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The (de)globalization of migration: has the polycrisis period changed the patterns of global migration?

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Migration is a hotly discussed issue, and while the magnitude of migration is a frequent topic of debate, there is less discussion about its patterns (i.e. the diversity of migration). Yet, there is accumulating evidence that higher cultural heterogeneity among immigrants – a result of more globalized migrants – has positive impacts on productivity growth and innovation in destination countries and thus, ultimately, affects monetary policy. But is migration really becoming more globalized (i.e. more heterogenous), or is there evidence for recent (de)globalization trends, often attributed to flows of goods and capital? We address this question by composing an index of the globalization of migration that comprises three dimensions of global migration, following Czaika and de Haas (2015): the intensity – or relative magnitude – of migration, its diversity with respect to origin and destination countries, and the average distance of migration routes. These dimensions are combined to obtain an index of migration globalization that allows us to assess not only the degree of migration globalization, but also each country's integration in global migration processes. Using migration flow estimates for 1990–2020, we find that migration continued to become more globalized in the past three decades, but this upward trend started to flatten out after the period 2005–10. The intensity of global migration flows did not increase between 1990 and 2020. The spread of global emigrants across destination countries widened in these three decades, while the diversity of global immigrants with respect to their home countries changed little and remained at a high level. This constitutes a change in the trend seen in earlier decades, when migrants from increasingly different origin countries moved to a narrowing set of destination countries.

JEL classification: F22, F60, J11
Keywords: international migration, bilateral migration, (de)globalization, diversification of migrants

The second half of the 20th century was characterized by increasing global economic integration, which gained even more speed after the fall of the Iron Curtain. The global economic crisis in 2008–10 seemed to have put a first halt to this process: the ensuing recovery was uneven and shallow in many world regions. At the same time, many advanced economies started to question the benefits of globalization: The United Kingdom leaving the EU and the trade war between the USA and China can be seen as manifestations of this skepticism (Thompson, 2022). More recently, the COVID-19 pandemic and the Russian invasion of Ukraine highlighted the fragility of supply chains, imposing further challenges on globalization. Whether this leads to a permanent trend reversal or is merely a transitory development remains to be seen (see, for example, Goldberg and Reed, 2023, and a recent IMF staff discussion note, Aiyar et al., 2023, for an assessment of the risks associated with increasing policy-driven geo-economic fragmentation).

While global trade and capital flows are more closely monitored (see, for example, Abelianski et al., 2024), another dimension of bilateral flows receives less attention in the context of

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(de)globalization: the bilateral flow of people. However, the composition of migration has important repercussions for trade channels, productivity, innovation and thus, ultimately, monetary policy. Conventional wisdom is that migration has been becoming increasingly global, more frequent and more diverse. Whether this is the case and/or whether migration flows are joining deglobalization trends often attributed to trade and capital flows has not been empirically assessed recently.

This study focuses on the question whether bilateral migration flows show signs of deglobalization, building on a concept developed by Czaika and de Haas (2015), who suggest measuring the degree of globalization along three dimensions: the intensity of migration, the spread/diversification of migration with respect to source and destination countries, and the average distance traveled by migrants. In this study, we apply the approach to estimates of global bilateral migration flows from Abel and Cohen (2019) in its most recent version (October 2022) and provided by Abel (2019) to address the following questions: First, looking at global migration *flows*, has migration continued to become more globalized since 1990? Has it become less globalized in the most recent past, in line with deglobalization tendencies often attributed to other cross-border flows (capital, trade)? Second, how do world regions differ with respect to the diversity of source countries of emigrants and destination countries of immigrants and their degree of migration globalization? Specifically, how does Europe differ from the rest of world? And how has this been changing over time?

These questions are not only intriguing in their own right but also integral to a comprehensive assessment of (de)globalization tendencies in global flows of capital, goods, services and people. Migration, in particular, has important implications for economic outcomes in both receiving and sending countries. In the euro area, the first and most direct impact is on the size of the working-age population. Especially against the background of shrinking working-age populations, immigration can counteract population decline at least in the short to medium run. Note, for instance, that the recent labor market boom in the USA can be largely explained by a surprise surge in immigration (Edelberg and Watson, 2024). In both the EU and the euro area, for example, the labor force would have shrunk between 2012 and 2022 without workers from foreign countries[2]. During the COVID-19 pandemic, on the other hand, weak net migration may have contributed to subdued labor force developments (ECB, 2022). Second, immigration does not only alter the size but also the age structure of a population. As immigrants tend to be relatively young, migration can counteract population aging in aging societies. It can contribute to lower old-age dependency ratios, which have been increasing strongly in most advanced economies (see, for example, Peri, 2020). The fact that immigrants tend to be young is also one of the reasons why several studies also find a positive fiscal impact of immigration (see, for example, OECD, 2021). Further, immigrants can contribute to a slowdown of population aging in advanced economies through, on average, higher fertility rates. Third, migration has been shown to foster productivity, thereby fueling economic growth. This effect is usually attributed to the complementarity of immigrants' skills to those of natives. With immigrants entering the labor market, natives move to different occupations that often require the performance of more complex tasks, linguistic and communication proficiency, etc. In other words, natives often upgrade their jobs as immigrants enter the labor market (see Foged and Peri, 2016.) Fourth,

[2] This result is calculated from Eurostat data (persons in the labor force, by country of birth). Between 2012 and 2022, the increase in the foreign-born labor force was larger than the increase in the total labor force (including foreign-born). This holds for both the EU and the euro area.

migration is related to other cross-country flows, such as trade and capital flows. Specifically, trade between home and host countries has been shown to increase as a result of migration (see, for example, Iranzo and Peri, 2009; Egger et al., 2012; Felbermayr et al., 2015; Bahar and Rappoport, 2018; OECD, 2022), just like FDI has been shown to increase with higher migration between two countries (see, for example, Buch et al., 2006; Javorcik et al., 2011; Kugler and Rapoport, 2007).

Thus, migration has an impact on economic variables, and in terms of growth and productivity, the impact is positive. But how does this relate to the globalization of migration? Does the globalization of migration have an effect on economic variables to an extent that it becomes relevant from a monetary policy perspective? In fact, there is accumulating evidence that higher cultural heterogeneity of migrants has positive impacts on productivity growth and innovation (see literature section below). As far as this is the case, migration affects the natural rate of interest. This is when it becomes relevant for monetary policy.

This study contributes to the literature in several ways. First, we address a topic that has received a lot of attention recently in the context of capital and trade flows and apply it to international migration dynamics. Second, we use a conceptual framework for assessing the globalization of migration developed by Czaika and de Haas (2015) and apply it to more recent data on migrant stocks. This allows us an assessment of (de)globalization trends of international migration up to the year 2020, an update compared to the existing results for 1960 to 2000. Third, we use estimates of global bilateral migration *flows* (Abel and Cohen, 2019). This way, the analysis is not diluted by previous migrants that show up in the stock figures although the actual year of migration might have been years or even decades ago. Migration flow estimates show current migration behavior and thus allow us to better study current trends. Fourth, we focus on the EU and assess how the intensity and diversification of migration has changed over time. This will feed into a follow-up study that will be dedicated to the assessment of possible implications for the size and age structure of the euro area population.

The remainder of this paper is structured as follows. In the next section, we will discuss the concept of measuring the degree of globalization of migration. After describing the data in section 2, we will present the results in chapter 3. Section 4 concludes.

1 The impact of migrant diversity on economic outcomes in the literature

The only paper that explicitly addresses the globalization of migration is that of Czaika and de Haas (2015). However, there is a body of literature that is concerned with the economic relevance of migration diversity. Migrants influence the economy in various ways: they impact demography, labor markets and productivity; migration has a fiscal dimension, and it also relates to trade and capital flows (see, for example, OECD, 2014; Koczan et al., 2019). An expansion of the workforce almost inevitably leads to an increase in a country's GDP. But there is also extensive research on the impact of migration on GDP per capita, and the majority of empirical studies find a growth-enhancing effect of immigration (see, for example, Brunow et al., 2015; Engler et al., 2023).

In the context of this study, however, the obvious question is whether the spread of migration, i.e. the heterogeneity of (im)migrants with respect to their origin, influences economic outcomes, and, if so, how. There is a limited but growing body of literature that addresses this question, and most analyses conclude that the diversity of immigrants with respect to their place of birth boosts economic performance in the recipient countries, regions, subregions or cities. The mechanism

behind this positive impact is usually described as the complementarity in knowledge and skill sets that come with migrants that were raised and trained in different countries. Bahar et al. (2022) argue that this increase in the skill sets that countries can draw upon also enables a country to become active in a broader set of fields and to become more economically complex. They empirically explore this relationship and find cross-country evidence that countries with a birthplace-diverse population indeed exhibit higher economic complexity. This finding holds in particular for diversity among highly educated migrants and for countries with intermediate levels of economic complexity. They further provide evidence that the underlying mechanism of birthplace diversity boosting economic complexity is the increasing diversity in host countries' export baskets. Bove and Elia (2017) investigate whether cultural diversity brought about by immigration has an impact on economic growth and, if so, to what extent. They find a robust and positive relationship over long time periods. Similarly, Alesina et al. (2016) find that the diversity of immigrants relates positively to measures of economic prosperity. The results suggest that skill complementarities between immigrant and native workers are driving the effect. Trax et al. (2015) show at the firm level and for Germany that cultural heterogeneity in firms increases productivity levels (while the mere share of foreign workers in a firm does not). In addition, the cultural heterogeneity in the region where a firm is located, matters for plant-level productivity. Discussing evidence on the impact of migrant heterogeneity with respect to origin but also to skills, motives, culture, etc., Brunow et al. (2015) conclude that its impact is, on balance, positive on innovation and economic growth. Ortega and Peri (2014) explore the interrelationship between trade, migration and income per capita. They find that openness to immigration has a positive and robust long-run impact on income per capita, with the main impact of immigration operating through total factor productivity. The degree of diversity in migration flows has an additional positive impact on income: the set of skills in the labor force is better differentiated, and some evidence suggests that innovation activity is higher with more diversity among migrants.

These recent examples of studies investigating the impact of the diversity of migrants – instead of their numbers – on economic outcomes provide evidence of a positive impact of birthplace diversity. Underlying mechanisms are predominately related to (skill) complementarities between native and migrant workers and associated productivity improvements and innovation.

2 Measuring the degree of (de)globalization of migration

Along with the increase of trade and cross-border investment flows in the course of globalization, a common narrative is also that migration flows keep growing and are getting increasingly complex. At the same time, it is argued, albeit less commonly, that the share of people living outside their country of birth is actually rather small and did not change significantly over several decades, i.e. between the 1960s and 2000s, and after that only increased to a still moderate 3.6% in 2020 (UNDP, 2020). Czaika and de Haas (2015) challenged the common notion that global migration patterns have become increasingly complex over the past decades, with a formerly more clear-cut distinction between typical immigration and emigration countries becoming diluted over time and the initially few main corridors – often following colonial ties – becoming increasingly broad. They do so by investigating – in a structured way – the changes in the magnitude and the diversity of global migration during 1960 and 2000, using data on migrant stocks that measure the number of foreign-born individuals living in the reference countries at a given point in time.

It is not straightforward how to *measure* the degree of globalization of migration, and while there is literature that relates international migration *to* globalization, usually understood as openness

to trade and foreign capital, research on (the measurement of) the globalization *of* migration is very scarce. Czaika and de Haas (2015) suggested a framework to quantitatively assess this question by considering three different dimensions: the intensity of global migration, the spread of migrants across origin and destination countries, and the average distance covered by global migrants.[3] The intensity of migration is measured by the share of migrants in the population. The spread of migration, i.e. the origin-country diversity of immigrants and the destination-country diversity of emigrants, is measured as unity minus the Herfindahl-Hirschman Index of concentration: the higher this spread measure, the more diverse the migrants. And the third dimension, the distance of migration, is measured as the average distance between migrants' origin and source country in a given year or period. Following Czaika and de Haas (2015), we combine these three dimensions to obtain an index of emigrant globalization and an index of immigrant globalization. The former summarizes how globalized emigrants are: how many emigrants are there, how diverse are their destinations, and how far away do they move. The latter index informs about the degree of globalization of immigrants: how many immigrants does a country have, how diverse are they, and from how far away are they? Finally, we combine these two subindices to obtain an index of migration globalization that measures the integration of a country into global migration processes, considering both emigrants from and immigrants to a country. Under this concept, migration becomes more globalized if the intensity of migration increases, migration is more diverse (with respect to origin and destination countries) and the distance becomes longer. Please refer to section A1 in the annex for a comprehensive explanation of the indicators constructed.

We use this approach to address the question of (de)globalization of migration, using recent data on global migration flow estimates in addition to migration stock data. We also use the most recent data on migration stocks, currently available for 1990 to 2020, to directly compare and update the results by Czaika and de Haas (2015). In all dimensions, it is crucial to look beyond the global average that might hide important regional heterogeneities. Geographically, our particular emphasis is on the EU.

3 Data

The core data we use in this analysis are estimates of international migration stocks and estimates of international migration flows. For a comprehensive overview of currently available data on international migration, see Buettner (2022).

3.1 Global bilateral migrant stocks

The UN's International Migrant Stock 2020 dataset (UNDP, 2020) is currently the most complete global database for bilateral stocks of migrants. It contains estimates of the total number of international migrants by age, sex and origin for the mid-point (July 1) of every fifth year between 1990 and 2020. The data are available for 232 countries and areas[4] of the world and are based on official statistics of the foreign-born population. Most of the estimates rely on population censuses but also use information from population registers and nationally representative surveys. Generally, international migrants are equated with the foreign-born population, which is possible

[3] This framework has more recently also been applied to global refugee migration (Fransen and de Haas, 2022) and in parts also to the global mobility of scientists (Czaika and Orazbayev, 2018).

[4] In the UN migration data, the term country does not solely refer to states but also to overseas territories/unincorporated territories, such as Bermuda, the British Virgin Islands or Gibraltar.

for most countries. Whenever the necessary information on the country of birth is not available, and that is the case for approximately 20% of the countries/areas, the country of citizenship is used instead. See section A6 in the annex for further information.

3.2 Global bilateral migrant flows

Migrant *stocks* also reflect to a large extent past migration patterns. Because we are mostly interested in current trends and developments, estimates of international migration *flows* are more interesting for us: they are not "diluted" by previous migration behavior and reflect concurrent migration dynamics. Migration flow data have additional important advantages over stock data. First, they are more appropriate for policy analysis, as flows can show direct reactions to policy changes and do not include migration movements that happened years or even decades ago independent of current policies. Second, migration flow estimates take into account *return migration*: a movement from A to B and back to A would be reflected and counted as two movements while it would not show up in migrant stock data once the return migration is completed. Third, flow data also better reflect *onward migration*: a movement from A to B to C would be counted as two movements while in migrant stock data, it would be interpreted as one movement from A to C once the onward migration is completed.

However, a global dataset on migration flows is not available, as in many countries migration flow data are not collected. In addition, even if the data are available for certain countries, it is difficult to compare the data for different countries, as underlying definitions often differ. We thus rely on estimates in our analysis. In particular, we make use of the bilateral international migration estimates provided by Abel (2019) and Abel and Cohen (2019), who – motivated by the lack of migration flow data – estimate global bilateral migration flows drawing on UN international migrant stock data. For this analysis, we use the most recent update of the database (Abel, 2019, version 6, October 28, 2022). This update has been prepared to incorporate current UN migrant stock estimates (UNDP, 2020) and current UN population statistics updates (UNDP, 2022). Following the periodicity of the UN migration data, the dataset provides estimates of migration flows between country pairs over five-year periods from 1990–1995 to 2015–2020 (in each case from July 1 onward). The estimates cover 225 countries for the periods 1990–1995 to 2000–2005, 226 countries for 2005–2010, and 229 from the period 2010–2015 onward. Abel and Cohen (2019) provide six different estimates of global bilateral migration flows and show validation exercises that help to choose the estimates according to the intended use. We use migration flows estimated by the closed demographic accounting method (pseudo-bayesian), as these estimates exhibit the best performance in validation exercises, in particular when the bilateral dimension of the data is of importance, as in this application.

3.3 Further data sources

In addition, we use data on the total population from the UN (UNDP, 2022) and the distance between countries, measured by the geographical distance between their largest cities from the CEPII Gravity Database (Conte et al., 2022).

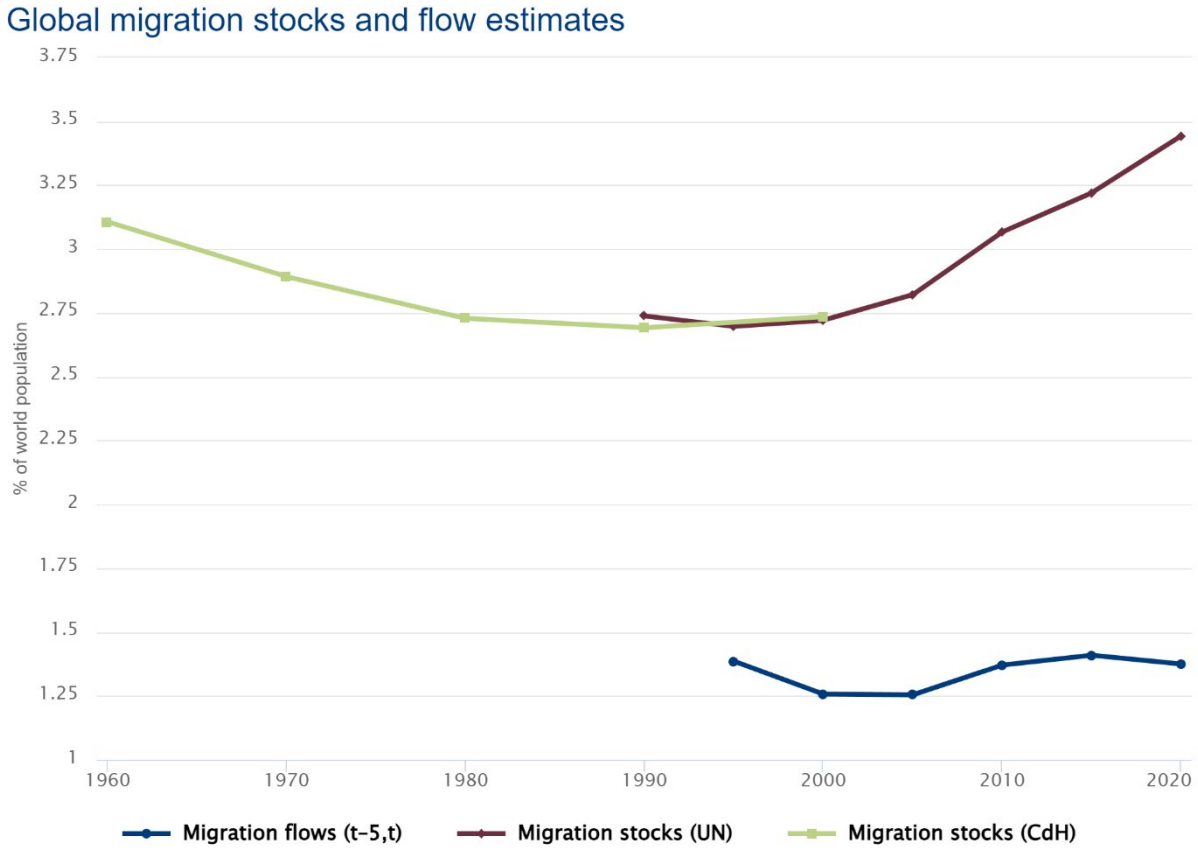
4 Empirical findings

4.1 Intensity of global migration flows

The number of international migrants continuously increased in the past decades. In 1960, an estimated 77 million people lived outside the country they had been born in (United Nations, 2009). By the year 2000, this number had grown to 173 million and increased further to 281

million by 2020.[5] Considering the simultaneous growth in the global population, relative numbers provide a more insightful perspective and show a rather different picture: The global share of migrants, i.e. the number of people living outside their birth country relative to the total global population, remained fairly constant at or below 3% from the 1960s to 2005, before it moderately increased in the past 15 years, to reach 3.5% in 2020 (see chart 1[6] and table 1 in section 4.4, which summarizes trend changes in all the indicators discussed). Currently, the stock of migrants – in absolute and relative terms – is at an all-time high. Political instability, geopolitics, inequality, and climate change are part of the story behind this recent increase (see, for example, IOM, 2024). Nevertheless, migrants still constitute a small share of the global population.

Chart 1



Source: Authors' calculations based on the UN International Migrant Stock (2020) database and migration flow estimates (Abel, 2019, version 9); Czaika and De Haas (2015) (CdH).

When looking at the estimates of global migration *flows*, i.e. the number of people that move from one country to another in a five-year period, we see that in relative terms, they remained fairly constant: In the period 1990–95, around 1.4% of the global population migrated, and in the period 2015–20, this share was approximately the same. This implies that the absolute values

[5] The UN does no longer publish data on the global bilateral migrant stock between 1960 and 1985, but several publications (e.g. IOM, 2024) and the methodological note on the 2008 revision of the data refer to the numbers.

[6] In this chart, and in the remaining analysis, our migrant stock data do not include migrants of unknown origin. For this reason, the global stock of migrants amounts to currently approximately 3.5% of the population in our data, while the UN's estimate is 3.6% (including migrants of unknown origins).

grew at rates comparable to overall population growth[7] and migration did not become more frequent between 1990 and 2020. Positive relative migration flows –even constant ones – mean that the relative *stock* of migrants can still increase, and so it did.

At this point, it is important to keep in mind that UN migration stock data are based on the country-of-birth-concept, whereas the flow estimates aim at counting each act of migration. So the flow estimates do not merely reflect changes in the stocks of migrants. They aim at counting each "regular" *outward* migration, where a person leaves their country of birth, but also each *return* and *transit* migration (i.e. onward migration). Each outward migration increases the global stock of migrants, whereas each return migration reduces it. Transit migration does not change the overall global migrant stock. The relative importance of these three types of migration in the overall flow estimates thus determines how stocks react to flows. Azose and Raftery (2019) show that return and transit migration constitute considerable parts of global migration. They provide estimates of migration flows by the type of movement between 1990 and 2015 and find that approximately 10% of global migration flows can be attributed to transit migration and around 30% to return migration, with the remaining 60% being typical emigration.[8]

What we thus observe in terms of global migration intensity is that while *migration* did not become more frequent in relative terms between 1990 and 2020 (i.e. constant relative migration flows), the presence of migrants did increase (i.e. rising relative migrant stocks).

Czaika and de Haas (2015) find considerable heterogeneities in migration intensities across world regions. Their analysis concentrates on the period from 1960 to 2000 and finds that emigrant intensity, measured by migrant stocks, decreased somewhat for Europe, which had the highest emigration rate, and also for Africa. Emigration rates from other regions, namely the Americas and Oceania, increased between 1960 and 2000. Immigration rates, on the other hand, increased for Europe (and the Americas), with Europe changing from a region predominantly sending migrants to a receiving region.

Looking at more recent years and using migration flow estimates (see charts A1 and A2[9] in the annex), we find notable variations in migration intensities and their trends across regions. Globally, however, this yields fairly constant migration rates between 1990 and 2020, but an increasing stock of migrants relative to the population. This first dimension does not contribute to an increase in the globalization of migration (flows) between 1990 and 2000, at least not globally. Regionally, we see mixed evidence: While in the EU, both emigration and immigration intensities increased (which would result in a higher globalization index), in other world regions, we observe little changes in both emigration and immigration rates (Asia) or significant changes in only one of the two (non-EU Europe, Latin America, Oceania). North America saw increases in emigration rates, with immigration rates dropping. So migration intensities will feed rather differently into regional migration globalization indices (see table 1 for an overview).

4.2 Spread of migration flows

The *global spread of migrants*, i.e. the dispersion of migrants across all possible (bilateral) corridors (country-pairs), see equation 4 in section A1 in the annex, has been increasing since the 1960s, but the increase slowed down considerably in the past two decades. The green line in chart 2

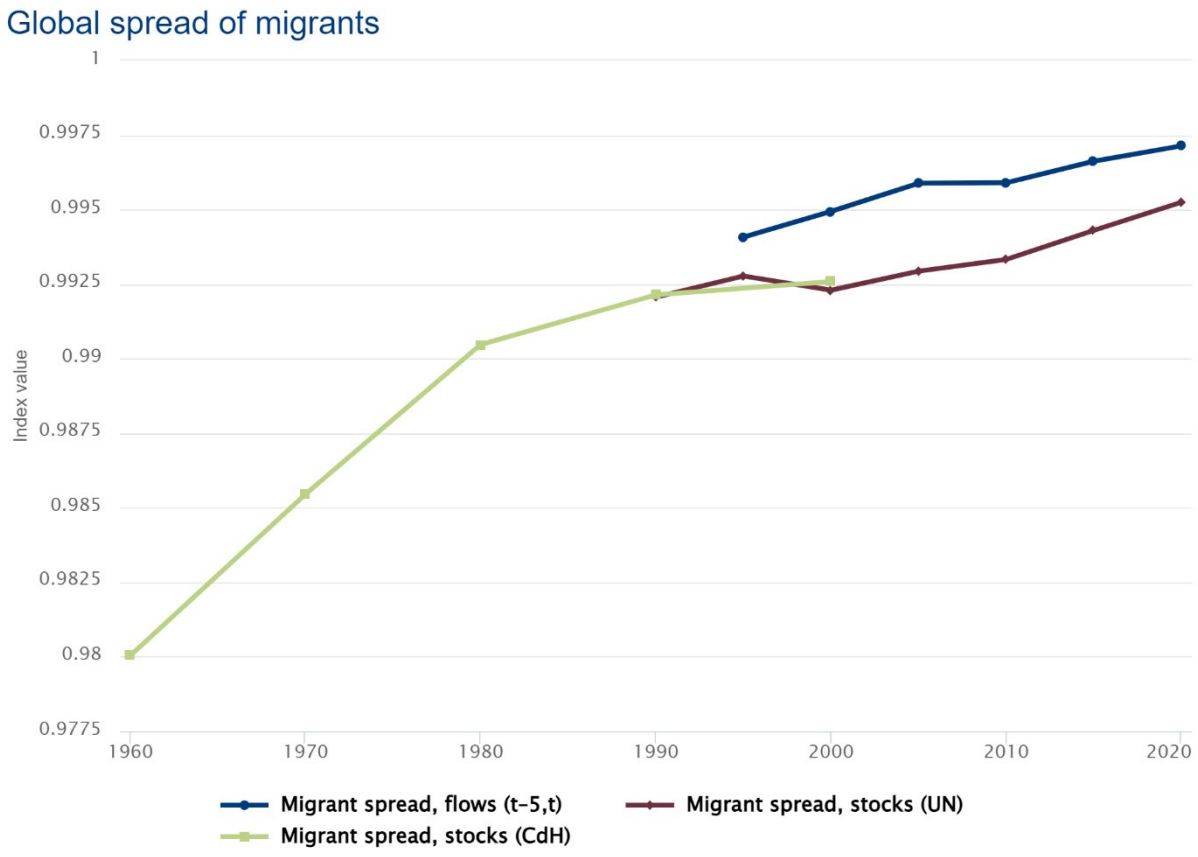
[7] The growth rate of the global population declined from 1.7% in 1990 to 0.9% in 2020 (UN World Population Prospects).

[8] See also migration flow estimates by type of move, Abel and Cohen (2022), available at https://figshare.com/articles/dataset/12845726.

[9] Emigration and immigration intensities displayed in these two charts include within-continent migration. Rates are estimated by dividing the sum of all emigrants (immigrants) of countries belonging to the continents by the continents' population.

shows the results found by Czaika and de Haas (2015) using data on the stock of migrants: Between 1960 and 2000, global migration was becoming increasingly dispersed across all possible migration corridors: the spread of global migration increased. The chart displays index values (based on equation 4 in section A1 in the annex) and for its application, index values are very close to one. The underlying reason is that well over 40,000 bilateral corridors are involved in its estimate and a large number of already very small shares are squared, added up and subtracted from one. The index may be interpreted as the probability that two randomly drawn migrants travel *different* corridors (see, for example, Alesina et al., 2003). Given the high number of possible corridors, this probability – and thus the index value – is very high (and that changes in the applications below, where the index is calculated for just above 200 countries). What is interesting for us here, however, is how the index develops over time.

Chart 2



Source: Authors' calculations based on the UN International Migrant Stock (2020) database and migration flow estimates (Abel, 2019, version 9); Czaika and De Haas (2015) (CdH).

The red line in chart 2 shows how the global spread of migrants has developed since 2000 on the basis of data on migrant stocks. We see that it has continued to increase, but at a slower pace. In other words, the bilateral routes migrants use have continued to get broader and more diverse, but only moderately compared to the increases observed between the 1960 and the 1980s. The blue line shows the spread of global migrants on the basis of estimates of migration flows and reveal a similar pattern: between 1990 and 2020, migrants spread more widely across different

migration corridors, but the pace of increase slowed down.[10] This is also confirmed by a look at the share of "filled" corridors in the migration flow estimates: While in the period 1990–1995, 63% of all possible routes (origin-destination country pairs) were "filled" (non-zero), in the period 2015–2020, 67% were filled. Corridors that opened up between 1990 and 2020 are, for example, Iran to Brazil, Nigeria to Estonia and Sri Lanka to Romania, all of which recorded positive and increasing estimated flows in 1995–2000 or later while showing zero flows in 1990–95. When counting only corridors with a flow of 50 or more, approximately 85 opened up after 1990–95.

When distinguishing between global *emigrant spreads* (equation 5 in section A1 in the annex) – how dispersed are (e)migrants in terms of the destination countries – and global *immigrant spreads* (equation 6 in section A1 in the annex) – how diversified are (im)migrants in terms of their origins – Czaika and de Haas (2015) find for the period between 1960 and 2000 that emigrant spreads declined while immigrant spreads increased (see solid and dashed green lines in chart 3). In other words, migrants from more and more diverse origin countries were increasingly concentrated in fewer and fewer different destination countries.

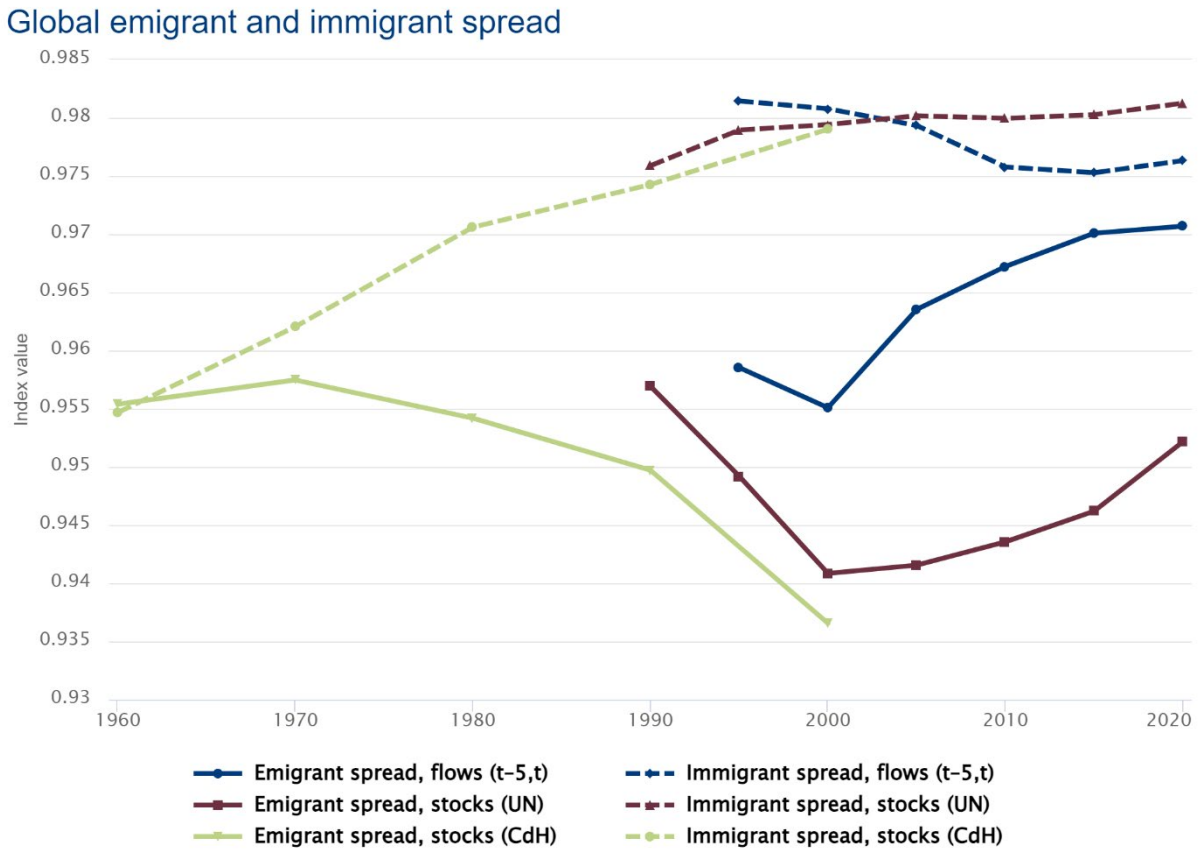
When applying the same method to more recent data on migrant stocks, we find that this diverging trend has been reversed: global migrants were moving to an increasingly diverse set of destinations between 2000 and 2020, and the trend of an ever-narrower set of destinations found for the decades between 1960 and 2000 reversed (see solid and dashed red lines in chart 3). We find the same trend reversal when the indicators are calculated on the basis of estimated migration flows (instead of stocks; solid and dashed blue line in chart 3). This is an important finding: the results show that while immigrants come from a (still) diverse set of origin countries, they are no longer concentrated in an increasingly narrow set of destinations but spread out more across different destinations.

This global aggregate again hides regional heterogeneities (charts A3 and A4 in the annex and table 1).[11] Latin America, for instance, exhibits both the lowest emigrant spread and the lowest immigrant spread among all world regions, but also the strongest increase over time. Immigrant spreads, on the other hand, dropped significantly between 1990 and 2020, from already low levels. Immigrants to African countries are not particularly diverse in terms of their origin countries while emigrant spreads of Asian countries have been increasing since 1990, but a recent flattening is observable. Immigrants to Asian countries do not have highly diversified origins. In North America, emigrant spreads are comparably low and stagnant, while immigrant spreads – which are not particularly high in comparison either – increased over time, especially after 2010.

[10] We also see the level of global migrant spreads being higher for flow data. This is consistent with the fact that stock data also reflect past migration patterns, where spreads were lower. This "inertia" of stock data is a key reason for our preference for flow data estimates in our analysis.

[11] It should be noted that for spreads, continent-specific and global values could appear to contradict each other. They do not add up, and it could be the case, for example, that continent-level spreads increase while the global spread remains unchanged: if immigration diversity increases for all continents, but the origin countries increasingly *overlap*, this can result in a constant global spread. Vice versa, if origin country sets of continents become more different (i.e. they overlap less), this could result in changing global spreads even when the number of origin countries does not change. Thus, the degree of overlap of the origin/destination country sets also matters in the relationship between global and continent-level spreads.

Chart 3

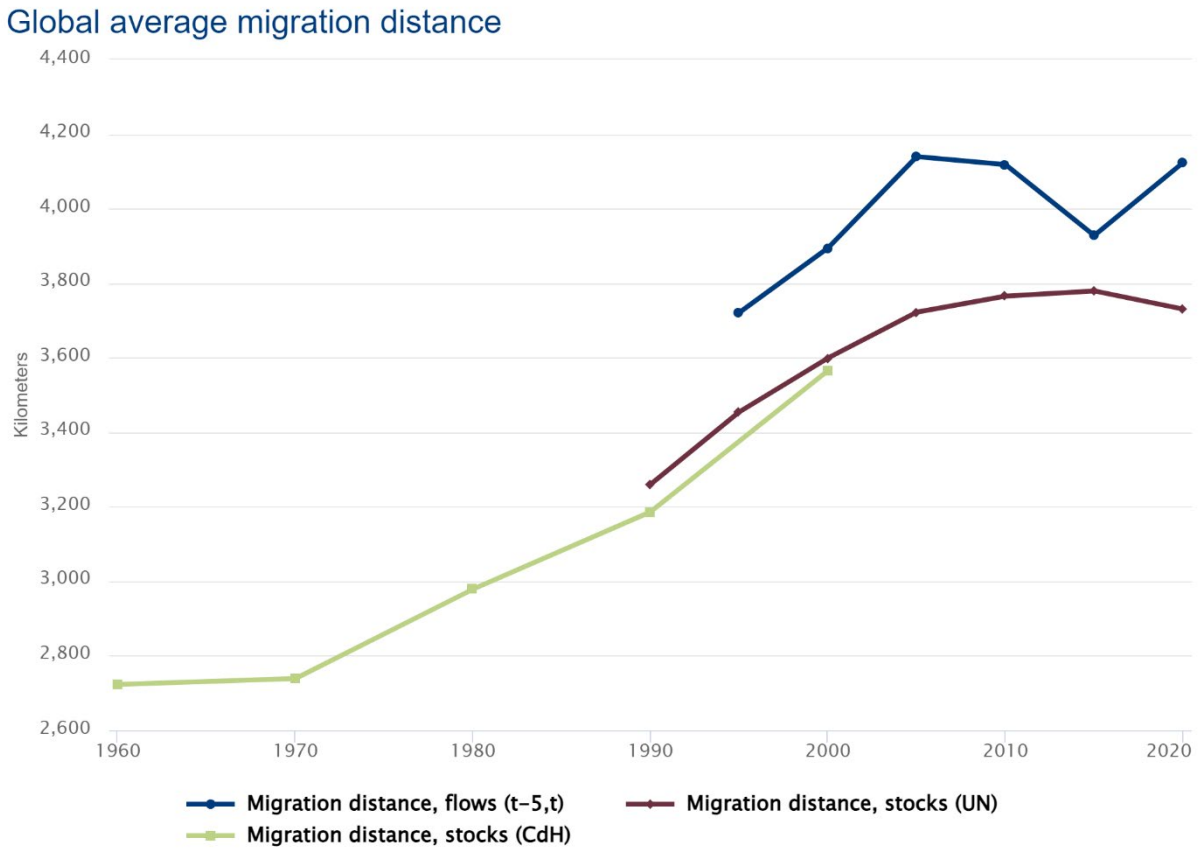


Source: Authors' calculations based on the UN International Migrant Stock (2020) database and migration flow estimates (Abel, 2019, version 9); Czaika and De Haas (2015) (CdH).

Turning to the EU, we find that both emigrant and immigrant spreads are high in a global comparison. In the most recent periods, emigrant spreads decreased significantly, the diversity of origins of EU immigrants on the other hand remained consistently high, ranking highest among world regions. In non-EU Europe, the emigrant spread has seen a moderate increase, while the immigrant spread has grown more markedly. The latter development has been particularly driven by an underlying increasing diversity of origins from Asia and Africa, as well as a balancing across existing corridors. Generally, European migration is comparatively diverse in terms of both origin and destination.

4.3 Distances covered by migrants

Chart 4



Source: Authors' calculations based on the UN International Migrant Stock (2020) database, migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022); Czaika and De Haas (2015) (CdH).

Czaika and de Haas (2015) find that the geographical distance between origin and destination countries increased considerably between 1960 and 2000. Using more recent data on migration stocks, we find an overall increase between 1990 and 2020. This is mostly due to the 1990s and early 2000s, however. As of the period 2000–05, we do not find a further increase in the average distance covered by global migrants.[12]

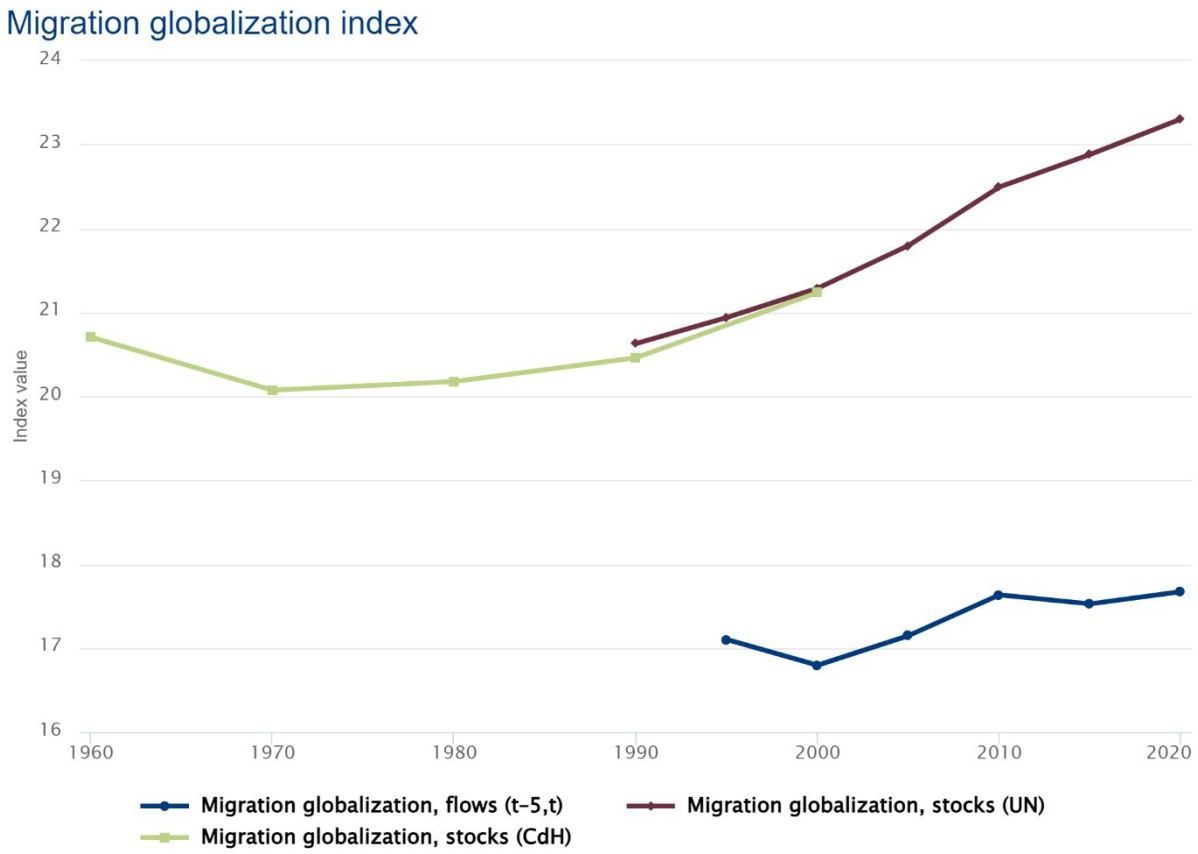
Variations at the regional level are strongly related to the remoteness of countries, with migrants from Oceania having covered by far the largest average distance among regions. Immigrants to and emigrants from North America travel on average 7,000km to 8,000km. The global average migration distance is around 4,000km. The lowest emigration distances are observed for Europe and Africa. Immigration distances are again lowest for Africa, which is related to the high share of within-continent and neighboring-country migration, as well as for Asia. The dynamics over time are limited, and the mild upward trend observed globally can mostly be attributed to increasing distances between source and destination for North American emigrants and immigrants, and African and Asian immigrants.

[12] It is not surprising that the average distance measured by migration flows is somewhat higher than that measured by stocks, as the stocks reflect also past migration patterns, which have been found to be of shorter distance.

4.4 An index of the globalization of migration

The index of the globalization of migration combines the three dimensions discussed above to form an overall measure (equation 14 in section A1 in the annex). Looking at global values and the stock of migrants, we see that from the 1970s, migration started to become globalized (see chart 5). This trend gained speed in the 1990s, and the globalization of migration is currently at its highest level. This increase in the index of approximately 12% results from an increase in the intensity of migration when measured by stocks, an increase in the spread of migrants as well as the distances covered by migrants.

Chart 5



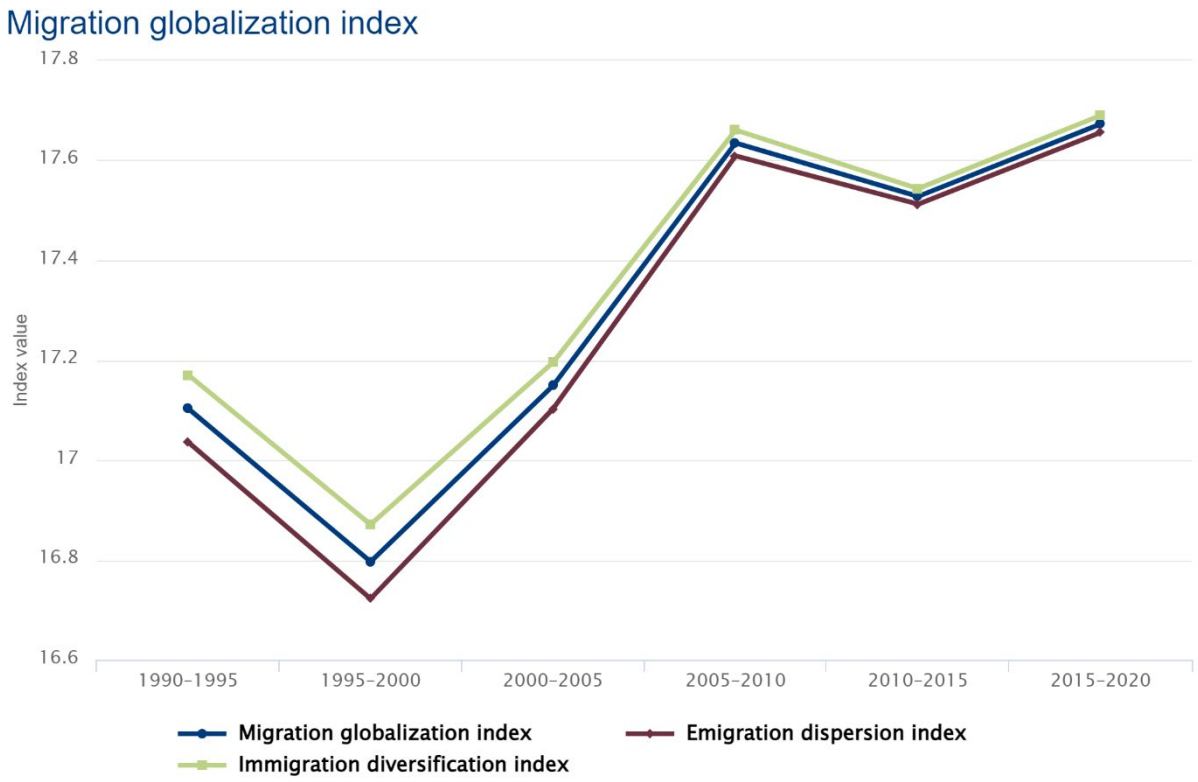
Source: Authors' calculations based on the UN International Migrant Stock (2020) database, migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022); Czaika and De Haas (2015) (CdH).

When looking at migration flows, which reflect solely *current* but not historical migration dynamics (see blue line in chart 5, and in more detail in chart 6, as well as the overview table 1), we observe an increase in the globalization of migration between 1990 and 2010, followed by a flattening. At the time of the global financial crisis, the trend toward increasing globalization of migration came to a halt and globalization remained stagnant until the most recent period (2015–20). The underlying developments here are a stagnant intensity of migration, a shift from increasing to flattening, even decreasing, immigrant spreads, and only minimal changes in the average distance covered by migrants in this time span.

Chart 6 further shows the difference between the two components of the globalization index: emigrant dispersion – the globalization of emigration (equation 12 in section A1 in the annex) –

and immigrant diversification – the globalization of immigration (equation 13 in section A1 in the annex). Over time, these two components converged, as the globalization of emigration increased faster than the globalization of immigration. Since the intensity of migration flows did not increase, and the average distance lengthened merely in the 1990s, the overall increase is mostly related to the previous finding that emigrants spread more over different destination countries and the diversity of immigrants exhibited a sideways movement in the past three decades.
How does this compare to the flows of goods or capital? Generally speaking, the observation that a steep increase in globalization starting from the mid-1990s was followed by a mere lateral movement at a higher level since the late-2000s also applies to other measures of international economic connectedness such as trade or capital flows or to other measures of globalization such as the KOF Index of Globalization (Gygli et al. 2019; see chart 7).

Chart 6



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022).

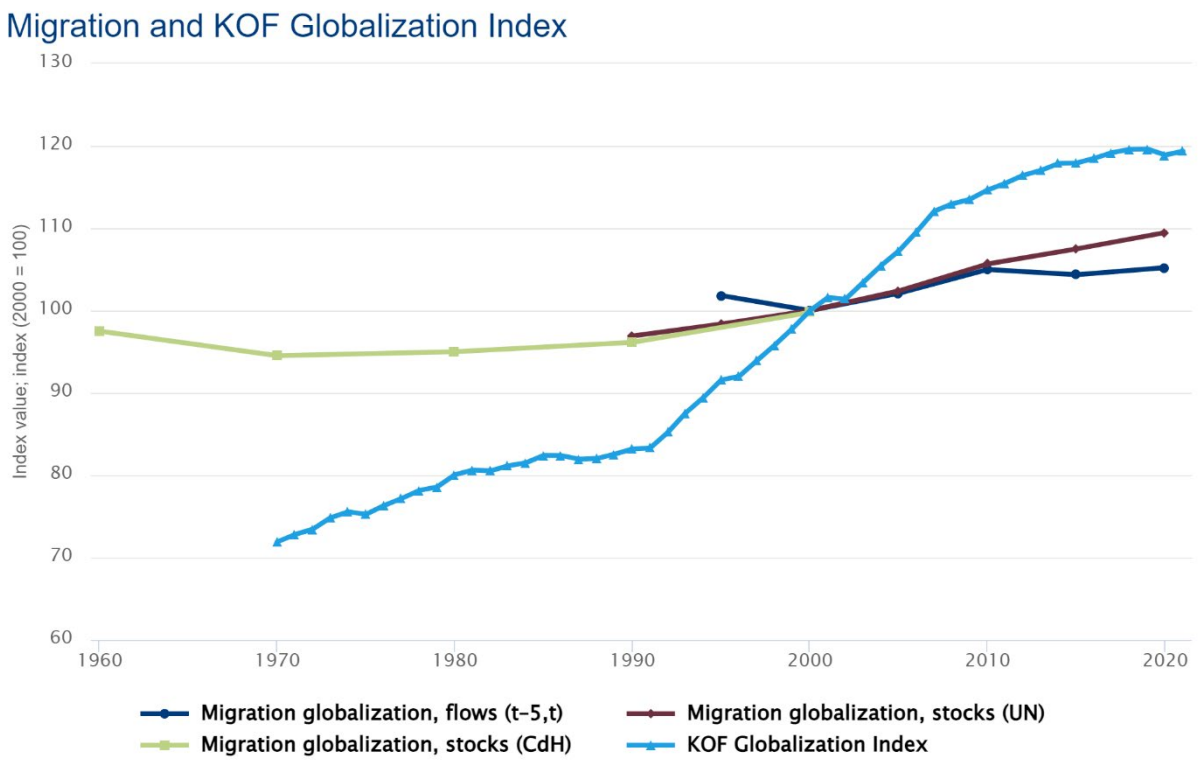
Table 1

Changes in migration intensity, spread, distance and in the globalization of migration between 1990–1995 and 2015–2020

	Global	EU	Non-EU Europe	Africa	Asia	Latin America and the Caribbean	North America	Oceania
Migration intensity	–							
Emigration intensity		↑	–	↓	–	–	↑	–
Immigration intensity		↑	↑	↓	–	↑	↓	↑
Spread of migrants	↑							
Emigrant spread	↑	–	▲	↑	↑	↑	–	↑
Immigrant spread	↓	–	↑	–	–	–	–	↑
Distance	▲							
Emigrants		–	↑	–	–	–	↑	–
Immigrants		–	▲	↑	↑	↓	↑	–
Globalization	↑	↑	↑	↓	↑	↑	↑	↑
Emigrant globalization	↑	↑	–	↓	↑	–	↑	–
Immigrant globalization	↑	–	↑	–	↑	↑	–	↑

Note: Upward (downward) arrows indicate increases (decreases) between 1990–1995 and 2015–2020, based on OLS estimations of the respective measure on a variable indicating the time period and an intercept. Large (small) arrows indicate a statistical significance level of 10% (15%); "–" indicates no statistically significant change. Values in empty cells have not been computed, either because the global values equal the values for emigration and immigration (intensity, distance) or because values are not uniquely defined without specifying either an emigrant or immigrant perspective (continent-level values).

Chart 7

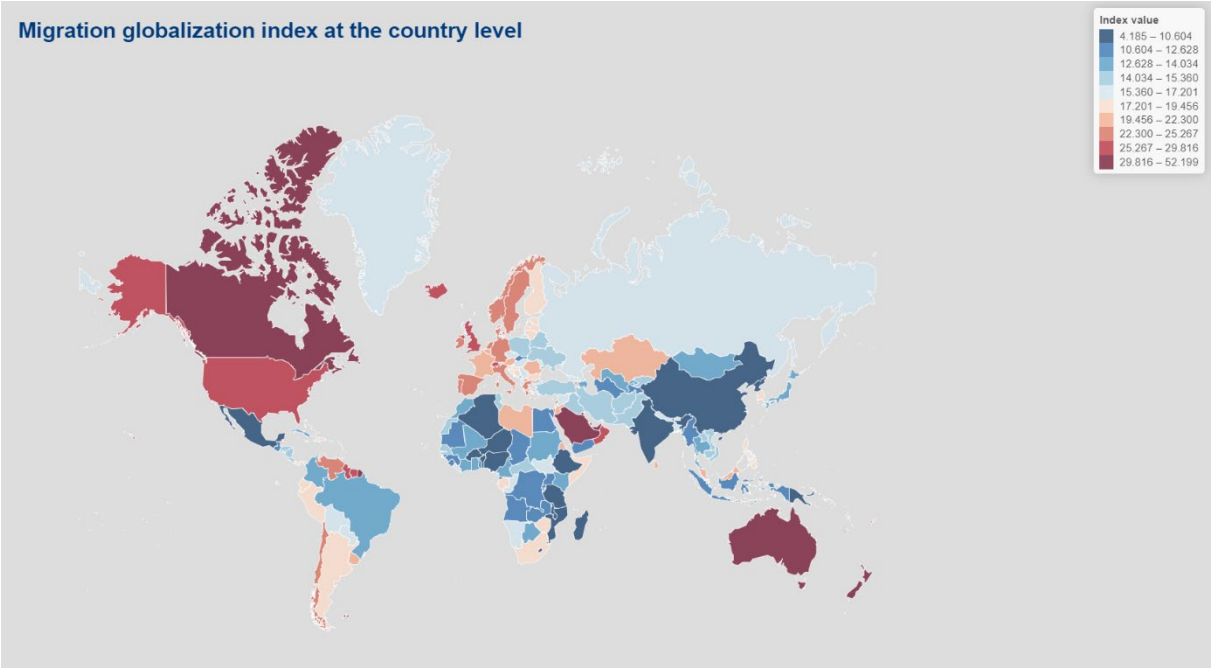


Source: Authors' calculations based on the UN International Migrant Stock (2020) database, migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022); Czaika and De Haas (2015) (CdH); KOF Globalization Index (Gygli et al., 2019).

At the country-level, the results are highly heterogeneous across countries (see figure 1). Many small (island) states exhibit the highest degrees of migration globalization. After excluding

countries with a population of less than half a million, Australia, the United Arab Emirates, New Zealand, Canada and Kuwait are the countries with the highest degrees of globalization in 2015–20. Many of those high-ranking countries have been typical immigration countries for decades or longer or are resource-rich countries with small populations and large numbers of immigrant workers. European countries exhibit high – but not the highest – degrees of migration globalization. Table 1 shows the direction and statistical significance of changes in the globalization index and the underlying subcomponents.

Figure 1



Source: Own calculations based on Abel and Cohen (2019) migration flow estimates.

Overall, we find a high degree of migration globalization especially in countries that have a long-standing migration history (and thus large diasporas and networks) and resource-rich countries with a high demand for foreign labor (like the Gulf region).[13] When relating the globalization of emigration to the GDP per capita in origin countries, and the globalization of immigration to the GDP per capita in destination countries, we find a positive correlation in both cases: the richer a country, the more globalized its emigrants and immigrants. The former is likely related to affordability, with emigrants from poor countries either not being able to emigrate at all or merely to a small set of neighboring (or close) countries. This reduces emigration intensities, spreads and distances and thereby the index. The latter might be generally related to the broad attractiveness of advanced economies for migrants from very different source countries, and the corresponding willingness to move far away from home.

[13] This is in addition to several small-island states that typically have very high emigration rates that feed into our index.

5 Conclusions

Our research on changing trends in the globalization of migration is motivated by the observation that the discussion of (de)globalization focuses predominantly on trade and capital flows, while another important cross-border flow – the flow of people – is often neglected. However, the degree of heterogeneity of migration has important economic implications on destination countries through its effects on productivity and innovation but also through its potential to mitigate challenges associated with aging societies. These effects are likely to influence the optimal course of monetary policy. Against this backdrop, we attempt to systematically address the question of a possible slowdown of the globalization of migration in the recent period of multiple crises.

We follow the seminal work by Czaika and de Haas (2015) and use more recent data on migrant stocks as well as – for the first time – estimates of global bilateral migration flows by Abel and Cohen (2019; most recent update from October 2022) to identify changing trends in the degree of globalization of migration, often attributed to trade or capital flows. We construct an index based on three dimensions: The first dimension, the intensity of global migration, did not increase between 1990 and 2020; the relative magnitude of global flows amounted to roughly 1.4% in the period 1990–95 as well as in our last period of observation, 2015–20. The second dimension reveals that migrants continued to spread more across all possible migration corridors between 1990 and 2020, but at a considerably slower pace than pre-1990. Between 1990 and 2020, we also observe an important change in emigration and immigration spreads: while Czaika and de Haas (2015) found that migrants come from an increasingly diverse set of origin countries and settle in narrowing destination countries, we find the opposite for the periods after 1990: Immigrants still come from diverse (albeit slightly less diverse) origin countries, but the variety of destination countries has increased (again). Thus, we find no evidence that there is an increasing concentration of migrants in fewer destination countries. In fact, quite the opposite is true: after 2000, the dispersion of emigrants over destinations increased considerably. The third dimension shows that the distance between source and destination country for an average migrant did not continue its upward trend that was observed before 2000.

What do these dimensions tell us about a possible deglobalization of migration? We combine them to obtain an index of the degree of migration globalization and find that – on a global scale – the globalization of migration, which was increasing constantly between 1960 and 2000, slowed down from 2005–10 onward. Between 2010 and 2020, a period characterized by multiple crises, migration did not become more globalized. When distinguishing between emigrant dispersion and immigrant diversification, our finding suggests that both did not further increase during this crisis period. Of course, there might be level effects at work here (globalization cannot increase indefinitely), yet it appears that the overall development could also reflect a changing momentum of globalization. To what extent this is the case remains to be seen in future research.

As argued above (section 1), an increase in the diversity of the immigrant population as such contains the potential to generate economic benefits (e.g. via increases in productivity, trade links, etc.). However, this will only be the case if integration into the labor market succeeds. Importantly, the fact that immigrants come from a still highly diverse set of countries underlines the need for flexibility and creativity in active labor market policies. It will be increasingly necessary to implement measures aimed at minimizing potential brain waste, i.e. an underutilization of the human capital of migrants on the labor market. Further, even if the pace of globalization is diminishing, it is still high and hence underlines the necessity for international

cooperation. As shown above, there is an increasing number of destination countries and thus cooperative efforts are ever more important. These efforts should be directed toward ensuring timely information about migration trends (again, informing labor market policy) but also to harmonizing migration processes across countries.

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Annex

A.1 Measuring the degree of (de)globalization of migration: technical chapter

A.1.1 Intensity of global migration

Following Czaika and de Haas (2025), we consider the intensity of migration as a first dimension. Here, it is important to distinguish between absolute and relative magnitudes of global migration, i.e. between the absolute number of migrants and the share of migrants in the population both at the global and country level. Only relative magnitudes can inform about an increasing intensity of migration – or an acceleration of migration rates. We define the global migration intensity I_G as

$$I_G = \sum_{i=1}^{N} \sum_{j=1}^{N} \frac{m_{ij}}{N} = \frac{M}{N} \quad (1)$$

where m_{ij} are migration flows between origin i and destination j, N is the total global population, and M is the total number of migrants.[14]

Regional- or country-level intensity may reveal interesting heterogeneities which would be invisible at the global level. We define emigration intensity of country i, EI_i, as

$$EI_i = \frac{m_{i.}}{N_i} \quad (2)$$

with $m_{i.}$ denoting all emigrants from and N_i total population of country i, and immigration intensity of country j, II_j, as

$$II_j = \frac{m_{.j}}{N_j} \quad (3)$$

where $m_{.j}$ refers to all immigrants to country j.

A.1.2 Spread of global migration

Apart from the number of global migrants, we are interested in the diversity of origin countries and the dispersion across destination countries. The second dimension thus covers the heterogeneity of source and destination countries in global migration.

Global spread of migrants across all possible (bilateral) routes

Following Czaika and de Haas (2015), we use a measure that is based on the Herfindahl-Hirschman Index to quantify the spread of global migrants over all possible migration corridors, i.e. over all possible origin-destination country pairs[15]. As the Herfindahl-Hirschman Index is a measure of concentration, it is subtracted from unity to obtain a measure of spread/diversity[16].

[14] The migration intensity and all measures below are calculated for different points in time (stocks) or time periods (flows). The time index is omitted from all formulas for the sake of brevity.

[15] Koech and Wynne (2017) use the Herfindahl-Hirschman index to measure the diversity of US states' exports, immigrants and financial links with respect to countries. For an application of the Herfindahl-Hirschman index to measure the concentration of remittances, see Hosny (2020).

[16] This index is also used in the trade literature to measure import/export diversification with respect to sectors (see for example UNCTAD 2024, Chapter 1). A Hirschman-based index is also often employed when measuring the diversity of a population with respect to different groups. A well-known index is the ethnolinguistic fractionalization index (see Alesina et al., 2003). It ranges between zero (perfectly homogeneous population) and one (maximally fractionalized population) and identifies the probability that two randomly chosen individuals in a population belong to a different group.

$$S_G = 1 - \sum_{i=1}^{N}\sum_{j=1}^{N}\left(\frac{m_{ij}}{M}\right)^2 \quad (4)$$

S_G denotes the index for the global spread of migrants, i and j are the indexes for the origin and destination countries. m_{ij} are migration flows between origin i and destination j, and M is the overall number of global migrants, i.e. $M = \sum_{i=1}^{N} m_{i.} = \sum_{j=1}^{N} m_{.j}$. The index ranges from 0 to $\left(1 - \frac{1}{N^2}\right)$. A value of 0 indicates that all flows occur on one migration corridor (i.e. only between one origin and one destination country), and a value of $\left(1 - \frac{1}{N^2}\right)$ indicates that flows are equally distributed across all possible migration corridors. As the shares that enter the sum are squared, bilateral corridors that exhibit relatively small flows receive a small weight in the index, whereas corridors that are characterized by relatively high flows receive a high weight. The index is a continuous function of the shares per corridor, i.e. small changes in the shares lead to small changes in the index value (no jumps). The order of the shares that enter the sum is irrelevant. The index is furthermore zero-indifferent, i.e. adding or removing possible migration corridors that are not used (and exhibit a share of zero) do not change the index value. If one *new* bilateral corridor is used and a new small share enters the sum, the sum of squared shares will be lower and the index will increase slightly, indicating a moderately higher diversification.[17]

Global *emigrant* and global *immigrant* spread

While the global spread of migrants informs at a very aggregate level how diversified migrants' movements along all possible migration corridors are, distinguishing between emigrant and immigrant spread can shed light on potentially different degrees of diversification from an origin and destination country perspective. We calculate the **global emigrant spread, $\mathbf{ES_G}$,** which informs about the dispersion of global migrants over destination countries. Also using a Herfindahl-Hirschman-based index, we compute it as unity minus the sum of squared shares of incoming migrants per destination country.

$$\mathrm{ES_G} = 1 - \sum_{j=1}^{N}\left(\frac{m_{.j}}{M}\right)^2 \quad (5)$$

An index value of 0 indicates that all migrants are moving to the same destination country, whereas an index value of $\left(1 - \frac{1}{N}\right)$, the maximum value of the index, indicates that global emigrants are equally spread over destination countries. The **global immigrant spread, $\mathbf{IS_G}$,** measures the diversification of global migrants with respect to their origin countries, and is calculated as unity minus the sum of squared shares of emigrants per origin country:

$$IS_G = 1 - \sum_{i=1}^{N}\left(\frac{m_{i.}}{M}\right)^2 \quad (6)$$

Emigrant and immigrant spread by countries or country groups

In order to address regional heterogeneities, we also calculate emigrant and immigrant spreads at regional or individual country levels. The **emigrant spread of (source) country (or**

[17] See for example Kvalseth (2022) for a detailed discussion of the index properties.

country group/region) i, ES_i, is a measure for the diversity of destinations of emigrants from country (or country group/region) i.

$$ES_i = 1 - \sum_{j=1}^{N} \left(\frac{m_{ij}}{m_{i.}}\right)^2 \quad (7)$$

Accordingly, the **immigrant spread of (destination) country (or country group/region) j , IS_j,** informs about the origin country diversity of all immigrants to country/region j.

$$IS_j = 1 - \sum_{i=1}^{N} \left(\frac{m_{ij}}{m_{.j}}\right)^2 \quad (8)$$

A.1.3 Distance covered by migrants

The third dimension considered is the average geographical distance covered by a migrant in a given period. This global average migration distance D_G is calculated as the geographical distance between the largest cities in the origin and destination countries, weighted by the relative share of migrations between them. It is measured in kilometers and can be interpreted as the distance traveled by an average migrant in a certain time period.

$$D_G = \sum_{i=1}^{N} \sum_{j=1}^{N} d_{ij} \frac{m_{ij}}{M} \quad (9)$$

d_{ij} denotes the geographical distance between countries i and j. On the regional or country level, the emigration distance of country/region i, ED_i, is defined as

$$ED_i = \sum_{j=1}^{N} d_{ij} \frac{m_{ij}}{m_{i.}} \quad (10)$$

and the immigration distance of country/region j, ID_j, as

$$ID_j = \sum_{i=1}^{N} d_{ij} \frac{m_{ij}}{m_{.j}} \quad (11)$$

Under this concept, migration becomes more globalized if the distances between origin and destination countries increase. Of course, one could also think of alternative measure of distance, for example cultural distance or the similarity in spoken languages. We stick to the original concept and apply a geographical distance measure.

A.1.4 An index of the globalization of migration

The three measures on intensity, spread and distance of migration can be combined to calculate an index of globalization. We use a geometric mean, following Czaika and de Haas (2015), which is scale-invariant and allows us to combine the three dimensions, which are all measured at a different scale, with equal weights on the subdimensions. At the country level, we can therefore calculate an emigrant dispersion – or emigrant globalization – index

$$EGI_{it} = [EI_{it}\ ES_{it}\ ED_{it}]^{\frac{1}{3}} \quad (12)$$

and an immigrant diversification – or immigrant globalization – index

$$IGI_{it} = [II_{it}\ IS_{it}\ ID_{it}]^{\frac{1}{3}} \quad (13)$$

The former looks at a country's emigrants: how many leave, how distributed are the destination countries, and how far do they go? The latter focuses on immigrants, their relative numbers, the diversity of their origin countries and the average distance between origin and destination. When combined, again using a geometric mean with equal weights, the resulting index subsumes the degree of globalization of a country's emigrants and immigrants and can be interpreted as a country's overall migration globalization:

$$GI_{it} = [EGI_{it}\ IGI_{it}]^{\frac{1}{2}} \tag{14}$$

It shows how deeply integrated countries are in global migration processes. High emigration or immigration rates, diverse immigrants and dispersed emigrants increase the degree of a country's migration globalization, so does a larger distance to the source and destination countries of migrants.

A.2 Summary statistics

Table A1

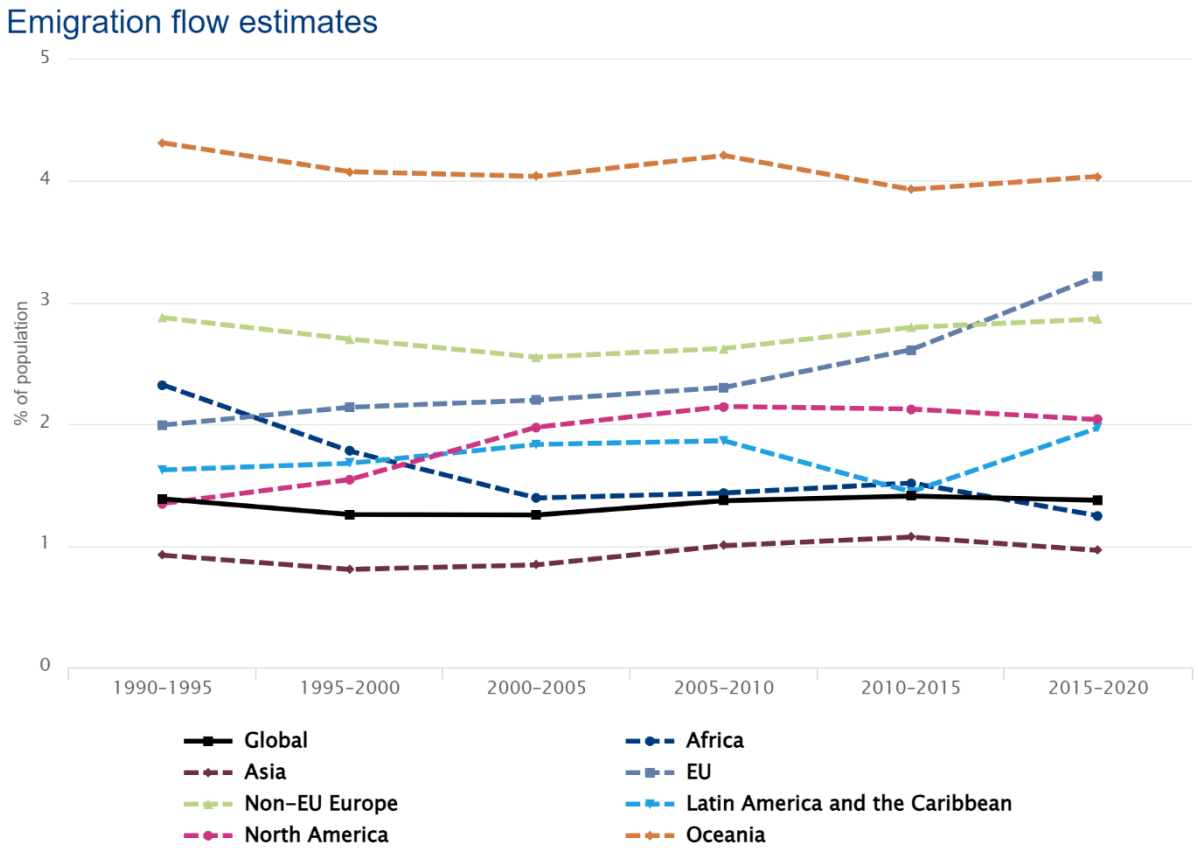
Summary statistics

		Emigration			Immigration			Globalization		
Period	Continent	Intensity (% of population)	Spread (index)	Distance (km)	Intensity (% of population)	Spread (index)	Distance (km)	Emigration (index)	Immigration (index)	Globalization of migration (index)
1990–1995	Global	1.4	1.0	3,721	1.4	1.0	3,721	17.0	17.2	17.1
1995–2000	Global	1.3	1.0	3,894	1.3	1.0	3,894	16.7	16.9	16.8
2000–2005	Global	1.3	1.0	4,140	1.3	1.0	4,140	17.1	17.2	17.1
2005–2010	Global	1.4	1.0	4,118	1.4	1.0	4,118	17.6	17.7	17.6
2010–2015	Global	1.4	1.0	3,928	1.4	1.0	3,928	17.5	17.5	17.5
2015–2020	Global	1.4	1.0	4,123	1.4	1.0	4,123	17.7	17.7	17.7
1990–1995	Africa	2.3	1.0	2,638	1.8	0.9	1,430	18.0	13.3	15.5
1995–2000	Africa	1.8	1.0	2,994	1.3	0.9	1,481	17.2	12.2	14.5
2000–2005	Africa	1.4	1.0	2,933	1.1	1.0	1,615	15.8	11.8	13.7
2005–2010	Africa	1.4	1.0	3,015	1.0	1.0	1,834	16.1	12.2	14.0
2010–2015	Africa	1.5	1.0	2,829	1.1	1.0	1,769	16.1	12.5	14.2
2015–2020	Africa	1.2	1.0	3,034	0.9	1.0	1,786	15.4	11.7	13.4
1990–1995	Asia	0.9	0.9	4,055	0.7	0.9	2,780	15.2	12.3	13.6
1995–2000	Asia	0.8	0.9	4,204	0.6	0.9	3,010	14.7	12.0	13.3
2000–2005	Asia	0.8	1.0	4,543	0.6	0.9	2,988	15.4	12.2	13.7
2005–2010	Asia	1.0	1.0	4,298	0.8	0.9	3,049	16.0	13.2	14.5
2010–2015	Asia	1.1	1.0	3,939	0.9	0.9	2,903	15.9	13.4	14.6
2015–2020	Asia	1.0	1.0	4,599	0.7	0.9	3,221	16.2	12.9	14.4
1990–1995	EU	2.0	1.0	3,158	2.8	1.0	3,224	18.2	20.6	19.3
1995–2000	EU	2.1	1.0	3,063	2.7	1.0	3,257	18.5	20.5	19.4
2000–2005	EU	2.2	1.0	2,652	3.5	1.0	4,042	17.8	24.0	20.7
2005–2010	EU	2.3	1.0	2,702	3.7	1.0	4,080	18.2	24.5	21.1
2010–2015	EU	2.6	1.0	3,061	3.3	1.0	3,360	19.8	22.1	20.9
2015–2020	EU	3.2	1.0	2,838	4.3	1.0	3,307	20.6	24.0	22.2
1990–1995	Non-EU Europe	2.9	0.9	2,637	3.3	0.9	2,819	19.2	20.7	19.9
1995–2000	Non-EU Europe	2.7	0.9	2,842	3.4	0.9	2,918	19.3	21.1	20.2
2000–2005	Non-EU Europe	2.6	0.9	2,636	3.2	1.0	3,371	18.5	21.7	20.0
2005–2010	Non-EU Europe	2.6	0.9	2,757	3.5	1.0	3,620	19.0	23.1	20.9
2010–2015	Non-EU Europe	2.8	0.9	3,034	3.7	1.0	3,266	20.0	22.7	21.3
2015–2020	Non-EU Europe	2.9	0.9	2,962	3.8	1.0	3,370	20.0	23.1	21.5
1990–1995	Latin America and the Caribbean	1.6	0.6	4,078	0.8	0.9	4,227	15.4	14.1	14.7
1995–2000	Latin America and the Caribbean	1.7	0.5	3,983	0.8	0.8	3,965	15.1	13.6	14.3
2000–2005	Latin America and the Caribbean	1.8	0.6	4,563	0.9	0.8	3,790	17.6	13.6	15.5
2005–2010	Latin America and the Caribbean	1.9	0.7	4,692	1.0	0.8	3,734	18.2	14.0	16.0
2010–2015	Latin America and the Caribbean	1.4	0.7	4,192	1.0	0.8	3,956	15.9	14.6	15.3
2015–2020	Latin America and the Caribbean	2.0	0.8	3,602	1.7	0.8	3,624	18.1	17.0	17.5
1990–1995	North America	1.3	0.9	6,326	4.7	0.9	7,468	20.1	32.1	25.4
1995–2000	North America	1.5	0.9	6,273	4.7	0.9	7,216	20.9	31.8	25.8
2000–2005	North America	2.0	0.9	6,470	4.3	0.9	7,688	22.9	31.2	26.8
2005–2010	North America	2.1	0.9	6,592	4.1	0.9	7,626	23.7	30.8	27.0
2010–2015	North America	2.1	0.9	7,035	4.3	1.0	8,042	24.1	32.1	27.9
2015–2020	North America	2.0	0.9	6,829	4.2	1.0	8,276	23.6	32.2	27.6
1990–1995	Oceania	4.3	0.9	10,769	5.9	0.9	10,945	35.2	39.2	37.2
1995–2000	Oceania	4.1	0.9	10,331	6.1	0.9	10,622	34.0	39.2	36.5
2000–2005	Oceania	4.0	0.9	10,630	6.5	1.0	10,037	34.3	39.7	36.9
2005–2010	Oceania	4.2	0.9	10,304	7.9	0.9	9,941	34.4	42.0	38.0
2010–2015	Oceania	3.9	0.9	10,347	7.1	0.9	10,763	33.7	41.7	37.5
2015–2020	Oceania	4.0	0.9	10,741	7.6	0.9	10,871	34.5	42.7	38.4

Source: Authors' calculations based on migration flow estimates (Abel, 2019) and the CEPII Gravity Databse (Conte et al., 2022).

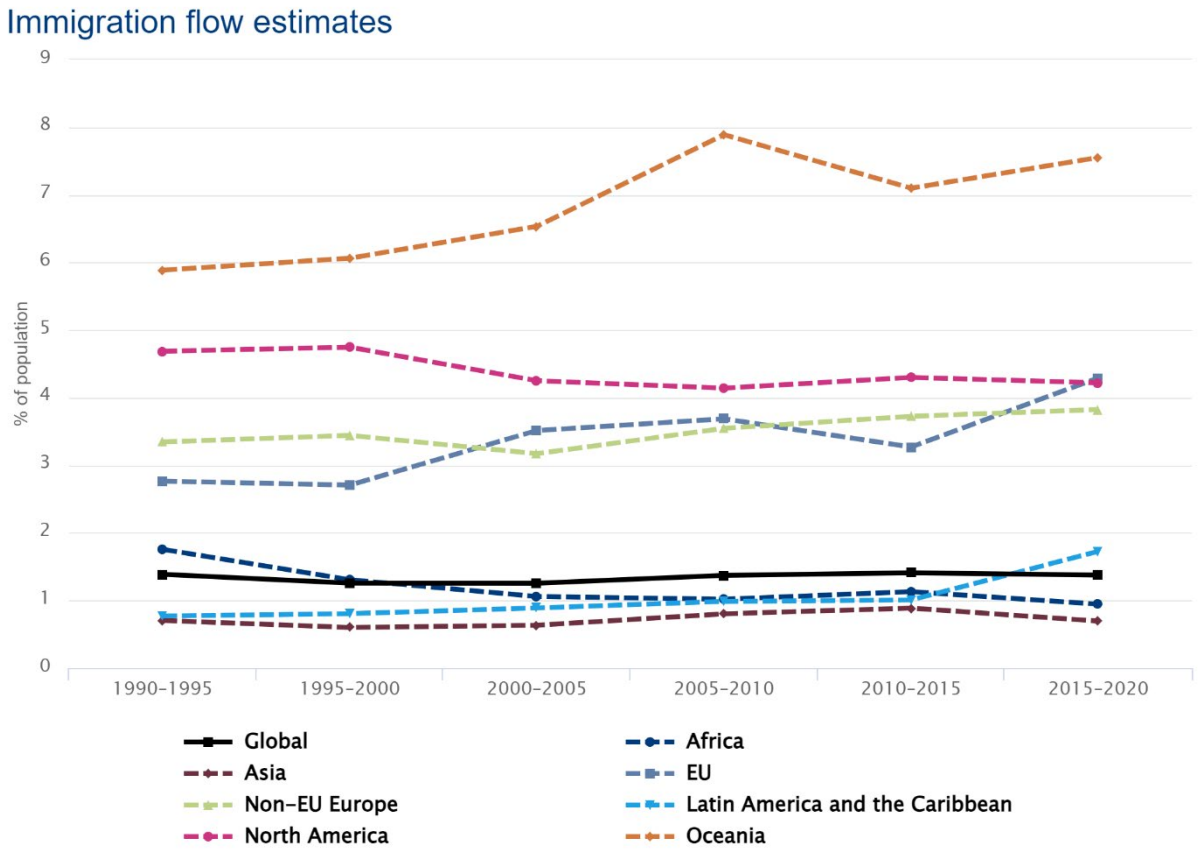
A.3 Emigrant and immigrant intensities by region

Chart A1



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9).

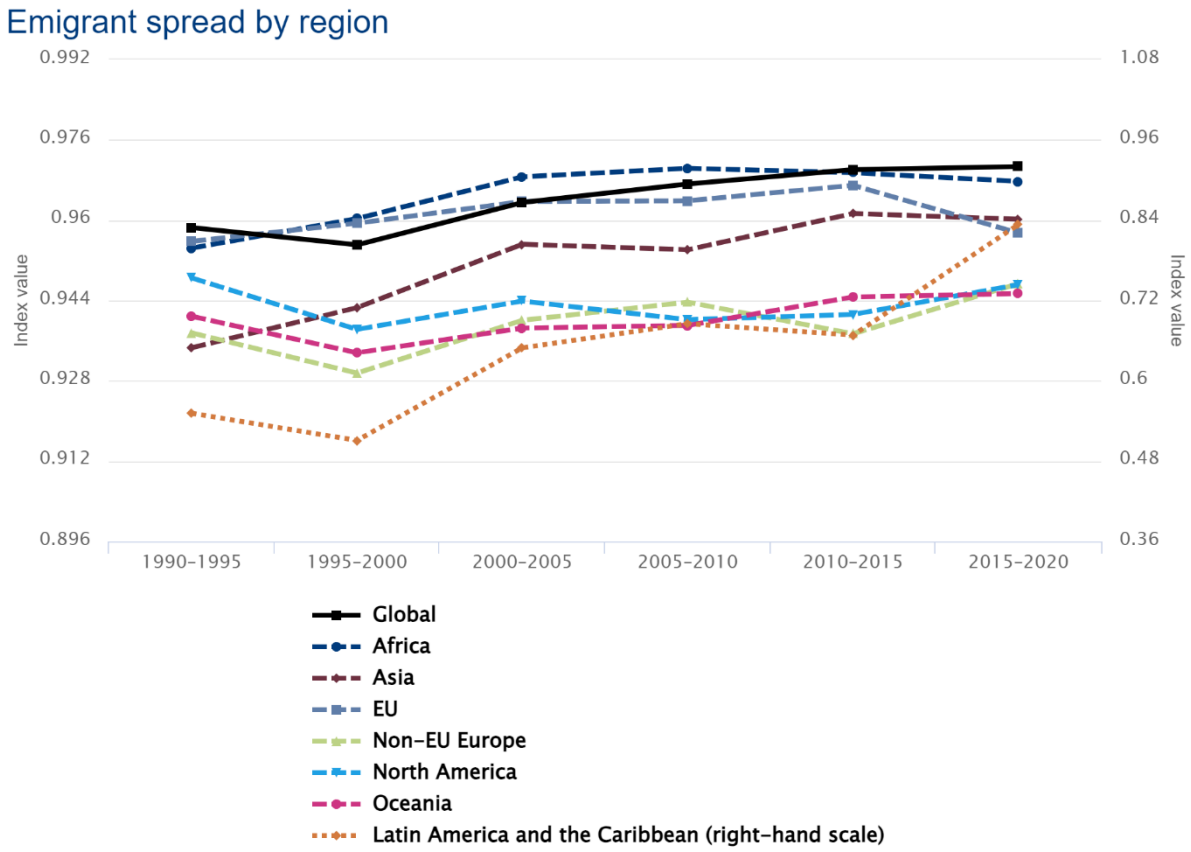
Chart A2



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9).

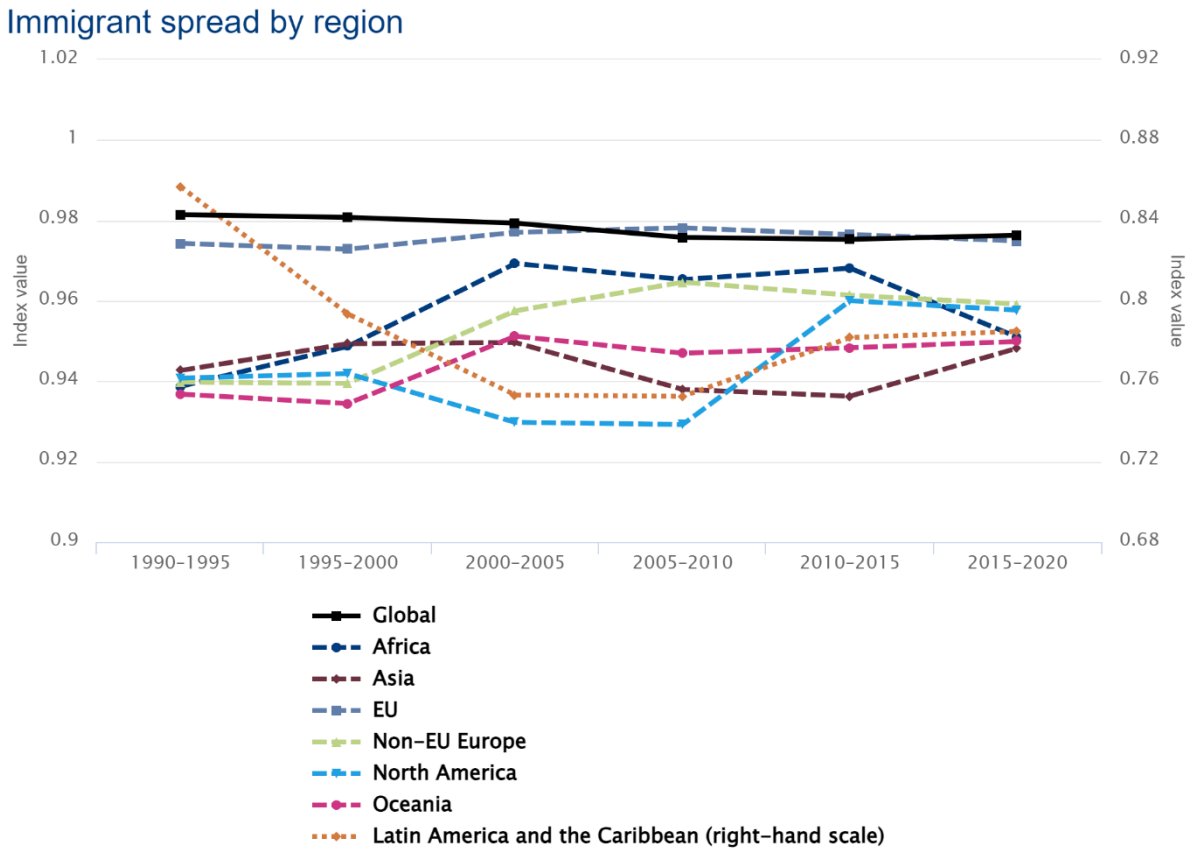
A.4 Emigrant and immigrant spreads by region

Chart A3



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9).

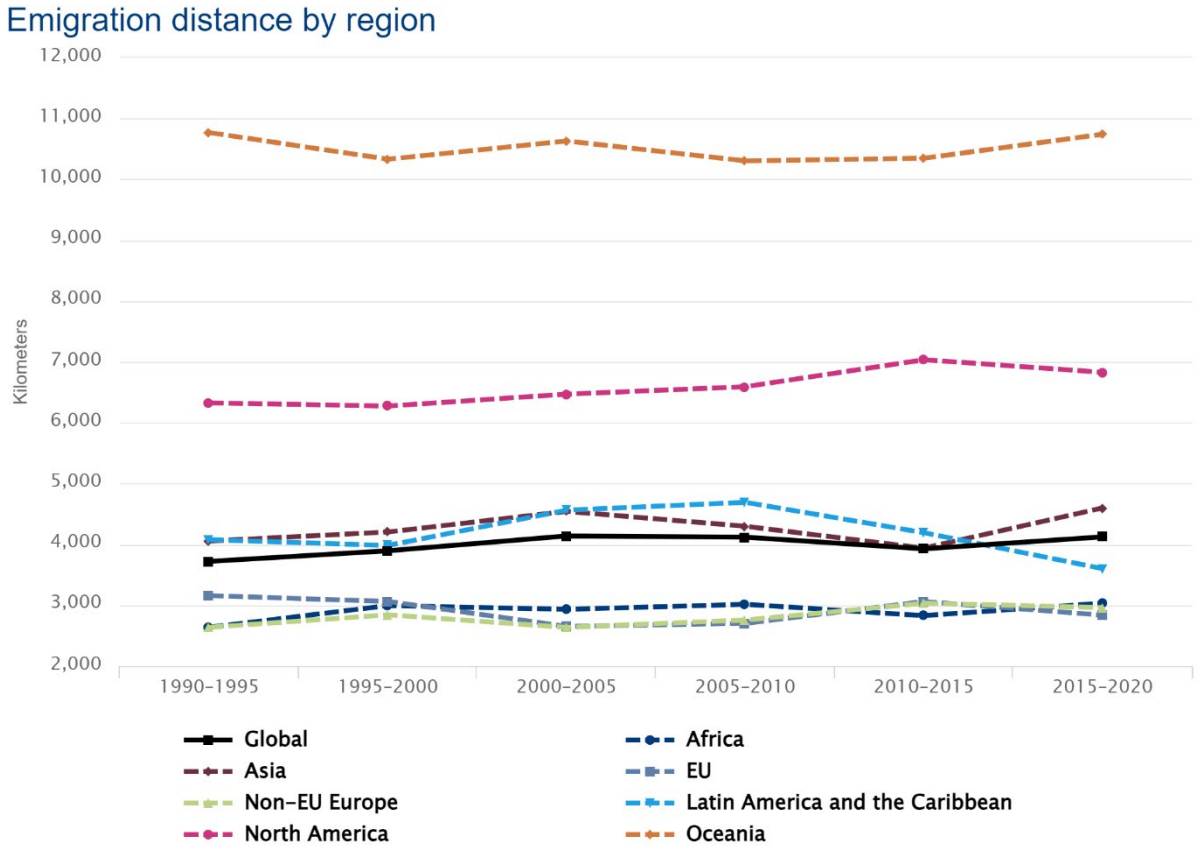
Chart A4



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9).

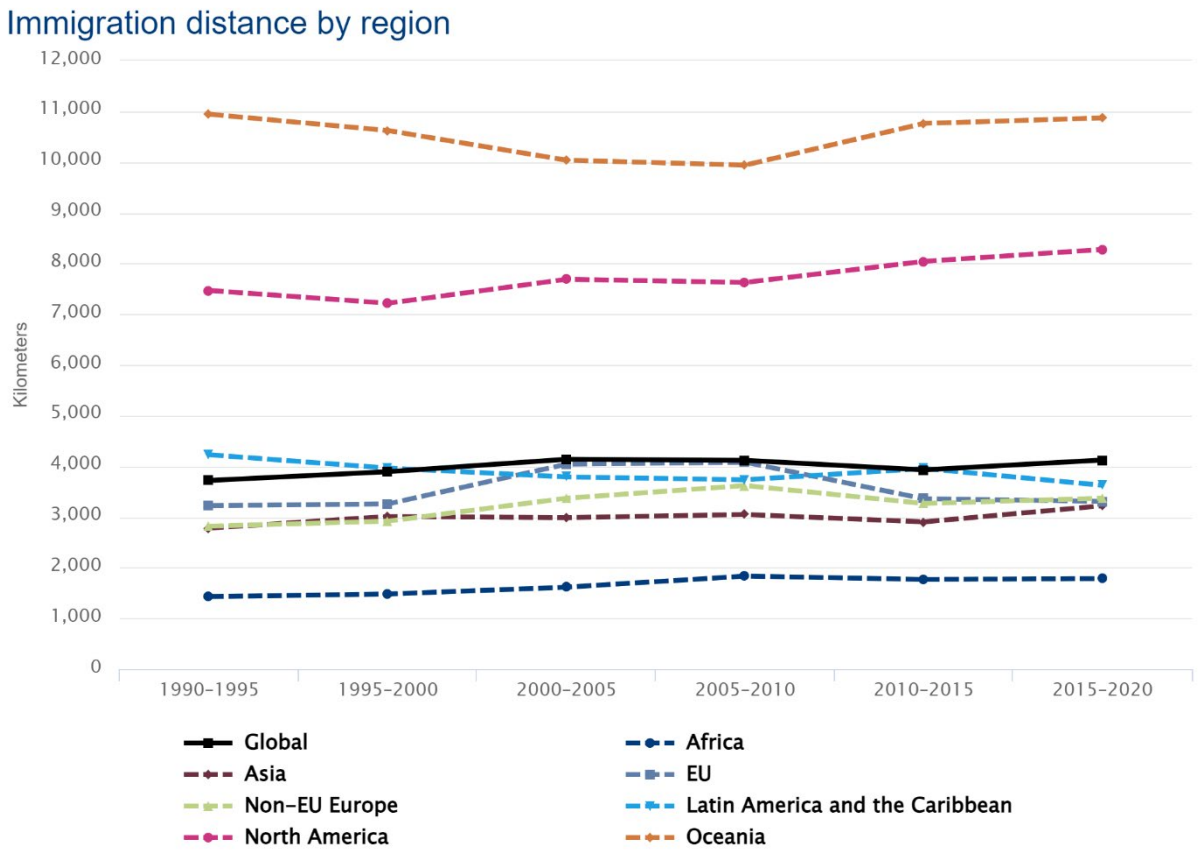
A.5 Average distance covered by region

Chart A5



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022).

Chart A6



Source: Authors' calculations based on migration flow estimates (Abel, 2019, version 9) and the CEPII Gravity Database (Conte et al., 2022).

A.6 Technical notes

Herfindahl-Hirschman Index

The Herfindahl-Hirschman Index is a concentration index that is also used in the trade literature to measure import/export diversification with respect to sectors (see for example UNCTAD, 2024, Chapter 1). A Hirschman-based index also often employed when measuring the diversity of a population with respect to different groups. These groups can be defined based on nationality, country of birth, ethnic group, etc., and a well-known index is the ethnolinguistic fractionalization index (see Alesina et al., 2003). These indices range between zero (perfectly homogeneous population) and one (maximally fractionalized population, i.e. each person belongs to a different group) and identify the probability that two randomly chosen individuals in a population belong to a different group. Koech and Wynne (2017) use the Herfindahl index to measure the diversity of US states' exports, immigrants and financial links with respect to countries. For an application of the Herfindahl index to measure the concentration of remittances, see Hosny (2020).

Migrant stock data

Whenever possible, international migrants are equated with the **foreign-born population** in this data. If the necessary information on the country of birth is not available, and that is the case for approximately 20% of the countries/areas, the country of citizenship is used instead. Note

that when the migrant population is equated with the foreign-citizenship population instead of the foreign-born population. This has important shortcomings: in countries where the citizenship of children depends on the citizenship of their parents (jus sanguinis) and not on the country of birth (jus soli), people might be included in the international migrant stock even though they never lived abroad. People who were naturalized in their country of residence, on the other hand, might not be included in the migrant stock, even though they immigrated from another country. (In addition, the legal framework for conferring citizenships – jus sanguinis vs. jus solis – has also consequences for the estimated age distribution of migrants, as under the former system, more children are attributed to the group of international migrants.) Estimates based on the country of citizenship instead of the country of birth are nevertheless included in the dataset in order to obtain a comprehensive bilateral database.

The migrant stock estimates also include **international refugees**. In countries where refugees hold an asylum status, they are usually included in the population census and no further adjustments are made by the UN. In countries where refugees mainly reside in restricted areas/refugee camps, they are typically not included in the census, and neither can they be included in a census if a refugee inflow occurred recently or rapidly. In these cases, estimates of the number of refugees, taken from international agencies such as the UNHCR, are added. For further details on the estimate of the migrant stock data, please refer to the documentation (UNDP, 2020).

The 2020 version of the estimates are adjusted to the restrictions that took place in the context of the **global COVID-19 pandemic**. Whenever there is no empirical data on the impact of the pandemic on international migrants available, it is assumed for the mid-year 2020 estimates that there were no changes in international migration between March 1 and July 1, 2020. This approach might be revised in the future, if and when more information on the impact of the pandemic becomes available.

Migrant flow data

There are efforts, mainly by international institutions, to collect flow data from statistical agencies and governments (e.g. the OECD for the foreign-born population in OECD countries, or Eurostat for immigration to and emigration from EU and selected non-EU countries). But even in countries with established and efficient statistics agencies (European countries, the USA, Canada, Australia, or New Zealand, for example), inconsistencies in the data can be found. In particular, data on immigration are usually better than data on emigration (see Buettner, 2022).

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