovation in science, technology, engineering, and mathematics (STEM). They also report that the percentage of patents filed by migrant inventors has increased over time in North America and Europe. They conclude that “senior and highly experienced migrant inventors may play a key role in transferring knowledge from their home countries to their host ones” (Lissoni and Miguelez 2024, 48).

Figure 10. Emigration rates of the highly educated to OECD countries, 2015/16



Source: OECD (2020)

The previous point raises concerns that poorer countries are losing the very people they need to boost development. Historically, economists understood migration as a zero-sum game whereby one country's "brain gain" was another's "brain drain." As the map above shows, the emigration rate of highly educated individuals is over 20% in more than a dozen countries (OECD 2020). This loss of talent is especially salient for countries that have the educational infrastructure to produce high-skilled workers but struggle to create commensurate opportunities in the labor market.

The traditional solution has been **brain train and retention** whereby countries seek to retain trained talent within their political borders to contribute to development (Shin and Moon 2018). However, this approach overlooks the fluid and multidirectional relationship between mobility and human capital. Shin and Moon (2018) propose a revised conceptual framework that considers gains from high-skilled emigration through 'brain circulation' and 'brain linkages'.

1.**BRAIN CIRCULATION:**

Sending citizens to study abroad so they can return with increased skills and knowledge.

2.**BRAIN LINKAGES:**

Encouraging high-skilled emigrants to transmit knowledge and resources back to the origin country through business trips, short-term stays, foreign investment, or remittances.

As high-skilled migrants reap the income premium from working abroad, they become better equipped to provide the capital required to finance development back home (see Pillar 5). Those who return either temporarily or permanently also bring acquired knowledge and networks that disseminate into the local economy. To encourage this outcome, developing countries are increasingly funding advanced education in internationally renowned universities – especially in STEM fields – for students who commit to return home to apply their new-found skills. Bilateral circular migration programs are also gaining momentum because they allow migrants from both countries to engage in advanced sectors in the host country while allowing them to eventually return and apply specialized industry knowledge in the origin country.

Economists also point to an **indirect brain gain** that occurs when citizens invest in training for opportunities abroad. While some of them will migrate, Batista et al. (2025, 1) find that "migration opportunities often increase human capital stock in origin countries" (p. 1). For example, when the United States expanded visa availability for nurses, enrollment in nursing schools in the Philippines surged, expanding the overall stock of tertiary-educated labor and producing nine new nurses for every one who emigrated. Similarly, when the United States eased the H1-B visa cap, Indians acquired computer science skills at a higher rate, producing a 10% increase in the earnings of Indians working in the United States (some of which they remitted back home) and a 5.8% increase in IT employment in India (Batista et al. 2025, 4).

PILLAR 3: TAX REVENUE

As countries grow, it is critical that they expand their tax revenue base accordingly. This section examines the net fiscal contribution of immigrants in Europe and the United States, which tends to exceed that of native-born residents because of immigrants' relative youth and lack of eligibility for social programs. The section concludes with a brief discussion of the fiscal implications of providing pathways to regularization (see Policy Brief #3).

Boffi, Suari-Andreau, and van Vliet (2024) use the concept of net fiscal positions (NFP) to compare the tax contributions and fiscal benefits received by immigrants in 15 European countries. They find that immigrants on average were net fiscal recipients but still received fewer benefits than the average native in two-thirds of the countries. Interestingly, migrants were net fiscal contributors in the other third. Overall, they find that “highly skilled migrants are most often net contributors, whereas low-skilled migrants or refugees are mostly net recipients” (Boffi, Suari-Andreau, and van Vliet 2024, 4).

The scenario plays out somewhat differently in the United States where access to welfare is more restricted. According to a Cato Institute update of a report by the National Academy of Science, U.S. immigrants contribute nearly \$300 billion more than they receive in cash assistance, entitlements, and public education (Bier 2023). Low-skilled workers in particular are more likely to be undocumented and therefore net fiscal recipients. For instance, undocumented immigrants paid close to \$55 billion in federal taxes and \$33 billion in state and local taxes in 2023 but will receive little to no welfare benefits or entitlements in return for their contribution (unless they have U.S.-born children) (American Immigration Council 2025). Refugees and asylum seekers are also net fiscal contributors to the tune of \$124 billion between 2005 and 2019 (Ghertner, Macartney, and Dost 2024).

Providing undocumented immigrants with legal pathways may reduce this fiscal advantage in the short run by requiring higher social expenditures. In the long run, however, it is likely to reap significant fiscal benefits. The formal labor market pays higher wages, on average, than the non-formal labor market where many undocumented immigrants are stuck working. Moreover, formalizing economic activity enables states to regulate, tax, and control these businesses. Finally, regularization pulls previously undocumented immigrants into the formal banking system, which increases their access to financing and allows further control and oversight.

With a regular status, migrants receive not only higher income but also economic stability which is crucial for long-term income growth. They also gain greater access to educational programs that further enhance human capital, leading to even higher wages (and tax revenues) in the long-term (Christensen Gee, Gardner, and Wiehe 2016). This creates a reinforcing cycle whereby tax revenue is expanded through payroll taxes while the country reaps the benefits of upwardly mobile immigrants. Unleashing this potential is especially critical in countries facing demographic decline (see Policy Brief #1).

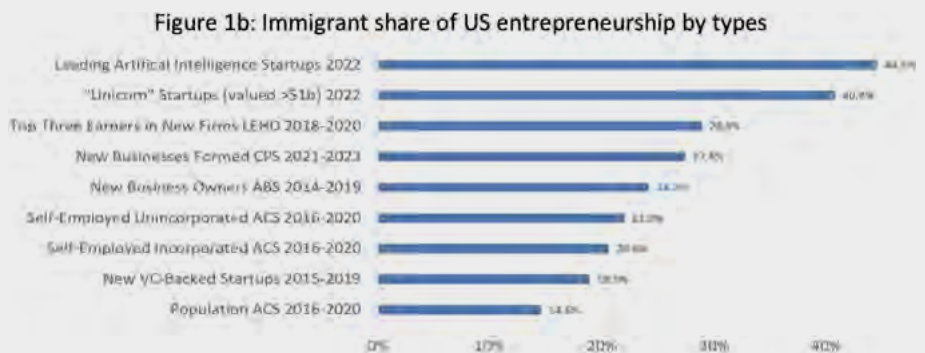
PILLAR 4: ENTREPRENEURSHIP

There is a politically charged notion that migrants ‘take away’ from natives by crowding out the labor market. However, in most situations, migration is a precursor to business-creation. This section examines (1) how the migrant population participates in new business creation and (2) the types of businesses migrants are creating.

Anyone who has visited an immigrant neighborhood can attest to the prevalence of immigrant-owned businesses. In the OECD, immigrants are more likely than native-born to be self-employed in two-thirds of countries, particularly Colombia, Central and Eastern Europe, Canada, the United States, Portugal, and Spain. From 2011 to 2021, self-employed immigrants created more than 3.9 million jobs, accounting for 15% of total employment growth. In 2022, the OECD hosted 10 million migrant entrepreneurs (OECD 2024).

The United States and Canada have especially high rates of business formation by immigrants. Fairlie (2024) finds that the rate of new business formation by immigrants in the United States increased from 13.3% in 1996 to 30.9% in 2023. This evidence suggests that immigrants are increasingly starting their own businesses instead of relying on the traditional labor market. Rather than taking away jobs, they are creating them through new business formation.

Similarly, Chodavadia et al. (2024, 15) find “an upward trend over time in the share of immigrant entrepreneurship” as a percentage of economically active population in the U.S. from 18.7% in 2007 to 24.2% in 2019. Most importantly, immigrants are creating high value-add businesses associated with STEM fields and technology. For instance, the authors find that migrants are responsible for over 44.5% of “Leading Artificial Intelligence Startups” and 40.8% of Unicorn startups. Notably, immigrants create 27.4% of new businesses, but they only represent 14.6% of the total population.



Source: Chodavadia et al (2024), 28

PILLAR 5: REMITTANCES

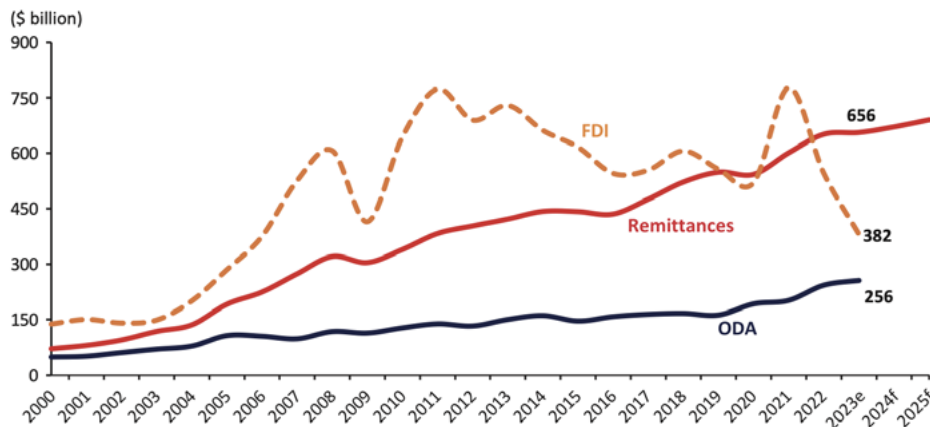
With the exception of brain circulation and brain linkages, previous sections focus primarily on the impact of migration on host countries. However, migrant remittances have a profound economic effect on origin countries. Often received by poorer segments of the population, remittances are transferred without government intervention and constitute one of the “largest sources of development capital” in developing economies (Howard 2023, 321).

The latest available data from 2023 measured global remittance flows at \$857 billion (World Bank 2024) which is just slightly below Foreign Direct Investment (FDI) at \$1.3 trillion (UNCTAD 2024). That year, more than 60 low and middle-income countries had remittances inflows accounting for at least 3% of Gross Domestic Product (GDP) (World Bank 2023). The share is much higher in many smaller countries. In El Salvador, for example, remittances are equivalent to around 24% of GDP (EU Global Diaspora Facility 2022). These funds contribute significantly to the national economy by increasing “domestic savings and easing credit constraints” (Vespero et al. 2017, 192).

Sending remittances has historically faced barriers and high costs. For example, banks and other financial services often charge a high margin of sent income. In 2015, the Addis Ababa Action Agenda established the goal of reducing the sending cost of remittances below 3% and eliminating low-volume remittance corridors with costs of 5% of sent income (United Nations 2015). Nonetheless, despite the benefits of technological advances, the average cost to send \$200 to low and middle-income countries in 2023 was 6.4%, more than double the 3% threshold established in the Action Agenda (World Bank 2024).

Thus, governments have yet to create the financial infrastructure that ensures “cheaper, faster, and safer transfer of remittances in both source and recipient countries” (United Nations 2015, 20). For instance, coordination between financial regulators in sending and receiving countries could ensure that non-bank service providers promote conditions for cheaper solutions. From a conceptual standpoint, it is crucial that developing countries understand the increasing importance of remittance flows in their sometimes-fragile economies.

Figure 1.1 Remittances Larger than FDI and ODA Combined in 2023



Source: World Bank/KNOMAD staff estimates.
 Note: f = forecast; FDI = foreign direct investment; ODA = official development assistance.

Source: (World Bank 2024, 2)

CONCLUSION

While open migratory policies create long-term benefits, they require time before success can be measured through formal economic indicators. They also require continuity that transcends electoral cycles (Benton, Banulescu-Bodgan, and Hooper 2025). In the meantime, policy makers face short-term political pressures to deliver results, and opposition parties have an opening to engage in slash and burn discourses arguing the negative effects of migration.

In this context, short-term programs like bilateral circular migration schemes, if managed well, can show positive results in a shorter time period. These programs are easily implemented within typical electoral cycles, and their impacts on local economies are almost immediate, allowing decision-makers an immediate feedback loop to argue for the positive effects of migration at large. The positive results of these schemes can serve as initial evidence for skeptics of the benefits of adopting open migratory policies more broadly.

Moreover, as argued in Policy Brief #4, democracies need to navigate the electorally motivated negative discourse around migration. It is likely that nationalist and populist politicians will continue to characterize migration as a ‘chaotic liability’, especially during moments of economic downturn (Buchardi et al. 2021). Even worse, ‘availability bias’ makes it easier for voters to recall situations associated with negative effects of migration portrayed in politically driven messaging, even if they are statistically insignificant.

One avenue is to treat migratory policy as a long-term public policy investment. Distancing migratory policy decisions from partisan political spaces and moving them into the realm of independent, non-partisan institutions provide more stability. The same independence and separation that cha-

acterize monetary policy decision-making would allow evidence, rather scoring political points, to be the driving force of new decisions.

Another avenue is to reap mutual gains through regional and global partnerships. Besides encouraging brain gain, circulation, and linkages, such partnerships could improve efficiencies through mobile welfare benefits, reduced transaction costs for remittances, and expedited licensing for high-skilled immigrants (see Policy Brief #3). These partnerships should include an important role for diasporas, who bring valuable resources, knowledge, and networks to the table and are uniquely positioned to serve as interlocutors.

Finally, while macroeconomic growth brings progress and improves living conditions, the perception of progress and fairness is equally as important, especially for those subgroups whose economic conditions might not be improving. Reducing the perceived threat of migrants as welfare-seeking will provide economically struggling subgroups assurance that their conditions are not perpetuated by incoming migrants. Most importantly, quick economic integration is likely to strengthen social cohesion too, as migrants engage in social interactions with locals as a part of their everyday routine.

The integration of “harder-to-employ” individuals into the labor market to reduce welfare net-outflows is particularly important. As their economic integration transforms a net budget outflow into a new budget inflow, the populist ‘liability’ discourse is weakened significantly. As migrants create businesses, file patents, and generate tax revenue, they become active contributors to the economic prosperity of their adopted country on its path to macroeconomic growth, innovation and progress.

REFERENCES

- American Immigration Council. 2024. "Mass Deportation."** <https://www.americanimmigrationcouncil.org/report/mass-deportation/> (August 7, 2025).
- American Immigration Council. 2025. "New Americans in the United States."** <https://map.americanimmigrationcouncil.org/locations/national/> (August 7, 2025).
- Bahar, Dany, Prithwiraj Choudhury, Sara Signorelli, and James Sappenfield. 2022. "Talent Flows and the Geography of Knowledge Production: Causal Evidence from Multinational Firms."** doi:10.2139/ssrn.4005693.
- Batista, Catia, Daniel Han, Johannes Haushofer, Gaurav Khanna, David McKenzie, Ahmed Mushfiq Mobarak, Caroline Theoharides, and Dean Yang. 2025. "Brain Drain or Brain Gain? Effects of High-Skilled International Emigration on Origin Countries."** *Science* 388(6749): eadr8861. doi:10.1126/science.adr8861.
- Benton, Meghan, Natalia Banulescu-Bodgan, and Kate Hooper. 2025. "Migration Governance in Unsettled Times: How Policy Makers Can Plan for Population Change."** NBER Working Paper Series.
- Bier, David. 2023. "Unlocking America's Potential: How Immigration Fuels Economic Growth and Our Competitive Advantage."** *Cato Institute*. <https://www.cato.org/testimony/unlocking-americas-potential-how-immigration-fuels-economic-growth-our-competitive> (July 9, 2025).
- Boffi, Giacomo, Eduard Suari-Andreau, and Olaf van Vliet. 2024. The Net Fiscal Positions of Migrants in Europe: Trends and Insights.** https://home-affairs.ec.europa.eu/document/download/3b3d3824-b335-46b9-8273-84d63622a03b_en?filename=The-net-fiscal-position-of-migrants-in-Europe_en.pdf.
- Buchardi et al., Konrad. 2021. Immigration, Innovation and Growth.** https://www.nber.org/system/files/working_papers/w27075/w27075.pdf.
- Chodavadia, Saheel A., Sari Pekkala Kerr, William R. Kerr, and Louis J. Maiden. 2024. "Immigrant Entrepreneurship: New Estimates and a Research Agenda."** doi:10.3386/w32400.
- Christensen Gee, Lisa, Mathew Gardner, and Meg Wiehe. 2016. "Undocumented Immigrants' State & Local Tax Contributions."** <https://itep.sfo2.digitaloceanspaces.com/immigration2016.pdf>.
- EU Global Diaspora Facility. 2022. "Diaspora Engagement Mapping: El Salvador."** https://diasporafordevelopment.eu/wp-content/uploads/2024/05/CF_El-Salvador-v.3.pdf.
- Fairlie, Robert W. 2024. "Indicators of Entrepreneurial Activity: 2023."** SSRN. https://papers.ssrn.com/sol3/papers.cfm?abstract_id=4708111.
- Ghertner, Robin, Suzanne Macartney, and Meredith Dost. 2024. The Fiscal Impact of Refugees and Asylees Over 15 Years: Over \$123 Billion in Net Benefit from 2005 to 2019.** ASPE. Issue Brief.
- Howard, Seamus A. 2023. "Remittances and Global Development."** *Georgetown Immigration Law Journal* 37(2). <https://www.law.georgetown.edu/immigration-law-journal/wp-content/uploads/sites/19/2024/03/GT-GILJ230004.pdf>.
- Lissoni, Francesco, and Ernest Miguelez. 2024. "Migration and Innovation: Learning from Patent and Inventor Data."** *Journal of Economic Perspectives* 38(1): 27–54.
- OECD. 2020. 239 A Global Profile of Emigrants to OECD Countries: Younger and More Skilled Migrants from More Diverse Countries.** . *OECD Social, Employment and Migration Working Papers*. doi:10.1787/0cb305d3-en.
- OECD. 2024. International Migration Outlook 2024.** OECD Publishing. doi:10.1787/50b0353e-en.
- Ortega, Francesc, and Giovanni Peri. 2014. "Openness and Income: The Roles of Trade and Migration."** *Journal of International Economics* 92(2): 231–51. doi:10.1016/j.jinteco.2013.11.008.
- Piazza et al. 2020. "The Macroeconomic Effects of Global Migration."** *International Monetary Fund*. <https://www.elibrary.imf.org/display/book/9781513539744/ch04.xml>.
- Shin, Gi-Wook, and Rennie Moon J. 2018. From Brain Drain to Brain Circulation and Linkage.** https://fsi9-prod.s3.us-west-1.amazonaws.com/s3fs-public/brain_drain_to_circulation_and_linkage_0.pdf.
- UNCTAD. 2024. "2024 World Investment Report: Investment Facilitation and Digital Government."** https://unctad.org/system/files/official-document/wir2024_overview_en.pdf.
- United Nations. 2015. "Addis Ababa Action Agenda of the Third International Conference on Financing for Development."** https://sustainabledevelopment.un.org/content/documents/2051AAAA_Outcome.pdf.
- Vespero et al., Esteban. 2017. "Spillovers from Migration and China's Transition."** *IMF World Economic Outlook*. <https://www.imf.org/en/Publications/WEO/Issues/2016/12/31/Subdued-Demand-Symptoms-and-Remedies>.
- World Bank. 2023. "Migrants, Refugees and Societies: World Development Report."** <https://www.worldbank.org/en/publication/wdr2023>.
- World Bank. 2024. Remittances Slowed in 2023, Expected to Grow Faster in 2024. The World Bank Group - KNOMAD: Migration and Development Brief 40.** <https://documents1.worldbank.org/curated/en/099714008132436612/pdf/IDU->



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