A Deeper Dive into the Relationship between Economic Development and Migration

Maheshwor Shrestha

Abstract

This descriptive paper provides a nuanced perspective on the relationship between development and migration, extending the non-parametric analysis in Clemens (2020). A few stylized patterns of migration emerge as countries develop. First, the migration response to development differs by the types of origin and destination countries. As low-income countries develop, their migration to high-income destinations increases slowly but steadily, whereas migration to other low-income or neighboring countries decreases at early levels of development. As middle-income countries develop, their migration to high-income countries increases steadily and plateaus once they reach sufficiently high levels of income. Second, the composition of migrants changes as countries develop. In particular, migrants to high-income destination countries become more educated. Third, the emigration response from middle-income countries is muted for countries with larger populations, particularly toward high-income destinations. These patterns suggest a strong role multiple transformations—such as increasing incomes, increased global integration, a demographic transition, increased human capital, and domestic structural change—play in changing migration patterns as countries develop. The paper explores these migration patterns in light of these transformations.

A Deeper Dive into the Relationship between Economic Development and Migration[*]

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1. Introduction

The world has undergone a remarkable transformation in recent decades through the economic development of low- and middle-income countries. The share of the extreme poor fell from 36.3 percent of the world population in 1990 to 8.63 percent in 2018, reducing the number of the poor by about 1.3 billion.[1,2] This progress has been a consequence of rapid and pro-poor growth in many low-income countries. Between 2000 and 2020, per capita incomes in countries that were in the bottom third in 2000 grew by 3.3 percent annually, compared to 1.4 percent for countries that were in the top third.[3]

The relationship between economic development and migration has been of keen interest for researchers and policy makers alike. Poverty is commonly considered to be one of the "root causes" of migration. One of the early economic framings of the migration decision was to consider it as a costly investment to reap the earnings differentials across different locations (Sjaastad 1962). This suggests that a high prevalence of poverty, or lower incomes, would induce many to incur the cost of migration and move to higher-income countries. In this framing, the propensity to migrate would decline as low-income countries get wealthier as some people would now choose not to migrate. This simple, but somewhat naïve, concept has also permeated policy makers' thinking about the link between migration and development.

Consequently, policy makers in some high-income destination countries are exploring how to use development policies and aid to curb (irregular) migration. For instance, the US Commission for the Study of International Migration and Cooperative Economic Development, which was established and mandated to understand conditions in the origin countries that result in undocumented migration and propose mitigations, recommended a host of economic development policies to reduce migration in the long term (USCSIMCED 1990). More recently, the US Citizenship Act of 2021, introduced in the House of Representatives, seeks to address the "root causes of migration"— such as institutional corruption, violence, and extreme poverty—in the origin countries, along with reforming the US immigration system to benefit all parties (Sánchez 2021). Likewise, the European Commission's position on migration, drafted in the wake of the Syrian refugee crisis, identifies civil war, persecution, poverty, and climate change as root causes of migration (European Commission 2015). The European Union Emergency Trust Fund for Africa, established with a €5 billion endowment to address the root causes of undocumented migration and forced displacement in selected African countries, also emphasizes enhancing economic opportunities in origin countries as a key strategic objective.[4]

But a closer look at the data suggests that the relationship between economic development and emigration is not straightforward. As Figure 1 shows, it is neither the highest-income nor the lowest-income countries that have the highest emigration rates. Low-income countries like Ethiopia, Madagascar, and Tanzania, as well as high-income countries like Japan, Qatar, and the United States, have fewer than 1 percent of their population as emigrants abroad. In contrast, emigration rates are highest for middle-income countries such as Albania, the Dominican Republic, and Lebanon.[5] This relationship—the inverted-U shape between income and migration where migration is highest at intermediate income levels—has been labeled the *mobility transition* (Zelinsky 1971), the *migration hump* (Martin and Taylor 1996), and the *emigration life cycle* (Hatton and Williamson 1994).[6] In other words, the propensity to migrate may increase, not decrease, as countries develop.

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[1] The poverty rate is based on the rate of $1.90 per capita per day. Poverty calculations are based on data from the World Bank Poverty & Inequality Platform: https://pip.worldbank.org/home.

[2] COVID-19 is expected have an adverse impact on poverty, pushing some 100 million people into poverty in 2020 alone (World Bank 2020).

[3] Unless otherwise mentioned, this paper will measure incomes in terms of GDP per capita in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) as established by the Penn World Tables (PWT) 10.0 release (Feenstra, Inklaar, and Timmer 2015).

[4] https://ec.europa.eu/trustfundforafrica/index_en

[5] Even after adjusting for the population of the countries, low-income countries have about the same migration rate as middle-income countries.

[6] See, for instance, Clemens (2014); Dao et al. (2018); Djajić, Kirdar, and Vinogradova (2016) for studies on the cross-sectional relationship between migration and development.

Figure 1 Emigration is highest for middle-income countries
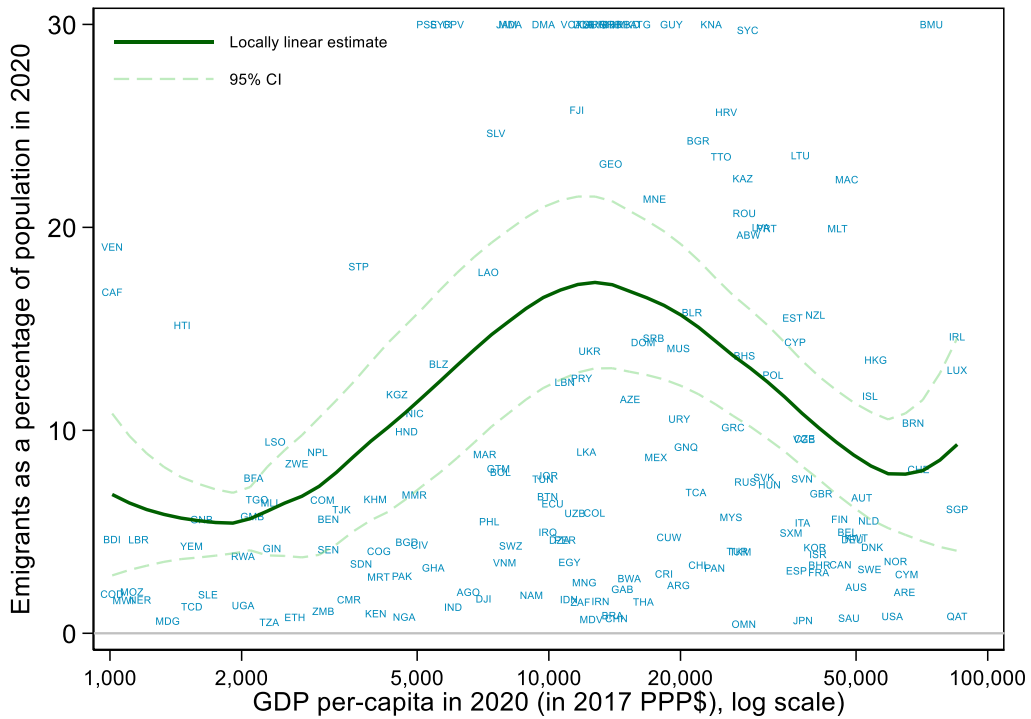
Sources: Original estimation based on migration data from UN DESA 2020 and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure plots the relationship between total migrant stock (as a percentage of origin country population) in 2020 against the per capita GDP (in constant 2017 US dollars in purchasing power parity terms, 2017 PPP$) in 2020. The solid line presents a locally linear fit. GDP for 2020 is calculated by applying the GDP growth rate applied to the 2019 GDP from PWT 10.0. Emigration is capped at 30 percent for countries with higher emigration rates for the scatterplot. Data labels use International Organization for Standardization (ISO) country codes.

However, early empirical research on this relationship was limited by lack of data. Early results relied on a cross-sectional relationship or used only a subset of countries for which reliable historic data were available (such as the member countries of the Organisation for Economic Co-operation and Development, OECD). This changed with a comprehensive compilation of historical migration data from 1960 to 2000 by Özden et al. (2011), which collated information from various censuses and surveys in origin and destination countries and using parsimonious modeling to fill in the gaps in data. For recent years, the United Nations, using a similar methodology, has been providing regular updates to data on the bilateral migrant stock (UN DESA 2020). Combining the data on migrant stock from 1960 to 2018 from these sources, Clemens (2020) produced one of the first studies to thoroughly examine how emigration changes as countries develop.

This paper extends the non-parametric analysis in Clemens (2020) to provide a nuanced picture of the relationship between development and emigration. It divides countries into three groups based on their baseline levels of income (for 1960 or the first year in which data are available) and analyzes the migration response separately by country income group. The analysis shows that for low-income countries, emigration dips slightly at early levels of development and steadily increases thereafter. This is driven by a sharp reduction in emigration to neighboring or other low-income countries and a slow increase in emigration to high-income countries. For middle-income countries, emigration increases steadily with development and plateaus at sufficiently high levels of income. This is driven by migration to high-income destinations. Larger (more populous) middle-income countries experience a muted response compared to smaller (less populous) ones. Overall, the migrant destinations of low-income countries diversify as they develop, whereas the concentration of destination countries remains similar for middle-income countries through their development trajectory.

The paper then shows that the educational composition of emigrants also changes as countries develop. Analysis using data on immigration to the United States, where the most consistent data are available, shows that the education level of migrants increases steadily with development. This pattern is driven by an increase in the proportion of highly educated in the population of the origin county, as well as by an increased propensity of the highly educated to migrate.

The stylized patterns highlighted in this paper illustrate that the aggregate migration response is a result of multiple transformations happening in low- and middle-income countries as they develop. Increasing incomes and the increasing level of education and skills of their populations are key, but increased integration with the global economy, urbanization, and a demographic transition can also play important roles. Another key insight from this analysis is that destination countries are heterogeneous in terms of the costs of migration, returns to migration, and skill premiums. The interplay between the transformations and the heterogeneity of destinations shapes the aggregate migration response, as well as the destination and skill compositions of the migrants.

For instance, development increases incomes, which can make migration more affordable but less desirable. The key insight from the evidence presented in this paper is that the destinations at the margins of affordability and desirability can be different, which elicits a varied aggregate response. Increased incomes may make migration affordable to some destinations (such as those with high costs of emigrating, but high returns in the destination country) and make migration to other destinations less desirable (such as those with low costs, but low returns). Likewise, development increases the educational profile of the population, which increases returns in the origin country as well as abroad. Here as well, the increase in returns may be larger for some destinations (such as high-income countries) than others. Additionally, higher education may also reduce policy barriers to many destinations due to the higher demand in destination countries.

In summary, this paper shows that, unlike the intentions of 'root cause' policies, emigration towards high-income destinations generally increases with development. The response is much smaller for low-income origin countries during early phases of development relative to the response from middle-income origin countries. However, development is strongly associated with shifts in the composition of migration. First, migrants sort into high-income and more distant destinations, which arguably offer higher returns, than low-income neighboring countries. Second, emigration to high-income destinations becomes more intensive in formal education. These patterns reflect the multiple transformations that accompany development, including rising incomes, rising global integration, demographic shifts, and rising human capital stocks. This paper presents these stylized patterns of migration in the context of the transformations that happen as low- and middle-income countries develop.

2. Data and empirical strategy
The data sources and empirical strategy for this paper draw heavily from Clemens (2020). The discussion that follows briefly describes the data sets used and the empirical strategy.

2.1 Data
Migration: The analysis uses the most comprehensive data set on bilateral migration stocks for each year, in ten-year intervals, spanning from 1960 to 2020. This data set allows the migration pattern of countries to be traced over time—a significant improvement in methodology compared to earlier studies. Migration stocks for years 1960, 1970, 1980, 1990, and 2000 are taken from Özden et al. (2011) and those for 2010 and 2020 are taken from UN DESA (2020). These data sets have migrant stock information, collated from censuses and surveys at destination and origin countries, for 226 countries and territories across the world and provide estimates for the 50,850 migration corridors.

A migrant, in these data sets, is typically a person who is born in a country that is different from the country in which they are currently living. To that extent, it includes, in principle, people who have migrated for various

reasons and channels, including those who migrated through irregular channels (Özden et al., 2011). However, it is possible that these data sources may misreport irregular migrants for various reasons. To the extent such misreporting exists, measurement errors can mute the estimated relationship.

Income: Per capita GDP serves as the key measure of income in this paper. The GDP data are taken from the Penn World Tables (PWT) 10.0 release dated June 18, 2021 (Feenstra, Inklaar, and Timmer 2015).[7] This release contains the most comprehensive and up-to-date data on GDP, in purchasing power parity (PPP) terms, covering 183 countries between 1950 and 2019. Per capita GDP is calculated by dividing the expenditure-side real GDP at chained PPPs (in 2017 US$) by the country's population.[8] GDP for 2020 is computed by applying the annual real per capita GDP growth rate between 2019 and 2020 available from the World Development Indicators (World Bank 2022). Similarly, per capita GDP is back-casted for earlier years based on annual real per capita GDP growth rates for countries for which the GDP series begins only after 1960. Countries that are missing GDP in this data set are omitted from the analysis.

Education. Data on the educational attainment of the populations of origin countries are from the Barro-Lee Educational Attainment Dataset (Barro and Lee, 2013).[9] This data set provides harmonized information on the percent of adult population that have no education, some primary education, some secondary education, and some tertiary education for all countries in five-year intervals from 1950 to 2015. This analysis uses the 2015 data to proxy for educational attainment in 2020.

Education of migrants: While comprehensive data on the educational attainment of migrants is absent, the analysis turns to data from the United States as a case of migration to high-income destinations. The data on educational attainment come from IPUMS USA, which provides easy access to the harmonized public use microdata samples of the decennial census, as well as the US Census Bureau American Community Survey (ACS) for various years (Ruggles et al. 2022). This study uses the largest available microdata samples for each of the census years: 1960 (5% sample), 1970 (1% state form 1 sample), 1980 (5% state sample), 1990 (5% state sample), and 2000 (5% sample). It uses the ACS one-year samples for years 2010 and 2019, which provide surveys a 1-in-100 national random sample of the population.[10]

IPUMS USA provides harmonized variables across all available samples. This analysis uses harmonized detailed data on birthplace to identify migrants and their country of birth. Migrants with unidentified country of birth are dropped from the analysis. Once migrants are identified, educational attainment is straightforward. Adult (ages 15+) migrants are classified into three groups: low-educated individuals with primary or lower level of education; medium-educated individuals with some secondary education; and high-educated individuals with at least one year of college education. Likewise, working migrants are classified into three groups based on the occupational earnings score provided with the IPUMS USA data: low-earnings occupations are in the bottom third of earning score; mid-earnings occupations are in the middle third; and high-earnings occupations are in the top third.

2.2 Empirical strategy

The empirical strategy closely follows the non-parametric estimation outlined in Clemens (2020). That is, the following equation is estimated:

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[7] See https://www.rug.nl/ggdc/productivity/pwt/ for more details.
[8] All PPPs in this paper are in 2017 US$ as per the PWT 10.0.
[9] See http://www.barrolee.com/.
[10] The analysis does not use ACS 2020 because it uses experimental weights to correct for the impacts of the COVID-19 pandemic on the collection of ACS data.

$$M_{i,t} = f(Y_{i,t}) + \varepsilon_{i,t}$$

where, $Y_{i,t}$ is the logarithm of the per capita GDP of country i in year t relative to the minimum per capita GDP of the country between 1960 and 2020. That is,

$$Y_{i,t} = \ln(GDP_{i,t}) - \min\{\ln(GDP_{i,k}),\ \ k \in \{1960,\cdots,2020\}\}$$

This formulation of $Y_{i,t}$ benchmarks the migration response of each country to a baseline year where the income (real PPP per capita GDP) was at its lowest levels. $M_{i,t}$ is the emigrant-to-population ratio or other relevant outcome, m, of country i in year t relative to the baseline year (in which the per capita GDP was at its lowest level between 1960 and 2020). That is:

$$M_{i,t} = m_{i,t} - m_{i,l} \text{ where } l = \underset{k}{\mathrm{argmin}}\{\ln(GDP_{i,k}),\ \ k \in \{1960,\cdots,2020\}.$$

The function $f(\cdot)$ is estimated using locally linear regressions and presented graphically in the next section.

3. Results and discussion

This paper classifies countries into three groups—high-income, middle-income, and low-income—based on whether they were in the top, middle, or bottom third of the global per capita GDP distribution in 1960. For countries for which data on incomes are not available for 1960, their position (top, middle, or bottom) in the earliest year of available data is used.

Low-income countries, according to this classification, had a baseline per capita GDP of PPP$1,165 (for the year when incomes were at their lowest, for each country), which had risen to PPP$7,000 by 2020. Relative to the baseline levels of income, the average (mean) low-income country attained 550 percent higher income during this period, with the median low-income country attaining only 330 percent higher income. Seventeen percent of the countries attained less than double the baseline income during this period; only 7 of them grew by more than 1,000 percent. Most of these low-income countries (83 percent) are still classified as a low- or a lower-middle-income country according to World Bank classification (World Bank 2022). About 73 percent of low-income countries in Sub-Saharan Africa experienced less than 200 percent growth relative to their baseline during this period. The Republic of Korea is the only example of a low-income economy that is currently classified as a high-income country.

Likewise, middle-income countries had a baseline per capita GDP of PPP$3,353, which had risen to PPP$15,200 by 2020. Relative to the baseline levels of income, the average (mean) middle-income country attained 400 percent higher income during this period, with the median country attaining 290 percent higher income. Nine percent of the countries attained less than double the baseline income during this period; only 8 countries (or territories) grew by more than 600 percent.

The discussion that follows traces the migration response from these low- and middle-income countries as they have developed. The analysis omits six outliers in terms of changes in emigration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis).

3.1 Aggregate migration response

Non-parametric estimation shows that as low-income countries develop, migration falls initially before rising steadily. Similar to figure 4 in Clemens (2020), panel a in figure 2 shows the average emigration trajectory of countries that were in the bottom third of the income distribution in 1960, with an average initial GDP per

capita of PPP$1,165 (in 2017 PPP$). As these countries developed, emigration rates initially fell slightly as incomes increased by up to 200 percent (about PPP$3,500). As they develop further, migration picks up pace and peaks at around PPP$12,000—ten times the initial incomes. At its peak, the average migration rate is about 6 percentage points higher than its baseline levels.

However, the average pattern hides considerable variation in the experiences of individual countries. Nepal followed a trajectory similar to the average pattern, with an initial fall in migration from about 5 percent in 1960 to 3 percent in 1990, to rise again to 9 percent in 2020 as its income grew four-fold. India has had a similar, but muted, experience with migration rates, falling initially from 2 percent in 1960 to 0.9 percent in 2000 and rising again to 1.3 percent by 2020. Mozambique, on the other hand, experienced a steady decline from 9 percent in 1960 to 2 percent in 2020 as its income almost doubled. Meanwhile, large, populous countries such as China, Ethiopia, and Indonesia experienced small changes (less than 1 percentage point) in migration rates as they developed. Two of the fastest growing economies, Korea and Botswana, had remarkably different migration trajectories as their incomes grew. Korea experienced a small decline followed by a small and steady increase, while Botswana experienced large and steady declines.

The migration rates of countries in the middle third of the income distribution increase and plateau as they develop, with some signs of declines at high levels of development. Panel b in figure 2 shows the average emigration trajectories of countries that were in the middle third of the income distribution in 1960, with an average initial GDP per capita of $3,353 (in 2017 PPP$). As these countries develop, they experience a steady increase in emigration, which peaks at around PPP$13,000 (300 percent of the initial level) and plateaus thereafter. At that income level, the average migration rate is about 5 percentage points higher than its baseline level. There are some signs of a decline in migration rates at very high levels of income, but the observed country experiences at such high levels of growth are sparse and the data are noisy.

Figure 2 The relationship between emigration and development is complex

a. Low-income countries experience an initial fall in emigration before a steady rise
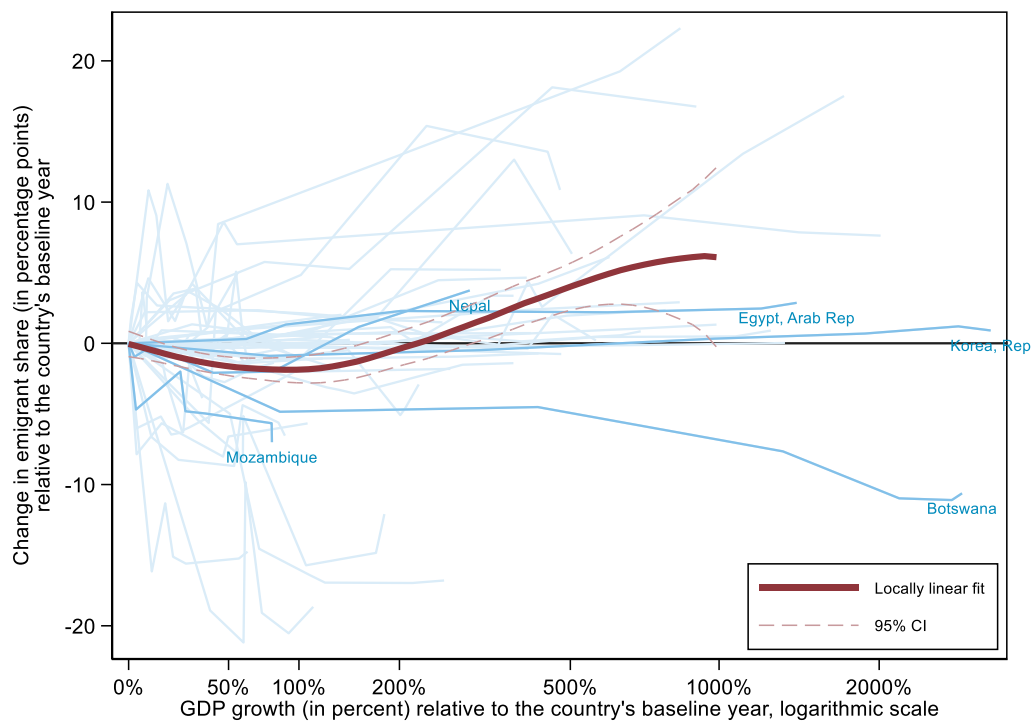
b.   Middle-income countries experience a hump-shaped emigration response in which emigration steadily rises and then falls off
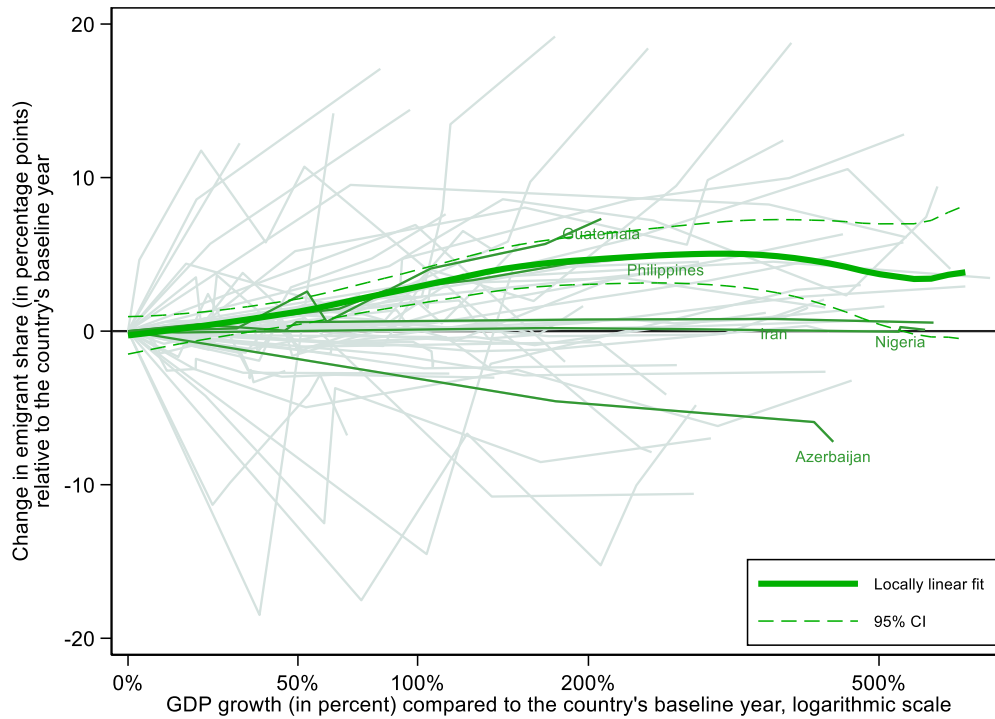
Sources: Original estimations based migration data from Özden et al. 2011 and UN DESA 2020; and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure traces the emigration trajectory for low-income (panel a) and middle-income (panel b) countries as they have developed. The horizontal axis represents the increase in incomes and the vertical axis represents the increase in migration stock relative to the baseline year. Each lightly colored line represents the trajectory for a particular country, with a few examples highlighted. The solid lines show the locally linear fit between increases in incomes and changes in emigration rates compared to the baseline year. The baseline year, for each country, is defined as the year in which per capita GDP in constant 2017 US dollars in purchasing power parity terms, (2017 PPP$) was at its lowest level since 1960. Low-income countries were among the bottom third circa 1960 in terms of per capita GDP (2017 PPP$), and middle-income countries were among the middle third. Estimates exclude six outliers in terms of changes in emigration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis). CI = confidence interval.

Again, there is substantial variation in the experiences of individual countries. For instance, Guatemala and the Philippines experienced steady increases in migration as their incomes more than tripled between 1960 and 2020. Azerbaijan experienced the highest levels of migration in 2000 following the economic collapse in the early 1990s. As the economy recovered, migration rates subsided. For large, populous countries such as the Islamic Republic of Iran and Nigeria, migration rates barely changed even though their economies faced large ups and downs.

The emigration response observed here is a gradual process spanning decades. For instance, countries in the bottom third of the income distribution in 1960 had, on average, barely increased their emigration when their income levels tripled. It took these countries nearly 40 years to double their incomes from their average level in 1960. Likewise, if low- and lower-middle-income countries today were to grow at the same rate that they did between 2000 and 2020, it would take them another 32 years to reach the average income of PPP$12,000 around which the migration rate peaks.

3.2 Heterogeneity by destination type

The aggregate response observed is a consequence of multiple transformations that affect the incentives and opportunities to emigrate in complex ways. These transformations can have countervailing impacts on migration: they increase the benefits of remaining in the origin country, but also make migration easier by lowering barriers.[11] Consequently, these transformations affect not only how many people migrate, but also to which destinations. The discussion that follows interprets the emigration response in terms of the destination composition, with a focus on the key transformations related to development.[12] The destination composition changes as these transformations change the constraints potential migrants face and shape their choices.

Higher incomes and liquidity constraints

Increased incomes in the origin country, due to development, make emigration less desirable but more affordable. Higher incomes in the origin country reduce the potential gains from migration, particularly those from migration with low returns. But higher incomes mean that destinations that were previously unaffordable come within reach. Migration is a costly endeavor and requires the potential migrants to bear those costs upfront, whereas the gains from migration accrue gradually after the migration has taken place. In absence of proper credit markets—as is common in low-income settings, liquidity and credit constraints can serve as barriers to suppress migration. In such cases, higher income due to development relieves those constraints and increases emigration.[13]

The overall impact of increasing incomes on migration depends upon whether the desirability or the affordability effect is stronger. This is, in turn, is influenced by the extent of development (the magnitude of income gains) as well as by the costs of migration, which can vary by the type of destination country. For a low-income country, sustained development may relieve pressing liquidity constraints to emigrate to high-cost and high-return destinations but lower the desirability to emigrate to low-return destinations. That is, *desperate migration* – low-return migration driven by lack of incomes and economic opportunities at the origin – may fall with rising incomes, whereas high-return migration may rise. However, if costs are very high to emigrate to high-return destinations, it might require the country to reach a much higher income level to adequately relieve liquidity constraints for many people. For middle-income countries, emigration to low-return destinations may already be irrelevant, but higher incomes may still relieve liquidity constraints to emigrate to high-cost, high-return destinations.

Figure 3 shows evidence consistent with this interplay of effects. As they developed, low-income countries reduced emigration to low-return destinations: that is, to neighboring or other low-income countries. On average, emigration to other neighboring or low-income destinations fell by almost 3 percentage points as their incomes doubled (to about PPP$2,300) from their baseline levels (figure 3, panel a). At the same time, emigration to high-cost, high-return destinations—that is, high-income countries—increased, but very slowly. By the time the income of these low-income countries tripled (to about PPP$ 3,500), migration to high-income countries had increased only by 0.7 percentage points. As their incomes increased further to PPP$ 7,000 (six times their baseline levels), emigration to high-income countries increased by 2.5 percentage points.[14]

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[11] Barriers can include monetary costs of migration as well as frictions (information, skill), psychic, and policy barriers.

[12] For a summary of key economic theories that explain the relationship between economic development and migration, see Clemens (2014).

[13] There is robust evidence in the literature showing that financing constraints inhibit migration. For instance, Angelucci (2015) and Gazeaud, Mvukiyehe, and Sterck (2021) find that cash transfer programs in Mexico and the Comoros increase international migration. Bazzi (2017) and Shrestha (2017) find that higher rainfall, which increases agricultural incomes, increases international migration from Indonesia and Nepal.

[14] The magnitude of the migration response is muted when weighted by the size of the countries. That is, the response is much smaller for some of the larger low-income countries.
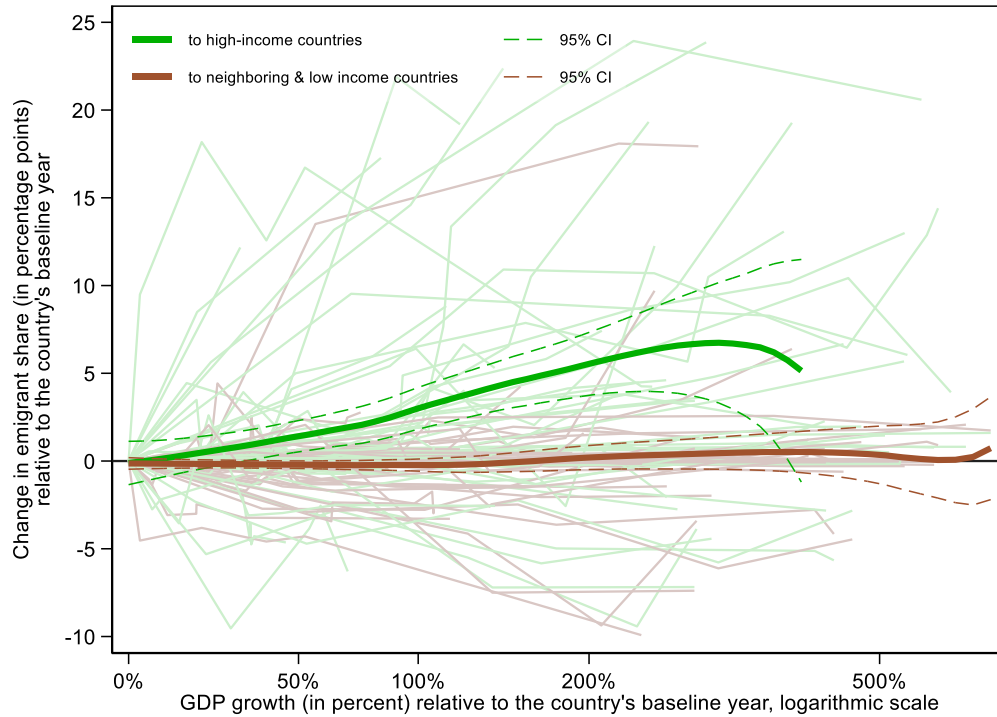
For middle-income countries that were already at a higher level of baseline income, further development hastened emigration to high-income countries (figure 3, panel b). On average, middle-income countries increased migration to high-income countries steadily as they developed, peaking at a 6.7 percentage point increase when their incomes quadrupled from their baseline levels (increases to about PPP$13,400). However, emigration to low-cost and low-return destinations—that is, neighboring or low-income countries—remained unchanged as middle-income countries developed further. Together, these findings suggest that liquidity constraints are not relevant for low-cost destinations because emigration to these destinations is already low or stable. Nevertheless, as middle-income countries continue to develop further, higher incomes very rapidly ease liquidity constraints to emigrate to high-income countries.

Figure 3 The composition of destination countries changes as countries develop

a.   Emigration to low-return destinations fall as low-income countries develop
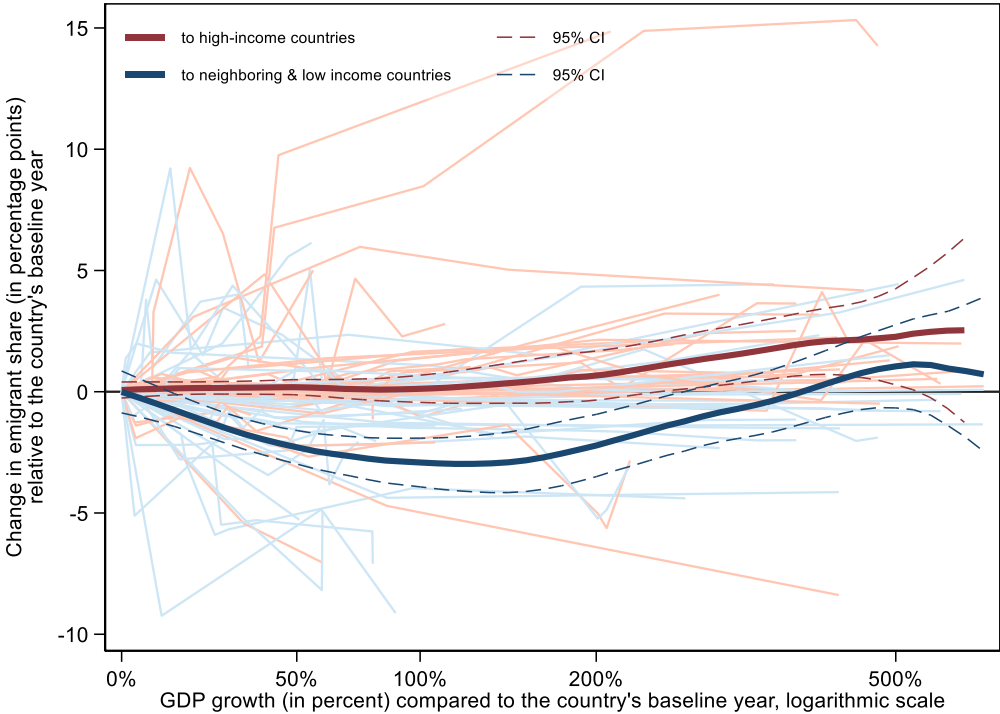
b.   Emigration to high-income countries rises steadily as middle-income countries develop

Sources: Original estimations based on migration data from Özden et al. 2011 and UN DESA 2020; and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure traces the destination composition of emigrants for low-income (panel a) and middle-income (panel b) countries as they have developed. The horizontal axis represents the increase in incomes and the vertical axis represents the increase in migration stock relative to the baseline year. The baseline year, for each country, is defined as the year in which per capita GDP in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) was at its lowest level since 1960. Each lightly colored lines represents the trajectory for a particular country to low-return (neighboring or low-income countries) or high-return (high-income countries) destinations. The solid lines show the locally linear fit between increases in incomes and changes in emigration rates to low-return or high-return destinations compared to the baseline year. Low-income countries were among the bottom third circa 1960 in terms of per capita GDP (2017 PPP$), and middle-income countries were among the middle third. Estimates exclude six outliers in terms of changes in emigration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis). CI = confidence interval.

The fact that emigration from low-income origin countries to high-income destination countries increases very slowly with development — both relative to middle-income countries as well as in absolute magnitudes — suggests very high costs of emigrating to these destinations. Much larger income gains are required for many people in those countries to be able to afford migration to high-income destinations.

Increased global integration

Economic development in recent decades has been associated with greater integration with the global economy. Such integration could take the form of increased trade (figure 4) and/or increased capital through foreign direct investment (FDI). Increase in trade and capital flows, or globalization more broadly, affects incentives to migrate in complex ways, which could potentially drive the observed migration patterns.[15]

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[15] At the same time, migration also influences the nature of trade and capital flows, as demonstrated by Javorcik et al. (2011), among others.

Trade and FDI affect the incentives to migrate in multiple ways through increased job creation.[16] First, as discussed, better jobs increase incomes for many, which makes migration less appealing. This flow of capital is widely considered to be a *solution* to the problem that workers cannot (or do not) move quickly and flexibly enough. FDI can, therefore, reduce migration in the short term (Kugler and Rapoport 2007), particularly among the people for whom FDI creates jobs. In the long term and/or among other groups of workers, FDI and migration may complement each other.

Figure 4 Economic integration through trade increases with development
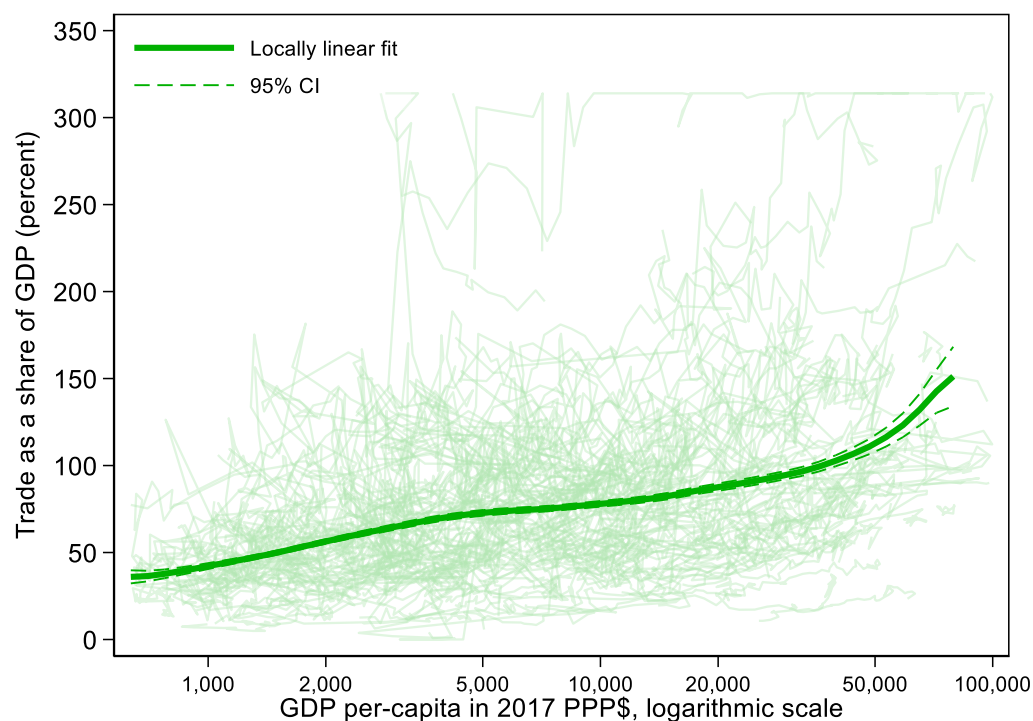
Sources: Original calculations based on trade data from World Bank 2022 and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figures show the relationship between trade (as a share of GDP) with GDP per capita. Each line on the background traces the evolution of trade and GDP for each country between 1960 and 2020 (with trade shares capped at 300 percent of GDP). The solid lines in the foreground plot the smoothened locally linear estimate pooling all countries and years between 1960 and 2020. CI = confidence interval.
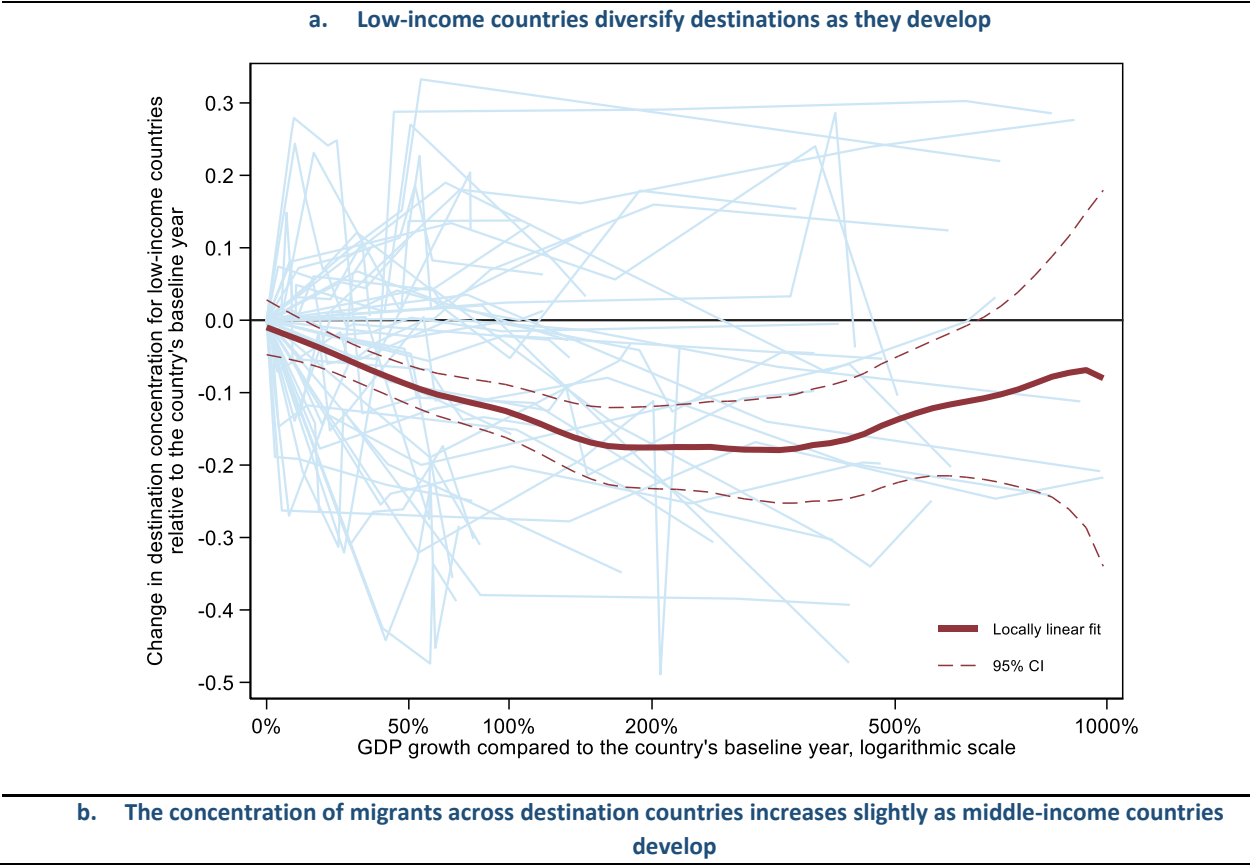
But trade and FDI also reduce other barriers to migration, which can encourage migration. Trade and FDI result in a strong network of firms across countries that facilitate better information flows. Through these linkages, firms get better information about the ability of specific workers or groups of workers and have a credible way to recruit them. More generally, the advances in and adoption of communication technologies due to globalization has lowered search costs for employers and workers. The reduced information friction in the labor market can facilitate migration. More broadly, globalization has facilitated increased information flow about life abroad—including lifestyles, cultures, norms, and specific amenities and services—that could help lower

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[16] Trade creates more jobs due to expansion of market size and the scale of production. FDI brings in additional capital, improved business processes, and advanced technology, which increases worker productivity. However, recent literature also finds that trade reduces incomes for some, and affects migration incentives in the opposite way. Majlesi and Narciso (2018) find that Mexican migration to the United States has fallen following the job losses induced by import competition from China.
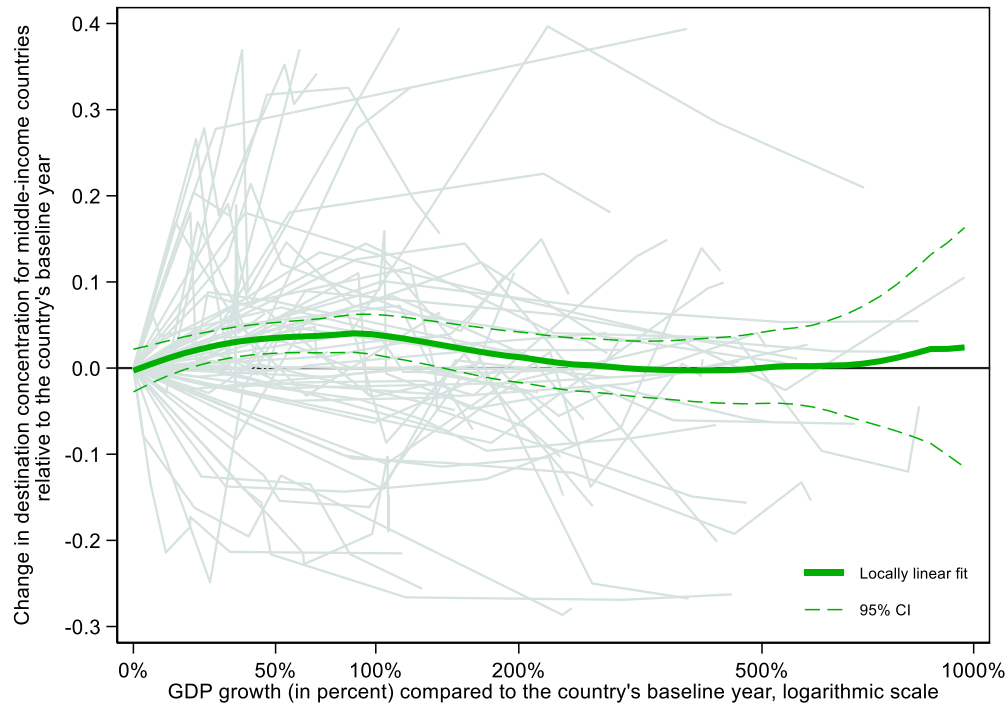
the psychic costs of migration or increase demand for specific services such as education abroad (see, for example, Khanna et al. 2020).

The data show patterns consistent with the notion that increased integration increases emigration from low-income countries as they develop. The concentration of migrants across destination countries, as measured by the Herfindahl-Hirschman index, falls as low-income countries develop (figure 5, panel a). In addition to the fall in emigration to low-return destinations as seen in panel a of figure 3, this pattern is also driven by increasing migration to *new* high-income destinations.

Figure 5 Development changes the concentration of migrants across destination countries, especially low-income origin countries

a.   Low-income countries diversify destinations as they develop

b.   The concentration of migrants across destination countries increases slightly as middle-income countries develop

Sources: Original estimations based on migration data from Özden et al. 2011 and UN DESA 2020; and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure traces the destination concentration of emigrants for low-income (panel a) and middle-income (panel b) countries as they have developed. The horizontal axis represents the increase in incomes and the vertical axis represents the increase in migrant concentration, measured by Herfinhdahl-Hirschman index, relative to the baseline year. The baseline year, for each country, is defined as the year in which per capita GDP in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) was at its lowest level since 1960. Each lightly colored lines represents the trajectory for a particular country. The solid lines show the locally linear fit between increases in incomes and changes in destination concentration compared to the baseline year. Low-income countries were among the bottom third circa 1960 in terms of per capita GDP (2017 PPP$), and middle-income countries were among the middle third. Estimates exclude six outliers in terms of changes in emigration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis). CI = confidence interval.

On the other hand, the response is somewhat muted in middle-income countries. The concentration of migrants across destinations increases only slightly (figure 5, panel b). They increase emigration to the same high-income destinations as they grow, concentrating on corridors that offer higher returns to migration.

These patterns are consistent with global integration connecting low-income countries with many other high-return destinations. But for middle-income countries that are already well-connected in the global economy, further development does not lead to increased migration or newer destinations, but continued or increased emigration to the same high-return destinations.

Furthermore, economic integration could be accompanied by policy integration, which can further lower barriers to migration. The findings suggest that connections to new high-income destinations constitute an important part of the migration response from low-income countries as they develop. Greater migration to these new destinations could potentially be facilitated by loosened restrictiveness in immigration policy, at least for some workers (such as high-skilled ones), as low-income countries develop and integrate economically with the broader world.

Changing demographic structure

As countries develop, they go through a demographic transition (Figure 6). The initial phase of development is accompanied by improvements in health, which reduces infant and child mortality and increases life expectancy (Pritchett and Summers 1996). Fertility decline typically follows, but with a lag (Lee 2003) for a host of reasons, including improved survival of children, preference for fewer children, focus on *quality* rather than *quantity* of children, higher opportunity cost of childbearing and childcare, and potentially the availability of contraceptives. This means that countries undergo a youth bulge as they develop. Developed countries are far ahead in this transition, and their populations have stabilized (or are even declining) with the trend expected to continue. By contrast, developing countries are experiencing various stages of a demographic transition with some experiencing a youth bulge and others nearing a fall in their populations.

**Figure 6 The share of children falls and the share of the elderly increases with development**
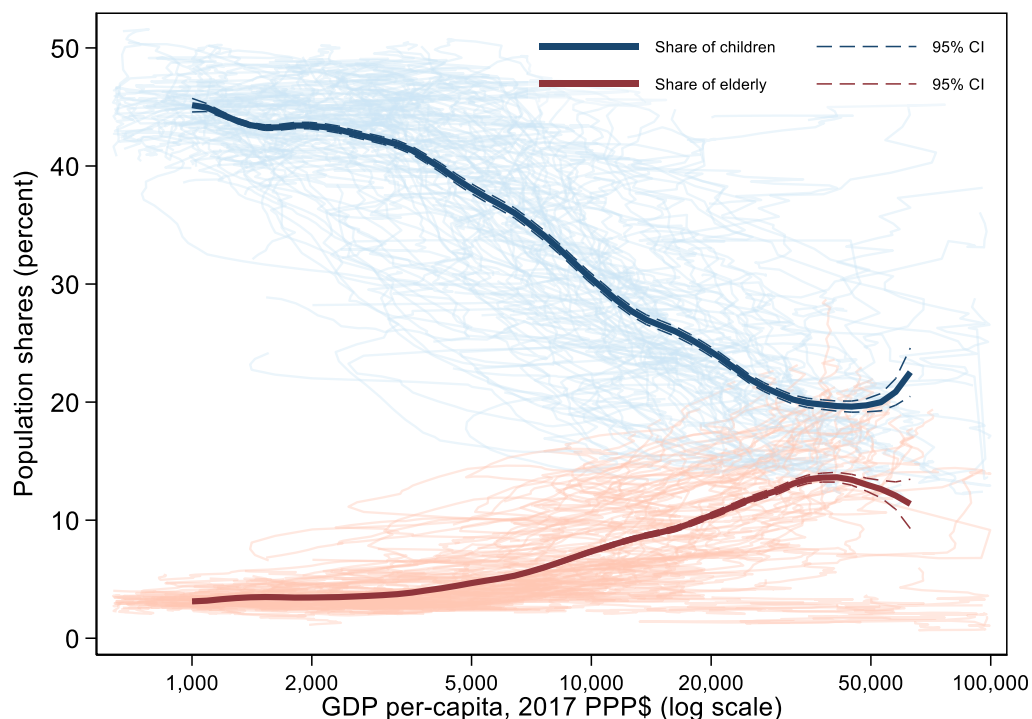
Sources: Original calculations based on demographic data from UN DESA 2022 and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure show the relationship between the population shares of children (ages 0–14) and the elderly (ages 65+) and GDP per capita. Each line on the background traces the evolution of population shares and GDP for each country between 1960 and 2020. The solid lines in the foreground plot the smoothened locally linear estimate pooling all countries and years between 1960 and 2020. CI = confidence interval.

The demographic transitions that accompany development, by themselves, can create demand for and supply of migrant labor. Developed countries tend to have an aging population and workforce, which increases the demand for younger workers in the economy. In addition, an aging populace increases the demand for care services, which can further fuel migrant demand. On the other hand, less developed countries, early in their demographic transition, may face increasing competition for economic opportunities for youth, who may seek opportunities abroad (Hatton and Williamson 2002). Taken together, these forces can lead to increases in emigration from low-income countries as they develop, fueled by the increased supply of potential migrants, as well as the increased demand from aging high-income countries.

Figure 7 Migration to high-income countries is more responsive to demographic divergence from middle-income countries, but not from low-income countries
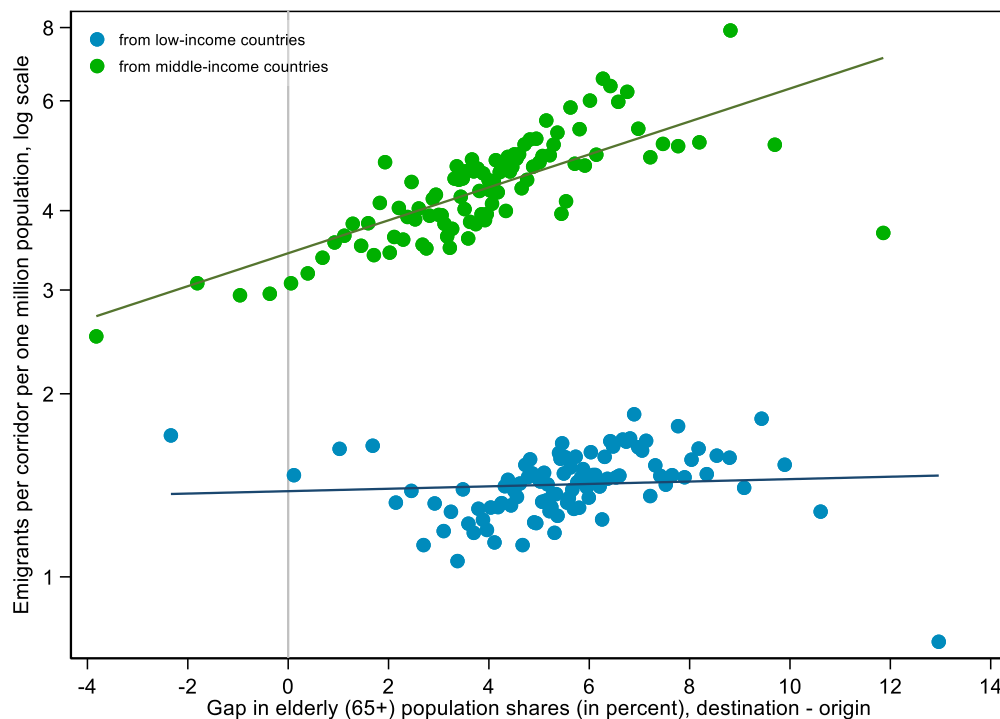
Sources: Original estimation based on demographic data from UN DESA 2022 and migration data from Özden et al. 2011 and UN DESA 2020.

Note: The figure shows the relationship between demographic divergence and migration from low-income countries (in blue) and middle-income countries (in green) to high-income destinations. The lines represent the estimation of β from the equation: $\ln(M_{o,d,t}) = \beta GAP\_ELD_{o,d,t} + \delta_{od} + \gamma_t + \varepsilon_{o,d,t}$, where $M_{o,d,t}$ is the number of migrants from origin country o in destination country d in year t per origin country population; GAP_ELD is the gap in the population share of the elderly (ages 65+) between destination and origin countries; δ represents corridor (origin-destination pair) fixed effects; and γ represents year fixed effects. The estimation is done separately for low-income countries and middle-income countries. The scatterplot shows the residuals of $\ln(M)$ and GAP_ELD grouped into a hundred bins after the corridor and year fixed effects are taken out. The residuals are scaled by their respective mean values.

However, migration fueled by demographic transition also depends crucially on the income levels of origin and destination countries. For instance, as seen in panel a of figure 3, migration from low-income countries to other low-income countries with similar demographic profiles falls with increased development. Furthermore, as seen in Figure 7, migration to high-income destinations is more responsive to demographic divergence, measured by the gap in elderly shares of the population between destination and origin countries, from middle-income countries but not from low-income countries. This suggests that while demographic divergence can be a strong impetus for migration, the level of development matters for actual migration. This could be driven by the high costs of migration to high-income countries or other pertinent barriers in these corridors.

3.3 Heterogeneity by population size

A common cause for concern is whether the migration response described in the previous sections is similar for large countries, as well as small ones. The cross-sectional relationship, for instance, is a stark inverted-U for smaller countries with populations that are below the median. However, for larger countries, where 96 percent of the global population resides, the relationship is much more muted (appendix Figure A.1). This raises the question of whether the migration response is indeed driven by the response from smaller countries.
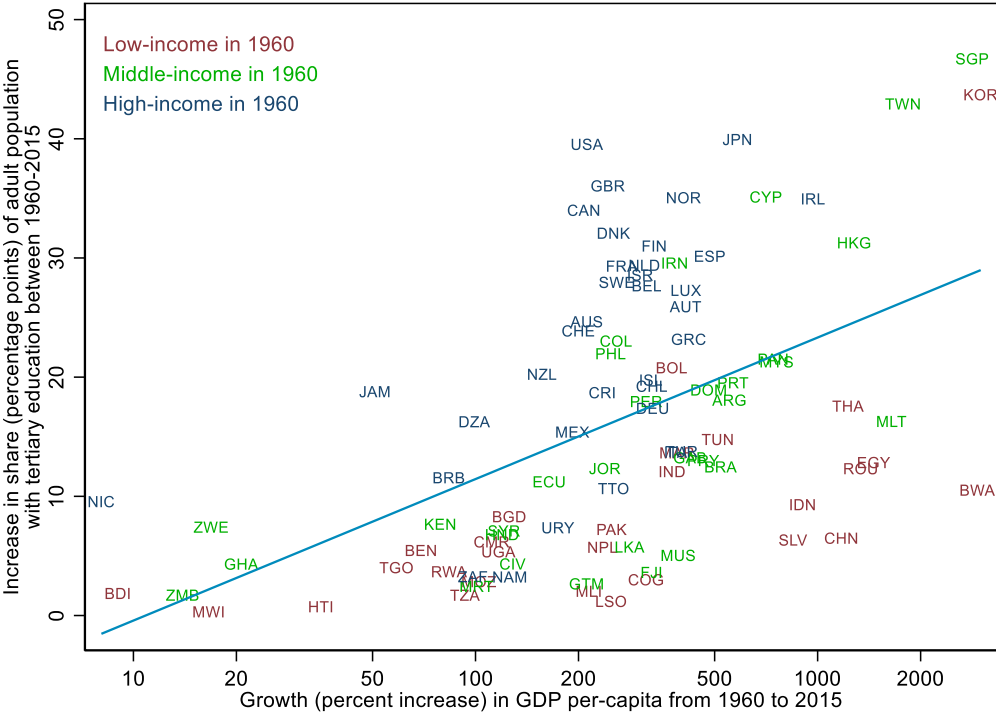
To address this concern, the analysis examines how the aggregate migration response for low- and middle-income countries differs for small and large countries. Countries are classified as "small" if they are below the median in terms of their population in 1960 (3.4 million) and as "large" if they are above the median.

Small and large countries follow the same qualitative pattern as discussed in earlier sections, but with some difference in magnitudes. Among middle-income countries, the migration response is muted for large countries compared to small ones (appendix figure A.2, panel b and appendix figure A.3, panel b). This response is driven by the difference in emigration response to high-return destinations (that is, high-income countries). When incomes quadruples from their baseline levels, emigration from small countries increases by 8.9 percentage points, while emigration from large countries increases by only 3.9 percentage points. Among low-income countries, the response from larger countries is also muted, but the difference between large and small countries is small, particularly at early phases of development (appendix figure A.2, panel a, and appendix figure A.3, panel a).

3.4 Heterogeneity by skill level

Improvement in human capital is the most important cause and a consequence of economic development. People and countries invest more in education as they become better off; in return, a better educated workforce further serves as the engine of economic development and growth. For instance, as Bangladesh's income per capita more than doubled between 1960 and 2015, the average years of school of the adult population increased drastically from 1.0 years to 6.9 years and the share of adults with some tertiary education increased from 0.33 percent to 8.6 percent. Bangladesh's experience matches that of many low-income countries (Figure 8). Increases in educational attainment have been even greater for middle- and high-income countries as they developed.

Figure 8 The education level increases with development

A higher level of education is associated with higher income in the origin country, which makes migration less attractive.[17] The disincentive to migrate to low-return destinations that do not offer much better prospects for the migrants could be especially strong. This could reduce migration to low-return destinations as a low-income country develops and poor people attain higher levels of education and better income opportunities domestically (figure 3, panel a).

Increased education reduces barriers to migrate, particularly to high-return destinations. As discussed, higher education reduces *financing* constraints through higher incomes, particularly for high-cost, high-return destinations. Moreover, better educated workers may experience lower *frictions* in the destination labor market due to better match of skills and improved ability to signal their ability to potential employers. They may also face lower policy barriers to emigrate to high-income countries due to the high demands for high-skilled workers. Together, these factors lead to an increase in the skill profile of migrants as countries develop.

To observe these effects in the data, however, is challenging. Comprehensive data on the skill level of migrants, particularly time series data spanning several decades, do not yet exist. To provide some insight into the evolution of the skill profile of emigrants to high-income countries, this analysis turns to data from the United States, which is one of the biggest destinations for migrants from around the world, particularly for high-skilled workers. While not representative, data from this corridor can shed light on how emigration to high-income countries evolves in terms of skills as origin countries develop.

Data from the United States confirm that migrants become increasingly educated as origin countries develop. The increased educational attainment of the population also translates to increased educational profile of the migrants to the United States (figure 9, panel a). The relative share of the highly educated, with some tertiary education, among migrants increases steadily as origin countries develop. The share of the highly educated increase by 25 percentage points as origin countries' incomes increase by 500 percent. The share of the medium-educated, with some secondary education, also increases by 10 percentage points.

The increased educational profile of migrants is driven not only by the higher educational attainment of the origin country population, but also by the increased rates of emigration as these countries develop. As panel b of figure 9 shows, the emigration rate of the highly educated increases much faster than those with lower levels of education as the origin countries develop. The probability that the highly educated would emigrate increases by 3 percentage points as origin countries increased their incomes by about 150 percent. The corresponding increase for those with lower levels of education is less than 1 percentage point. There is some indication of higher probability of emigration as countries increase their GDPs beyond 500 percent, but the estimates are noisier.

The evidence presented here is consistent with the increased skill profile of the migrants to high-return destinations as origin countries develop. This increase is driven by the changing educational composition in the origin countries as well as by a disproportionate reduction in migration barriers for the highly educated.

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[17] Even with increasing levels of education across the world, particularly in the developing countries, the economic return to education has largely remained unchanged over the past few decades. For a recent update of the large literature on returns to education, see Psacharopoulos and Patrinos (2018).

Figure 9 Migration to the United States becomes more skill-intensive as origin countries develop

a.   The education level of migrants increases
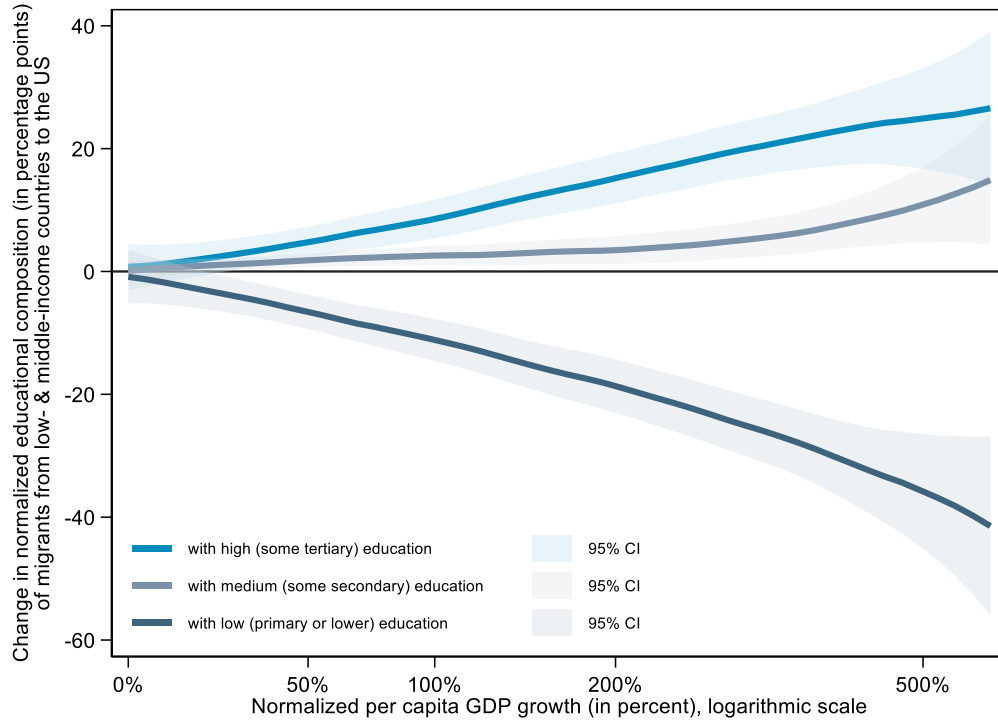
b.   The emigration probability of the highly educated increases
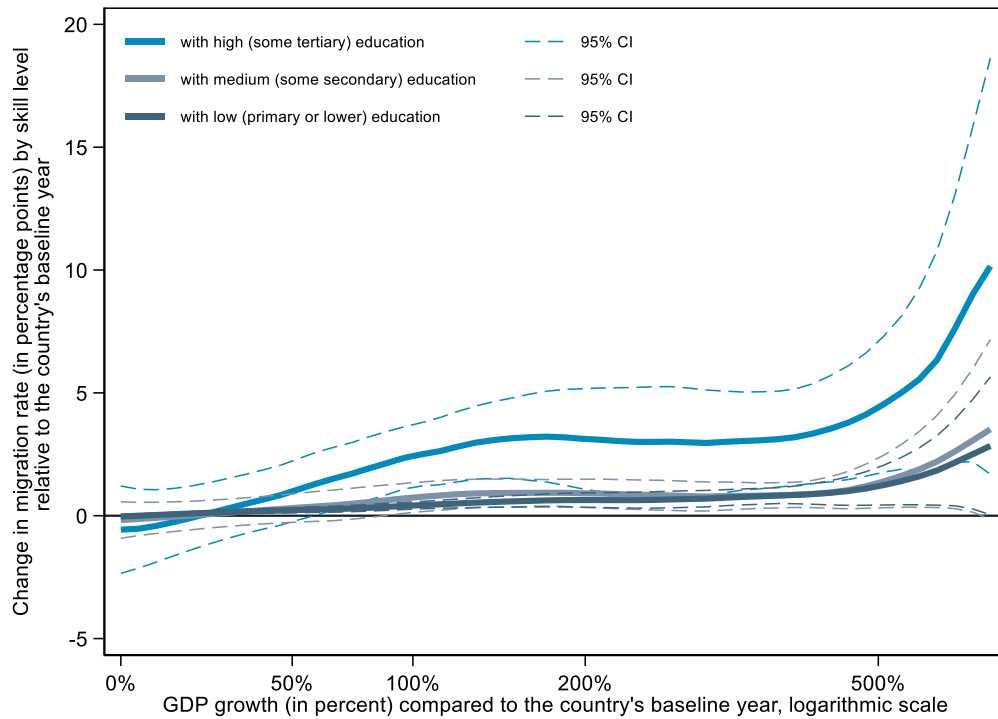
Sources: Original estimation based on data of migrants in the United States from harmonized US Census microdata for years 1960 (5% sample), 1970 (1% state form 1 sample), 1980 (5% state sample), 1990 (5% state sample), and 2000 (5% sample), and American Community

Note: The figure traces the change in skill composition among migrants (panel a) and emigration probabilities to the United States by educational level (panel b) as low- and middle-income origin countries develop. The horizontal axis shows the increase, in percent, in per capita GDP in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) of origin countries relative to the origin country's baseline year. The vertical axis shows changes in educational composition (panel a) and emigration probabilities (panel b) relative to the origin country's baseline year. The baseline year is defined for each origin country as the year with the lowest per capita GDP (2017 PPP$). Low-and middle-income countries were among the bottom two-thirds circa 1960 in terms of per capita GDP (2017 PPP$). CI = confidence interval.

4. Conclusion

This paper shows that the relationship between emigration and development is complex. The emigration response to development varies along a few dimensions. First, the income level of origin countries matters. Low-income countries have a more complex response than middle-income countries, which exhibit an "inverted-U" pattern whereby migration first rises, then plateaus, and then falls with development. Second, migration response differs by the type of destination. Migration from low-income origins to low-return destinations—neighboring countries or other low-income destination countries—falls in the initial stages of development. Emigration to high-return destinations increases steadily with income for middle-income countries but increases at a much slower pace for low-income countries. Third, the population size of the origin country does not matter in terms of the qualitative nature of the response. But the emigration response from middle-income origin countries to high-income destination countries is muted for larger countries compared to the response from smaller countries. Fourth, the composition of migrants to high-income destinations changes as countries develop. As countries develop, their population and the emigrants attain higher levels of education. In addition, the probability of emigration increases disproportionately for the highly educated. These patterns reflect the multiple transformations that accompany development, including rising incomes, rising global integration, demographic shifts, and rising human capital stocks.

The evidence presented in this paper has important policy implications, particularly for policies that intend to influence migration flows. First, migration policies need to recognize that the emigration response to development differs by the type of origin country as well as the destinations migrants choose as countries develop. Unlike the intentions of 'root cause' policies, emigration towards high-income destinations generally increases with development, but much less so from low-income countries.

Second, migration policies need to go beyond the absolute numbers of migrants and focus on the composition of migrants. *Desperate* migration—low-return migration in response to lack of opportunities at origin—tends to fall while emigration of a more skilled workforce tends to increase, plausibly due to higher demands for such skills in the destination labor markets. This suggests that the nature of development matters. A development process that generates decent jobs for the poor and vulnerable and develops skills that are scarce in the global labor markets is likely to result in high-return migration with positive impacts for origin and destination countries.

Third, destination countries have significant ability to determine the nature of migration and migrants despite the forces of development or accompanying transformations. For instance, although low-income countries have strong demographic advantages relative to high-income destination countries, emigration in this corridor remains low and unresponsive to demographic divergence. High-income destination countries need to proactively facilitate the steady inflow of migrants to compensate for their demographic disadvantages, likely from low-income countries where a youthful workforce is still abundant. Such migration facilitation policies may need to be accompanied by relevant skills development in the origin countries.

This paper is a descriptive exploration into some dimensions of the heterogeneities in migration response to development, notably the types of origin and destination countries, as well as the types of migrants. Further theoretical and empirical work is needed to better understand these and other important heterogeneities. Further work can shed light on how key transformations that accompany development—increased incomes, increased global integration, domestic structural changes, and demographic transition—affect migration and how they complement one another to constitute the aggregate response. Further work can also investigate whether the increased skill profile of migrants is commensurate with increased productivity in destination countries.

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APPENDIX A. Additional Figures

Figure A.1 The cross-country relationship between income and emigration is muted for large countries
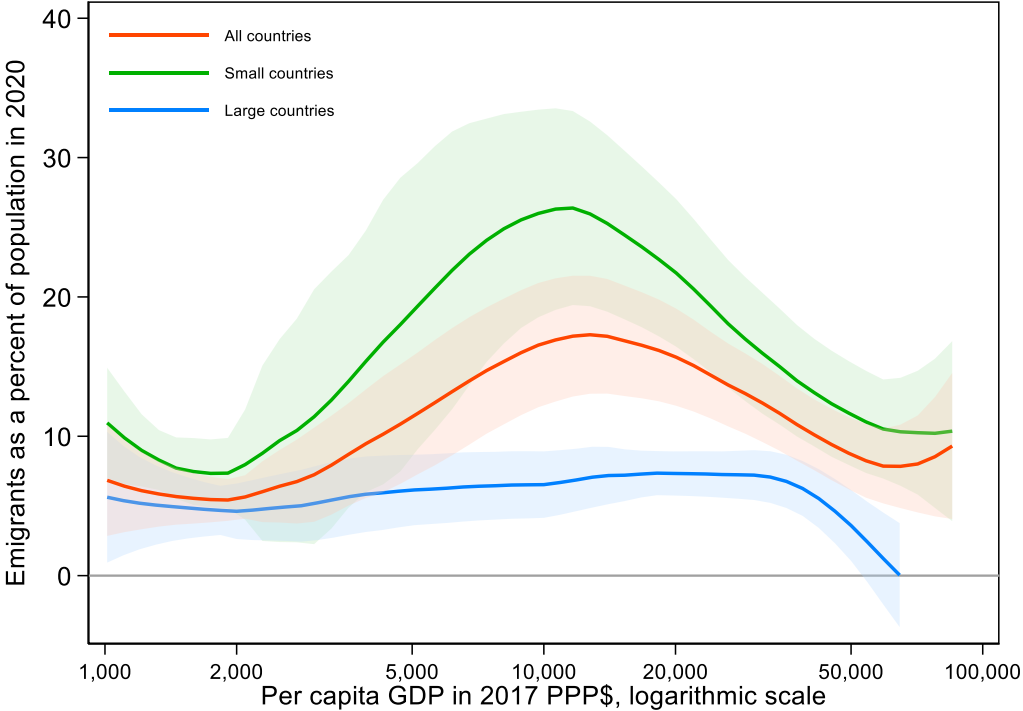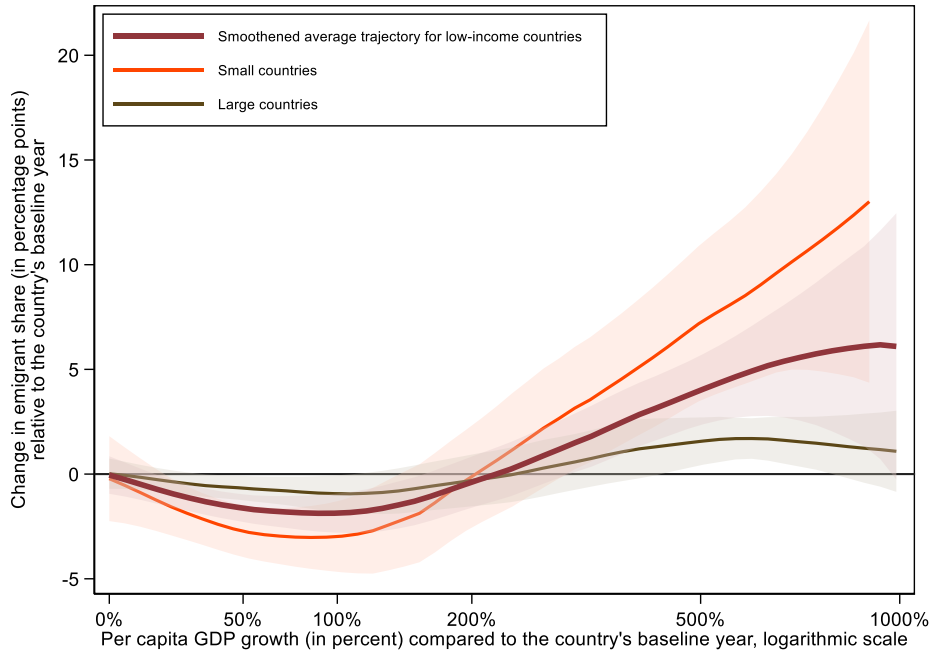

Sources: Original estimations based on migration data from UN DESA 2020 and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: Data are as of 2020. The figure shows the relationship between total migrant stock (as a percentage of origin country population) in 2020 against the per capita GDP per capita in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) in 2020, for all countries (red line), and separately for small countries (green line) and large countries (blue line). The lines represent a local linear fit, with 95 percent confidence interval shaded in the same colors. GDP for 2020 is calculated by applying the GDP growth rate applied to the 2019 GDP from PWT 10.0. Countries are considered small if they are below the median population (9.3 million in 2020) and large if they are above the median.

Figure A.2 The relationship between development and emigration differs by population size of countries

a. Among low-income countries, large countries exhibit similar but muted relationship between development and emigration

b. The hump-shaped relationship between development and emigration is muted for large middle-income countries
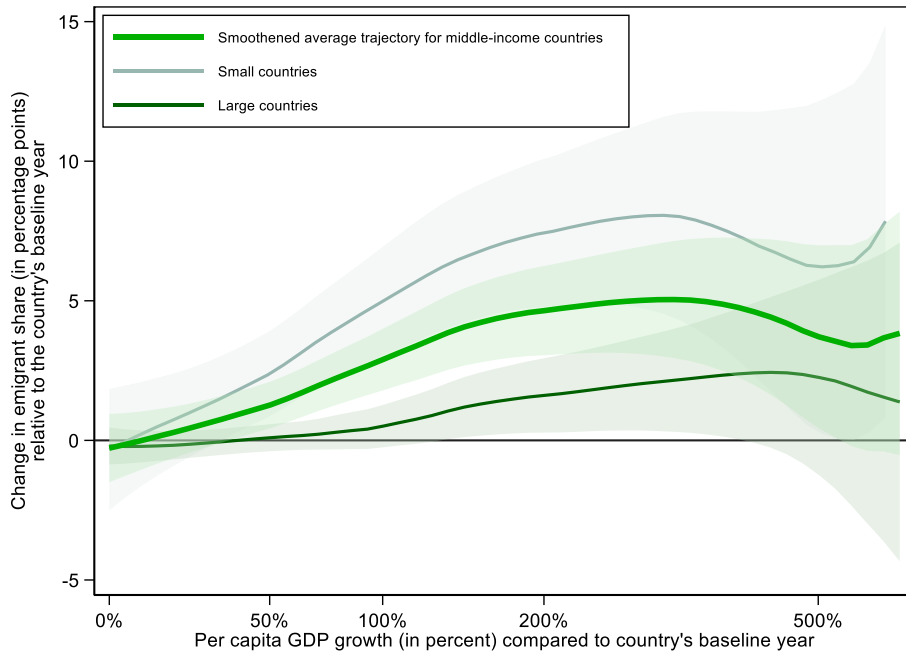
Sources: Original estimations based on migration data from Özden et al. 2011 and UN DESA 2020; and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).
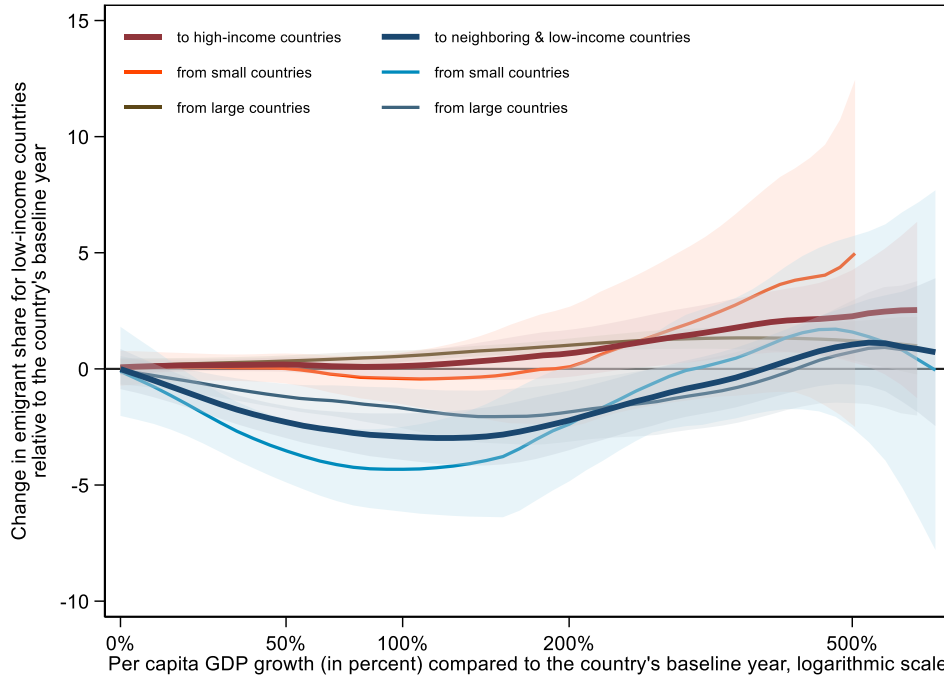
Note: The figure traces the emigration trajectory for low-income countries (panel a) and middle-income countries (panel b) as they have developed. The horizontal axis represents the increase in incomes and the vertical axis represents the increase in migration stock relative to the baseline year. The solid lines show the locally linear fit between increases in incomes and changes in emigration rates compared to the
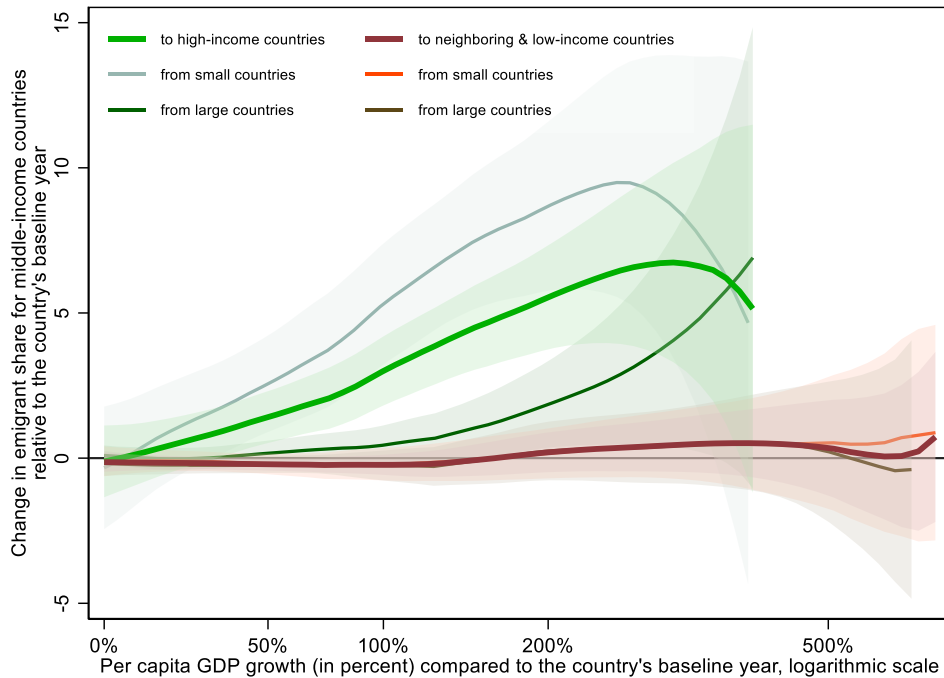
baseline year. The baseline year, for each country, is defined as the year in which per capita GDP in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) was at its lowest level since 1960. Low-income countries were among the bottom third circa 1960 in terms of per capita GDP (2017 PPP$), and middle-income countries were among the middle third. Estimates exclude six outliers in terms of changes in migration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis).

a. **Large low-income countries have similar but muted emigration response to neighboring or low-income countries, particularly at early phases of development**

b. **Large middle-income countries exhibit a muted emigration response to high-income destinations**

Sources: Original estimations based on migration data from Özden et al. 2011 and UN DESA 2020; and GDP data from the Penn World Tables (PWT) 10.0 (Feenstra, Inklaar, and Timmer 2015).

Note: The figure traces the destination composition of emigrants for low-income (panel a) and middle-income (panel b) countries as they have developed. The horizontal axis represents the increase in incomes and the vertical axis represents the increase in migration stock relative to

the baseline year. Baseline year, for each country, is defined as the year in which per capita GDP in constant 2017 US dollars in purchasing power parity terms (2017 PPP$) was at its lowest level since 1960. Each lightly colored lines represents the trajectory for a particular country to low-return (neighboring or low-income countries) or high-return (high-income countries) destinations. The solid lines show the locally linear fit between increases in incomes and changes in emigration rates to low-return or high-return destinations compared to the baseline year. Low-income countries were among the bottom third circa 1960 in terms of per capita GDP (2017 PPP$), and middle-income countries were among the middle third. Estimates exclude sic outliers in terms of changes in emigration rates: three low-income countries/economies (Bosnia and Herzegovina, Grenada, and West Bank and Gaza) and three middle-income countries (Antigua and Barbuda, Dominica, and Saint Kitts and Nevis).