The Cross-country Determinants of Potential and Actual Migration[1]

Frédéric Docquier
FNRS, Fonds National de la Recherche Scientifique and IRES, Université Catholique de Louvain

Giovanni Peri
University of California, Davis

Ilse Ruyssen
IRES, Université Catholique de Louvain and SHERPPA, Ghent University

In this study, we use cross-country bilateral data to quantify a two-step process of international migration and its aggregate determinants. We first analyze which country-specific factors affect the probability that individuals join the pool of potential (aspiring) migrants. Then, we consider the bilateral and destination country factors that affect the frequency at which potential migrants turn into actual migrants. Using information on potential migrants from World Gallup surveys and on actual migrants from national censuses for 138 origin countries and 30 major destinations between 2000 and 2010, we analyze economic, policy, cultural, and network determinants of each step. We find that the size of the network of previous migrants and the average income per person at destination are crucial determinants of the size of the pool of potential migrants. Economic growth in the destination country, on the other hand, is the main economic generator of migration opportunities for a given pool of potential migrants. We also find that college-educated exhibit greater actual emigration rates mainly because of better chances in realizing their immigration potentials, rather than because of higher willingness to migrate.

INTRODUCTION

Migrating from a country of origin to a country of destination involves several steps, not all of them observable and measurable (Paul, 2011). This paper relates to the existing literature by considering the migration process as comprised of two main steps. We first analyze the macrodeterminants of the aggregate probabilities of becoming potential migrants (first step), and then, we look at the factors determining what fraction of potential become actual (second step) migrants. A tradition in the migration literature identifies a clear first step in the decision of looking for migration opportunities. "Aspiring" migrants are those who express an intention/desire to emigrate (Carling, 2002; van Dalen *et al.*, 2005a; van Dalen *et al.*, 2005b; Jónsson, 2008; Becerra, 2012; Creighton, 2013). Several studies have used survey questions to elicit this information and have thoroughly analyzed specific cases, often focused on one country of origin or one migration corridor, such as Mexico–U.S. These studies have been focused on uncovering detailed motivations of potential migrants and on individual level analysis, but are hard to compare with each other or across countries and to generalize into quantifiable tendencies.

From an economist's perspective, deciding to be in the pool of potential migrants is explained as a rational decision. Individuals evaluate how desirable it would be to migrate to a foreign country relative to staying in the country of origin. An implicit comparison of the utility (benefits minus costs) of staying with the utility of migrating to different potential countries is made by individuals. "Potential" migrants are those who state a preference for migrating (arguably because perceived benefits of migrating are larger than perceived costs). Those benefits and costs depend on the presence of family members abroad, on individual characteristics and on economic and social conditions, among other things. Hence, a large part of the sociological literature, relating those factors to the intention of migrating (both by individuals and families), can be interpreted in this framework (*e.g.* Yang, 2000; Papapanagos and Sanfey, 2001; Wood *et al.*, 2010).

The second step of the migration process takes place when some *searchers* in the pool of potential migrants find *opportunities* to migrate – such as a job offer, a temporary visa, a study opportunity or a family permit – and migrate. The interactions between potential migrants and migration opportunities determine the flow of actual migrants (Carling,

2002). From an economic perspective, it can be considered as somewhat similar to a matching process: Heterogeneous individuals who are willing to migrate find – through a slow and costly process – potential migration opportunities. Pissarides (2000) popularized the use of search and matching in labor market studies. Some of the underlying features of those models can be used in the analysis of how potential migrants (searchers) and migration opportunities are matched and produce the flow of actual migrants.

In the present study, we implement a simple two-stage empirical analysis to illustrate the role of aggregate determinants of migration flows. First, we analyze empirically what country-specific and bilateral factors determine the size (and composition between education groups) of the pool of potential migrants. The latter is defined as those who have revealed being willing to migrate by positively answering the question "Ideally, if you had the opportunity, would you like to move permanently or temporarily to another country, or would you prefer to continue living in this country?." Most of them have, then, indicated a preferred country in the follow-up question "To which country would you like to move?." In the second step, we analyze how these potential migrants combine with factors determining migration opportunities and generate actual migration flows.

The answers to the questions described above were obtained from representative Gallup polls (described in detail in Gallup, 2012) and available for 138 countries – representing 97% of the world population – between 2007 and 2013. After organizing, cleaning, and aggregating these data by origin–destination pairs, we merged them with data on actual bilateral net migration flows for the 2000–2010 period from 138 countries to 30 major migrant-receiving countries. Bilateral net migrations are measured as the difference in the stock of migrants from an origin to a specific destination between 2000 and 2010. Hence, they are good estimates of the long-term flows of permanent migrants. Dividing by native population in the country of origin, we construct net migration rates and potential migration rates between country pairs over the 2000–2010 decade. With these bilateral data, we analyze in a simple econometric framework how the pool of potential migrants and migration opportunities (stemming among others from economic growth, policies in the receiving country, the presence of networks) determine the net migration rates. In doing so, we learn (1) which factors affect migration by changing the share of potential migrants in the population and (2) which factors affect the actual migration rate, given the pool of potential migrants.

Throughout our analysis, we distinguish between individuals with at least some college education (that we call college-educated) and those without (sometimes called "less educated" or non-college-educated).[2] Their increasingly different labor market performance in most developed countries (Autor *et al.*, 2008; Goldin and Katz, 2008; Moretti, 2012), and – even more importantly – their different degree of national and international mobility (Grogger and Hanson, 2011; Artuç *et al.*, forthcoming) calls for a separate analysis to better understand their differences. Are college-educated individuals more mobile because they are more likely to be potential migrants in response to perceived economic opportunities? Or are they more mobile because within the pool of *potential migrants*, they have a greater probability of finding opportunities? As most receiving countries' immigration policies, either directly or covertly, favor highly educated immigrants, differences in the rate of realization of migration opportunities between college-educated and non-college-educated are likely to depend on immigration policies. Alternatively, college-educated may be able to navigate through foreign labor markets more easily and acquire knowledge of more opportunities.

Several interesting results emerge from our analysis. First, supporting the cost–benefit model used as the basis of economic studies of migration, we find that the average income at destination and the presence of networks of previous migrants are robust and quantitatively significant determinants of potential migration rates. Interestingly college-educated and non-college-educated respond to destination income and networks *in a broadly similar way* when it comes to willingness to migrate. On average, the less educated are only somewhat less likely to be willing to migrate, and their willingness to migrate responds to economic incentives with similar elasticities as college-educated. Yet, college-educated have a three to four times larger probability of actually migrating, once in the pool of potential migrants. This is the main factor determining skill-biased emigration. Third, growth in gross domestic product (GDP) per capita in the receiving country is the only economic factor that we find positively correlated with migration rates once we control for the pool of potential

---

[2]In the two datasets used in this paper, the definition of college-educated is slightly different. In the data on actual migration, college-educated are defined as described here. In the Gallup poll, only individuals with a college degree are defined as college-educated. (We do not have information on individuals who attended college without graduating.) Hence, we use the desired migration rates for college graduates and apply them to the population of all college-educated.

migrants, and such correlation is stronger for non-college-educated. Fourth, policies allowing free mobility of labor across borders (such as within the European Union), which are the closest to having open borders, had a small (and sometimes statistically insignificant) effect in translating potential into actual migrants among non-college-educated. They had no effect on the mobility of college-educated in 2000–2010. Similarly, the presence of visa waiver agreement between countries has a positive but small correlation with actual migration flows of the less educated, for given potential. One has to keep in mind, however, that free migration policies only exist between rather similar countries within Europe. Likewise, visa waiving agreements exist between countries with similar levels of development and democracy, mainly the rich Western countries (Neumayer, 2006). Finally, we find that economic growth in the destination countries had a proportionally stronger effect on migration opportunities from sending countries where the pool of potential migrants to that destination was larger. Networks in the destination country, income differentials, and geographical and cultural proximity had only a minor impact on migration rates once we control for the pool of potential searchers.

The rest of the paper is organized as follows. First, we review the existing literature on the determinants of migration, focusing on the empirical aggregate approach we use that derives from the economics literature. In the following section, we present the data on potential and on actual migrants and show some descriptive statistics and general trends. Subsequently, we provide the framework for the empirical analysis. In the empirical section, we first estimate the impact of economic characteristics, policy variables, and network size on the pool of searchers, among college- and non-college-educated. Then, we analyze how the pool of potential migrants and receiving-country opportunities determine actual migration rates of college- and non-college-educated. We end with a brief summary and some conclusions.

LITERATURE REVIEW

The classical way economists look at migration has been by founding the decision to migrate in an individual cost–benefit analysis (utility maximization). By aggregating heterogeneous individuals, this framework has allowed scholars to analyze the determinants of aggregate migration flows and the selection of migrants (along the skill dimension). Examples of this

approach can be found in Borjas (1987), Clark *et al.* (2007), Grogger and Hanson (2011), Hatton (2005), Roy (1951), and Sjaastad (1962). In this paper, we use this aggregate empirical perspective based on an individual cost–benefit analysis. However, we incorporate it in a two-step process by analyzing first the aspiration and then the realization of migration potentials in sequence. This approach draws inspiration from a framework that has long been applied in other social sciences. As mentioned in the introduction, several studies (*e.g.* De Jong, 2000; Carling, 2002; van Dalen *et al.*, 2005a van Dalen *et al.*, 2005b; Hagen-Zanker *et al.*, 2009; Becerra, 2012; Creighton, 2013; Czaika and Vothknecht, 2014) have recognized the importance of analyzing the factors influencing the aspiration to migrate in specific countries and contexts. Some of these studies have explicitly taken a two-step approach, analyzing (1) aspirations and (2) ability to migrate (Carling, 2002). Our analysis extends this approach by drawing upon additional economic theory and using a uniquely extensive dataset. Our two-step analysis is loosely based on utility maximization in the first step and "matching" of potential migrants and migration opportunities in the second.

Empirically, the specifications we use to analyze the "first step" are similar to the bilateral gravity-like regressions grounded on theoretical microfoundations and used in several previous studies (*e.g.* Karemera *et al.*, 2000; Hatton and Williamson, 2005; Clark *et al.*, 2007; Bahna, 2008; Hooghe *et al.*, 2008; Pedersen *et al.*, 2008; Mayda, 2010; Ruyssen *et al.*, 2014). Several recent papers have refined the economic analysis of the determinants of migration, framing the empirical estimates within a more rigorous multicountry choice, random utility maximization model derived from McFadden (1974). Grogger and Hanson (2011), Beine *et al.* (2011), and Ortega and Peri (2013), for instance, analyze bilateral migration as the result of a multinomial choice among alternative locations, driven by utility maximization determined by a comparison of costs and benefits. They relate the migrant/non-migrant ratios to economic and policy factors. Recently, Bertoli and Fernández-Huertas Moraga (2013) extended this framework to more general decision structures and implemented more complex, yet more general, econometric analyses. More generally, Beine *et al.* (forthcoming) discuss the methodological challenges that are implied by the use of bilateral data for the analysis of international migration. These papers are closely related to ours in that they also use aggregate bilateral cross-country data to identify determinants of migration flows.

In the first step, we analyze the role of several factors that previous researchers have found to be important in affecting costs and benefits of migration: first of all income and job availability at destination, but also geographical, cultural, and institutional distance and social linkages (networks) between countries. Fawcett (1989), Bauer and Zimmerman (1997), Hooghe *et al.* (2008), Pedersen *et al.* (2008), Mayda (2010), Beine *et al.* (2011), and Ruyssen *et al.* (2014) are examples analyzing the impact of some of these factors directly on migration. Differently from these studies, however, we first focus on the impact of those factors on potential (rather than actual) migration.

The second part of our analysis looks at the process of combining potential migrants with factors that produce migration opportunities. In this respect, the combination of potential migrants and potential opportunities in receiving countries can be described in the context of a "matching" function (as in Pissarides and Petrongolo, 2001; Petrongolo and Pissarides, 2006; or Gregg and Petrongolo, 2005 among others) that summarizes the slow and uncertain process through which potential migrants realize migration opportunities. This is a somewhat new way of looking at the second stage of the migration process in which potential migrants become actual migrants. By including policy, cultural, geographical, and other determinants of the likelihood of migration among potential migrants, we want to identify all factors (economic and not) that affect the probability that a potential migrant turns into an actual migrant.

There is a small but growing literature analyzing migration opportunities in a search and matching framework. Chassamboulli and Peri (2014), for instance, used such a framework to investigate the effect of the U.S. immigration policy on illegal immigration from Mexico. Ortega (2000), on the other hand, theoretically showed that multiplicity of equilibria can arise from the interaction of searching firms' and migrants' optimizing behavior due to search and job creation externalities. Whereas those are search and matching models of migration for labor reasons, this paper uses the matching framework in a broader sense. In particular, we use bilateral data to statistically describe the process of matching potential migrants with "migration opportunities." It is worth noticing that we do not directly observe "migration opportunities" (namely the number of jobs, permits, or visas available to foreigners) in receiving countries. We can identify, however, some receiving-country factors (such as productivity growth and policies) that could affect the availability of those opportunities and the probability of matching them with potential migrants.

As the Gallup data on willingness to migrate are new, the literature relying on these data to capture potential migration is very limited. There are several studies analyzing the willingness (aspiration) to migrate using country-specific surveys–for instance, in Mexico (Becerra *et al.*, 2010; Becerra, 2012; Creighton, 2013), in Cape Verde (Carling, 2002), in North Africa (van Dalen 2005a; van Dalen 2005b), and in China (Yang, 2000), just to cite a few. The fact that our database, on the other hand, covers all countries in the world makes it exceptional. A recent report by the International Migration Organization (Esipova *et al.*, 2011) presents detailed descriptive statistics on the willingness to migrate across countries based on these data. A very recent working paper by Manchin *et al.* (2014), in addition, analyzes the importance of individual satisfaction on the desire to migrate using individual data from the same Gallup Poll, disregarding the bilateral dimension.

DATA ON MIGRATION AND WILLINGNESS TO MIGRATE

Our database includes 138 countries of origin for which data on both actual and desired emigration are available toward 30 major destination countries.[3] The set of destinations includes all major OECD countries as well as Persian Gulf countries, the Russian Federation, and South Africa. According to the United Nations database, our set of destination countries accounts for 66.3% of the worldwide stock of international migrants in 2010 (and 63.4% of the stock in 2000). Throughout our analysis, we always separate college-educated individuals (denoted as h) who attended some tertiary education and less (or non-college) educated individuals (denoted with l) who did not attend any tertiary education. These two groups are very different in terms of wage, job type, and mobility. During the recent decades, their economic differences, especially in developed countries, have grown (*see* Autor *et al.*, 2008; Moretti, 2012). We compare statistics and findings for the two groups. Our set of 30 destination countries accounted, respectively, for 82.5% and 57.8% of the stock of highly and less educated adult migrants in the year 2000.

We focus on bilateral migration flows over the period 2000–2010. The actual migration rate from country of origin o to destination country

---

[3]In the Appendix, we describe in greater detail the methodology and the original data used to construct actual and desired migration rates. We also show in Table A3 the summary statistics for all 138 countries of origin.

d is calculated as the net migration flow (obtained as the difference between the 2010 and the 2000 stocks of people born in o residing in country d), normalized by the native non-migrant population of country o in 2000. These bilateral rates are denoted by $m_{o,d}^h$ and $m_{o,d}^l$ for college- and non-college- educated, respectively. While net migration rates over 10 years imperfectly capture short-term gross migration,[4] they represent more closely the change in permanent migrants. Moreover, net measures of migration, as they are derived from census data (rather than from registers of entry), are much more reliable and include non-documented migrants in several countries.

We then define the "desired" (though unrealized) migration rate from country o to country d as the share among native non-migrants in country o, interviewed by the Gallup Poll between 2007 and 2013, who said that they would be willing to migrate (permanently or temporarily) to country d if they had an opportunity, but who are still in the country of origin. Whereas most respondents indicated a specific country of desired migration, some individuals only demonstrate a willingness to migrate but no specific desired destination. We considered all those who indicated a preference for migrating as "willing" and allocated those who did not express a country preference in proportion of the preferences expressed by those who did.[5] We denote these bilateral rates as $w_{o,d}^h$ and $w_{o,d}^l$ (for "willingness"), respectively, for college- and non-college-educated. The population of reference, encompassing all people who could, in principle, migrate, is always the initial population of natives in country o as of the year 2000, denoted by N_o^h and N_o^l, respectively, for college- and non-college-educated. The rates m and w are both expressed relative to this initial population of natives in 2000. The sum of those two rates, therefore, gives the "potential" emigration rate. It combines those who emigrated (between 2000–2010) and those who are willing to migrate but were still in the country of origin by 2010. Hence, potential migration

---

[4] *See* Smith and Swanson (1998) and Rogers (1990) for a discussion of the pros and cons in the use of net and gross migration rates.

[5] It could be argued that individuals are willing to migrate to many different destinations and decide which country to move to only once an opportunity arises. In this case, the only meaningful distinction would be between willing and non-willing, making the bilateral preferences irrelevant. We will describe and analyze overall emigration rates (rather than bilateral) as well. Their responses to economic and network variables are similar to the response of bilateral rates implying that we are not distorting the choice too much by analyzing potential migration as bilateral preferences.

rates are denoted by $p_{o,d}^h = m_{o,d}^h + w_{o,d}^h$ and $p_{o,d}^l = m_{o,d}^l + w_{o,d}^l$. To cap-
ture some key characteristics of potential and actual migrants, let us con-
sider some summary statistics and aggregate features of migration rates
from the origin and destination countries' perspectives.

General Overview

Table 1 shows the values for emigration rates of college-educated and the
less educated (without college degree), averaging 138 countries of origin
in the upper part of the table. In the second row, we show the actual net
emigration rate, and in the third row, the "desired" emigration rate as
defined above. In the first row, for comparison, we show the stock of emi-
grants relative to the native population as of 2000. The first two columns
of the table show the values averaged across countries of origin, weighted
by their native population. The percentages correspond to those in the
aggregate native population. The third and fourth columns, on the other
hand, show the simple average rates counting each country as one, so that
small countries have the same weight as large countries in the summary
statistics. The much larger values in columns 3 and 4 are due to the fact
that emigration rates (both actual and desired) are larger in small coun-
tries.

   Three interesting facts emerge from these aggregate statistics. Focus-
ing on the weighted figures, actual emigration rates between 2000 and
2010 as a share of the world population were fairly small. Only 0.4 per-
centage points of the native non-migrant population without college edu-
cation migrated between 2000 and 2010, compared to 3.9 percentage
points of those with college education. Desired emigration rates were
larger. About 8.5% of non-college-educated and 16.2% of college-edu-
cated said that they were willing to migrate (if they had an opportunity),
but they did not do so in the considered period. Most strikingly, there
was a much larger difference between non-college- and college-educated in
actual rates (ratio of almost 10 to 1) than in desired rates (ratio of 1.9 to
1). This is even more notable when we consider the simple averages in
columns 3 and 4. This fact suggests that the low migration rates of non-
college-educated may not be due to a difference in perceived benefits/costs
of migrating, but may rather be explained by the fact that those searching
for migration opportunities without a college degree have a much harder
time finding them. An additional interesting implication of the simple
averages is that if all people who say that, ideally, they are willing to

TABLE 1
AGGREGATE STATISTICS ON ACTUAL AND DESIRED MIGRATION RATES (2000–2010). AS PERCENTAGE OF THE POPULATION IN 2000

	Aggregate Population-weighted Less educated	Aggregate Population-weighted College educated	Average Non-weighted Less educated	Average Non-weighted College educated
Actual and desired emigration rates, as percentage of the country-of-origin, native population				
Stock of emigrants/Native population 2000	1.8	5.8	6.4	34.9
Actual emigration rate: Net emigrants 2000-2010 relative to native population in the country of origin, 2000	0.4	3.9	1.1	30.3
Desired rate: Willing to Migrate 2000-2010, still in the country, relative to native population in the country of origin, 2000	8.5	16.2	14.2	21.4
Actual and desired immigration rates, as percentage of the country-of-destination, native population				
Stock of immigrants/Native population 2000	9.4	10.9	20.9	30.0
Actual immigration rate: Net immigrants 2000-2010 relative to native population in the country of destination, 2000	2.4	6.0	11.0	35.0
Desired rate: Willing to Migrate 2000-2010, still in the country, relative to native population in the country of destination, 2000	42.0	26.0	87.0	93.0

The stock of migrants and native population in 2000 are calculated using data from Artuç *et al.*, (forthcoming) and Brücker *et al.* (2013). Net migration rates in the period 2000–2010 are calculated as the difference in bilateral stocks of migrants 2010–2000, aggregated by country of origin or destination. Willingness to migrate is calculated as the share of people, among those interviewed by Gallup between 2007 and 2013, who have expressed a desire to migrate, if an opportunity arises. We consider 138 countries of origin and 30 destinations.

migrate would do so, the migration rate of college-educated would still exceed that of non-college-educated, but emigration rates of the two groups would be much closer. However, we should be cautious in considering the desired (potential) migration rate as realizable under any circumstances. Our results below show that even free labor mobility policies do not seem to move potential and actual migration rates any closer together. While "potential migration" is an interesting concept to identify migration *searchers*, the frictions and hurdles preventing its translation into actual migration could be pervasive and hard to reduce, at least within the plausible range of policies and institutions.

The lower part of Table 1 shows, instead, summary statistics on actual and desired migration rates from the perspective of the receiving country. The actual and desired flows (and stocks in 2000) of migrants are aggregated by country of destination (or desired destination) and divided by the native resident population of the *destination* country. Hence, those two rows show actual and desired "immigration" rates for the 30 destinations considered, averaged either by weighting by the destination country population (columns 1 and 2) or without weights (columns 3 and 4).

As stated above, the considered 30 destination countries receive about two-thirds of the actual, worldwide migration stock, and 82.5% of the worldwide stock of high-skilled migrants. Yet, they include less than 20% of the world population so that the immigration rates for these countries are much greater than the emigration rates for the origins in our sample. During the 2000–2010 period, immigration of non-college-educated into the considered destination countries corresponded to 2.4% of their aggregate non-college-educated population as of 2000, compared to 6% for college-educated. Desired immigration among non-college-educated, that is, the size of the inflow of all "willing" migrants, would amount to 42% of the native non-college-educated population. For college-educated, desired immigration equals 26% of the receiving-country population. In this case, there are more potential non-college-educated migrants to our destination countries than there are college-educated. The reason is that, while the emigration rate from almost any country is larger for college-educated, there are many more non-college-educated in the sending than in the receiving countries so that – from the destination point of view – the flow in percentage of non-college-educated would be much larger. Hence, if all people who are willing to migrate would follow on their desire, the inflow of immigrants into the considered receiving countries would be much less skill intensive than it is today. For most countries, it would still be college intensive, but

in some countries (such as the U.S.), the inflow would become much larger and non-college intensive. Let us emphasize, before moving to the analysis of individual countries, that the data used to construct desired *emigration* rates only use the information about people's willingness to migrate. On the other hand, those used to calculate desired *immigration* rates use also the information on the most preferred country of migration. In as much as potential migrants are willing to migrate to other (less preferred) countries, or do not know exactly which country they would like to migrate to, there would be significantly more imprecision in the second measure than in the first. Countries that do not top the lists of most preferred but could still be desirable destinations, in particular, could receive significantly more immigrants than these figures suggest, if they unilaterally opened their borders.

Sending and Receiving Countries

Desired and hence, potential migration rates are significantly larger than actual migration rates. Here, we show preliminary evidence that they are also correlated with those. Table 2 shows the actual net immigration rates and the desired immigration rates – desired from the point of view of migrants – for each of the 30 considered receiving countries. First, note that the actual net immigration rate for non-college-educated is usually below 10% and sometimes quite small (or even negative in the presence of return migration). In contrast, the immigration rate of college-educated is found to be usually quite large, on average it is 35.8%. The United Arab Emirates form a clear outlier, attracting immigrants in much larger numbers than the native population both among more and less educated. The labor force of professionals and workers in these countries has typically been built by attracting immigrants. Australia, Canada, Ireland, and the United Kingdom, on the other hand, attracted a large inflow of college-educated and had a very skill-intensive immigration in the 2000–2010 period. These data confirm previous studies (Docquier *et al.*, 2014; Artuç *et al.*, forthcoming) in finding that, for essentially all migration-receiving countries, the flow of recent immigrants was college-educated intensive relative to the native population. The third column defines immigration as "skilled" ("unskilled") if the net immigration rate between 2000 and 2010 was larger for college (non-college)-educated. All but two countries in our sample (U.S. and New Zealand) were characterized by skilled immigration in the 2000s. The remaining columns calculate the desired immigration rate for the same set of receiving countries 2000–

TABLE 2
ACTUAL AND DESIRED IMMIGRATION RATES OF COLLEGE-EDUCATED AND THE LESS EDUCATED BY DESTINATION COUNTRY

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Skill Intensity	Desired rates Less educated	Desired rates College-educated	Skill Intensity
Australia	−0.6	33.5	Skilled	148.6	245.4	Skilled
Austria	3.1	11.7	Skilled	37.7	72.9	Skilled
Belgium	2.0	11.8	Skilled	24.1	16.4	Unskilled
Canada	−0.8	71.2	Skilled	142.3	240.7	Skilled
Chile	16.7	20.8	Skilled	6.0	9.3	Skilled
Denmark	2.9	8.6	Skilled	30.5	62.9	Skilled
Finland	2.4	5.6	Skilled	15.1	78.3	Skilled
France	1.8	7.3	Skilled	41.7	71.3	Skilled
Germany	0.8	0.9	Skilled	26.0	44.2	Skilled
Greece	7.1	23.1	Skilled	20.5	34.1	Skilled
Ireland	6.1	30.4	Skilled	63.1	88.7	Skilled
Israel	−18.7	2.3	Skilled	35.8	38.0	Skilled
Italy	1.3	7.5	Skilled	24.4	67.7	Skilled
Japan	0.2	0.7	Skilled	12.8	9.3	Unskilled
Luxembourg	10.5	23.6	Skilled	119.5	118.6	Unskilled
Mexico	0.1	1.3	Skilled	3.8	8.5	Skilled
Netherlands	−4.3	−0.9	Skilled	24.6	23.4	Unskilled
New Zealand	9.1	8.7	Unskilled	212.4	154.6	Unskilled
Norway	5.2	14.1	Skilled	48.0	78.5	Skilled
Poland	−0.9	1.0	Skilled	1.2	3.8	Skilled
Portugal	6.7	21.4	Skilled	23.9	50.0	Skilled
Russian Federation	−2.7	1.0	Skilled	8.3	1.5	Unskilled
Saudi Arabia	20.4	121.5	Skilled	300.0	173.4	Unskilled
South Africa	2.8	18.4	Skilled	19.0	8.5	Unskilled
Spain	10.6	20.0	Skilled	58.6	58.8	Skilled
Sweden	4.7	15.4	Skilled	62.0	79.8	Skilled
Switzerland	3.0	3.7	Skilled	119.9	295.5	Skilled
United Arab Emirates	248.4	587.2	Skilled	937.7	622.4	Unskilled
United Kingdom	0.9	26.3	Skilled	50.6	117.8	Skilled
United States	6.3	3.9	Unskilled	92.8	12.9	Unskilled
Average	11.1	35.8	Skilled	87.6	93.6	Skilled

2010. While both rates are much larger than the actual ones, non-college-educated desired immigration is eight times as large as actual, while the ratio for college-educated is less than three. As a result, while the majority of countries would still be facing skilled desired immigration, ten countries would switch to primarily low-skilled immigration if all those who are willing to migrate were to do so leading to a much smaller overrepresentation of college-educated among immigrants. The U.S. exhibits desired immigration rates heavily biased in favor of unskilled, mainly because it is the most popular migration destination for most people in the world and because, on average, there are many more non-college-educated than college-educated in the world.

Preliminary evidence also shows high correlation between potential migration and actual emigration rates in Figures I and II. These figures report scatterplots of actual and potential emigration rates from the 138 sending countries and the OLS regression lines describing their correlation separately for non-college- and college-educated. By aggregating all destinations, we are reducing also the error in assigning potential migrants to one or another destination. We observe a positive and very significant correlation for both college- and non-college-educated. The regression line for the college-educated, however, has a slope of 0.93, and potential

Figure I. **Potential and Actual Emigration Rates of the Less Educated (138 countries of origin).**
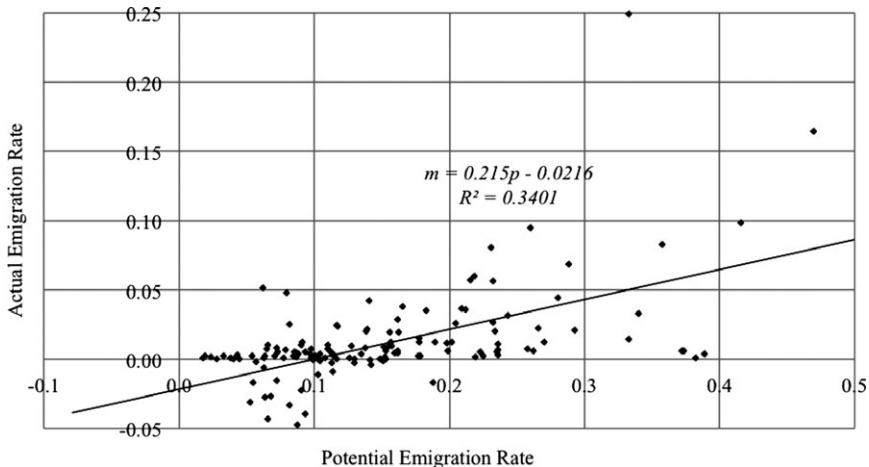
$$m = 0.215p - 0.0216$$
$$R^2 = 0.3401$$

Notes: Actual and potential emigration rates are calculated as described in the text. They are aggregated by country of origin. Each point shows the total actual and potential migration rate from one origin to all destinations.

Figure II.   **Potential and Actual Emigration Rates of College-educated (138 Countries of Origin).**
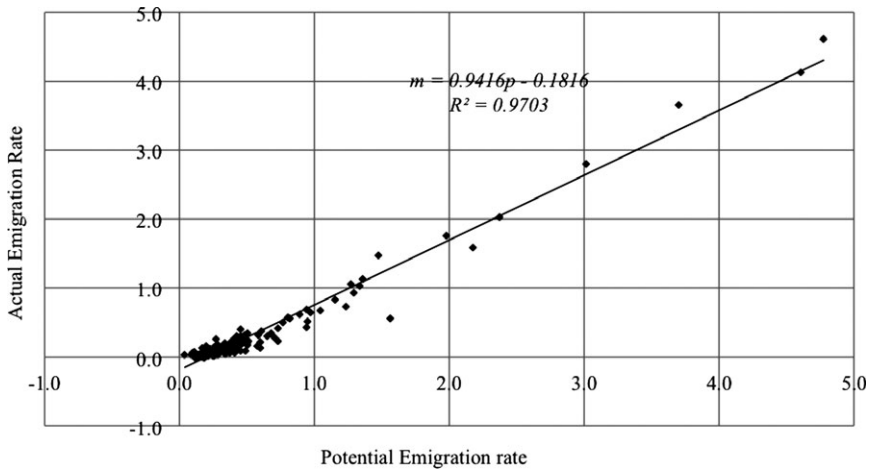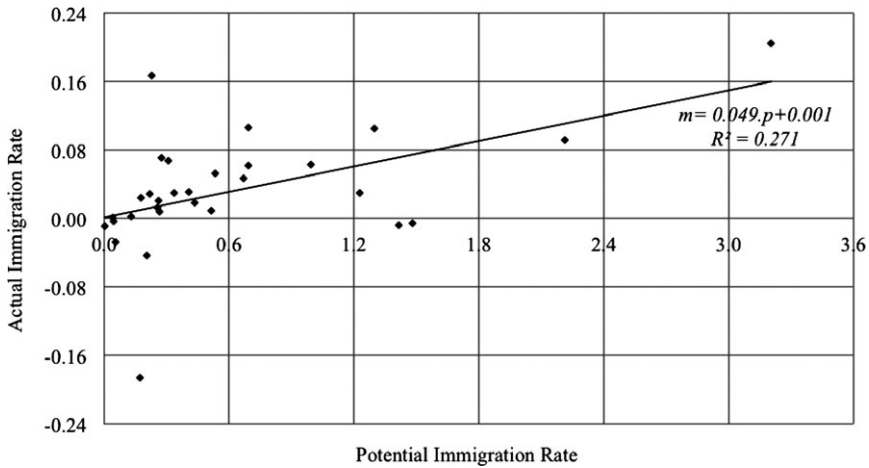

Notes: Actual and potential emigration rates are calculated as described in the text. They are aggregated by country of origin. Each point shows the total actual and potential migration rate from one origin to all destinations.

migration rates explain most of the variation of actual rates (R^2 =0.969). For non-college-educated, the slope is only 0.24, though still very significant (R^2=0.378). We can summarize this stylized fact by saying that countries with a very large net emigration rate of college-educated are those where many college-educated want to emigrate. To the contrary, for less educated, the percentage of people willing to emigrate is always much larger than (and less correlated to) the percentage of actual migrants. This is a clear sign that desiring to emigrate is far less effective in realizing emigration for non-college-educated than for college-educated.

Figures III and IV show similar scatterplots for immigration rates in the 30 destination countries. The scatterplots are more noisy implying that our data about willingness to migrate to a specific country may be less precise than in capturing a general willingness to migrate, as mentioned above. Nevertheless, potential immigration rates have a significant and positive effect on actual immigration rates. Yet, for each increase in the potential immigration rate of non-college-educated by one percentage point of the native population, only 0.05 percentage points of actual immigrants would materialize. For each percentage point of potential college-educated, instead, the country would receive almost 0.2 percentage points of actual immigrants. This difference between college and non-college in the percentages of potential migrants turning into actual migrants will

Figure III.   **Potential and Actual Immigration Rates of the Less Educated (30 Countries of Destination).**

Notes: Actual and potential immigration rates are calculated by dividing the number of net migrants and potential migrants (2000–2010) by the native population in the destination country in 2000. They are aggregated by country of destination. Each point shows the total actual and potential migration rate from all origin countries to one destination.

Figure IV.   **Potential and Actual Immigration Rates of College-educated (30 Countries of Destination).**
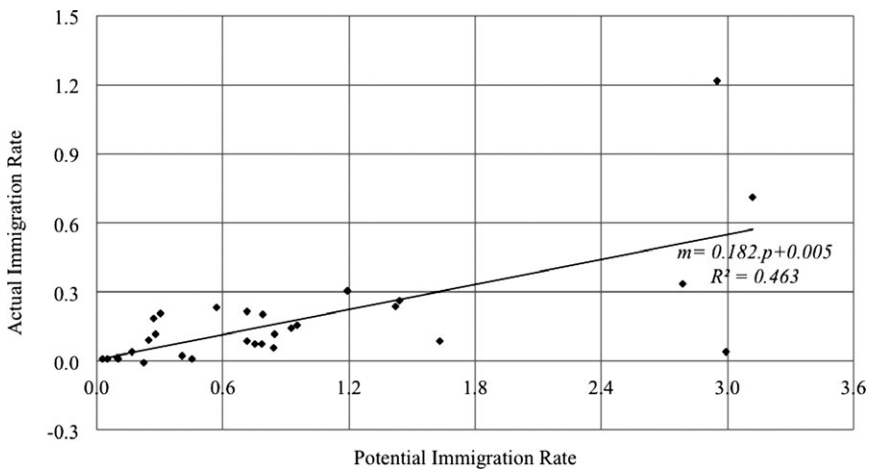
Notes: Actual and potential immigration rates are calculated by dividing the number of net migrants and potential migrants (2000–2010) by the native population in the destination country in 2000. They are aggregated by country of destination. Each point shows the total actual and potential migration rate from all origin countries to one destination.

prove to be a very pervasive feature of international migration. It survives the inclusion of many controls, it is present both in aggregate and bilateral rates, and it is common to poor and not so poor countries of origin.

FRAMEWORK

As described above, we organize our data into aggregate groups by country of origin o, destination d, and education categories: h (college-educated) and l (non-college or less educated). The native population of reference is defined as the total number of individuals aged 25 and over, born and residing in country o in the year 2000 (the first year of our sample). We call these groups N_o^h and N_o^l, respectively, for more and less educated. The desired migration rates, $w_{o,d}^h$ and $w_{o,d}^l$, then capture those who revealed themselves as willing to migrate to country d yet who were still residing in o between 2007 and 2013, expressed as shares of N_o^h and N_o^l. The net migration rates $m_{o,d}^h$ and $m_{o,d}^l$ then equal the net flows of actual migrants from country o to country d in the period 2000–2010, relative to the initial population in 2000. The sum of these two groups constitutes the total of potential migrants, that is, $P_{o,d}^h$ and $P_{o,d}^l$, which, standardized by the initial population, correspond to the potential migration rates denoted by $p_{o,d}^h$ and $p_{o,d}^l$.

Potential migrants should have higher utility (accounting for migration costs and gains) from living/working in country d than in their country of birth o. This is the group identified by migration scholars as "aspiring" or "intended" migrants. Our main specification considers the revealed migration preference for a specific destination country d. This may be a strong assumption (De Jong et al., 1996; De Jong, 2000) which is relaxed when we analyze the overall migration potential (rather than bilateral) by aggregating all potential migrants in a country of origin. Allowing for heterogeneity in preferences across individuals, but assuming that all individuals (1) value income from higher wages and higher probability of employment and (2) incur higher costs when moving farther and to more different countries, implies that – after controlling for country-of-origin characteristics – the share of people who would potentially migrate from o to d among all individuals, $p_{o,d}^s$, depends positively on the returns and negatively on the costs of migrating from o to d (see Borjas, 1987; or Grogger and Hanson, 2011 for a similar framework). So we assume that people account for all perceived costs and benefits of migration when revealing whether they would like to migrate

or not and to which country. Also, the willingness to move to a country shows that individuals know about the opportunities in that country, and therefore, the availability of information about that country can be a crucial determinant of willingness to move there. In general, we can write:

$$p^s_{o,d} = f(\text{Returns}_d, \text{Costs}_{o,d}, \text{Info}_{o,d}) \tag{1}$$

We then consider a linear approximation of (1) which expresses the potential migration rate, $p^s_{o,d}$, as a linear function of factors affecting the returns in a specific destination, the bilateral cost of migrating, and the flow of information from country d.[6] Following the economic literature (as in Borjas, 1987; Hatton, 2005; Mayda, 2010), we consider wages (approximated by income per person) and employment opportunities (approximated by employment/population ratio) in country d as the main determinants of the economic returns to migration. Following the economic and anthropological literature (*e.g.* Spolaore and Wacziarg, 2009; Putterman and Weil, 2010), we include measures of distance and proximity in geographic, language, genetic, and cultural space to capture migration costs. Finally, we consider the size of the destination country and the presence of a pre-existing diaspora of migrants from country o as the main sources of information about the country. The diaspora presence can also directly reduce migration costs by providing easier assimilation. We can therefore write relation (1) as a linear specification of the following form (for $s = h,\ l$):

$$p^s_{o,d} = \alpha^s_o + a^s_1 y_{d,2000} + a^s_2 e_{d,2000} + a^s_3 \text{Dist}_{o,d} + a^s_4 \ln \text{Pop}_d + a^s_5 \text{Netw}_{o,d} + \epsilon^s_{o,d} \tag{2}$$

In equation (2), α^s_o is a set of 138 country-of-origin dummies that capture heterogeneity of people and preferences and economic conditions across origins. The term $y_{d,2000}$ captures per capita income (GDP) in the destination country in PPP US \$ as of the year 2000. The term $e_{d,2000}$ is the ratio of employment to population in working age as of 2000 in the destination country. These variables proxy (imperfectly) for the expected

---

[6] A random utility maximization model with (1) individuals with heterogeneous preferences, maximizing utility that depends on the same arguments as function f above, and (2) errors following a Gumbel distribution, would produce a linear relation between the logarithm of $p^s_{o,d}$, the odds ratio of migrating or not, and the arguments of the function f. This simpler form can be considered a linear approximation of the former.

income and employment probability of a migrant and determine the economic attractiveness of a destination. Their cross-sectional differences are very large, and one can plausibly assume that individual decisions on long-term migration are informed by these differences. $\text{Dist}_{o,d}$ is a set of bilateral variables capturing geographical distance, such as common border, language or colonial origin, and measures of genetic, religious, and legal distance across countries. Those factors affect the transferability of skills, cultural barriers, and moving costs, hence influencing costs and benefits from migration. The term $\ln \text{Pop}_d$ captures the size of the receiving country which affects its "visibility" to potential migrants. $\text{Netw}_{o,d}$, finally, is a measure of the size of the stock of existing migrants from o in d in 2000 expressed as percentage of the population in the origin country. This is a first approximation of the connection with the country of destination, which can affect information and reduce costs of settling and hence could affect potential migration. The term $\epsilon_{o,d}^s$ captures measurement error.

Specification equation (2) is similar to what is usually estimated in the economic literature using *actual migration data* (Grogger and Hanson, 2011; Beine *et al.*, 2011; Ortega and Peri, 2013). Our data allow us to go one step further. The actual migration "action" requires that "a migration opportunity" becomes available to potential migrants. This could be the opportunity of a visa or a migration permit, or it may involve a study, working or career opportunity. A successful migration episode, in other words, involves the matching of a migration opportunity at destination d and a potential migrant from country o, from the pool $p_{o,d}^s$. Hence, we express actual migration, $m_{o,d}^s$, as the number of successful potential migrant–opportunity matches, which depends positively on the size of the population willing to migrate to d, $p_{o,d}^s$, and on the opportunities for migrants arising in the 2000–2010 period in the destination country, v_d^s. Those viable opportunities (hence the letter v) are usually not specific to people in country o; hence, we only have a subscript d, but in practice, some bilateral factors could improve the availability of those opportunities to some specific countries of origin. In general, we write:

$$m_{o,d}^s = m(\underset{+}{p_{o,d}^s}, \underset{+}{v_d^s}) \tag{3}$$

The superscript s permits differentiating between college- and non-college-educated. This framework allows us to explore whether economic growth (captured by real income per capita growth, gy_d^{00-10}) or employ-

ment growth (captured by the growth of employment relative to the population, ge_d^{00-10}) in the period 2000–2010 in the destination countries contributed to actual migration, once we account for the pool of potential migrants for that country. Fast growth of income per capita or growth of employment is driven by productivity growth, which would increase demand for labor in a destination country, creating opportunities (jobs, study, business) for immigrants. These vacancies could be matched to potential migrants willing to move to that country. Potential migrants are a stock (share of those who would migrate) measured at a specific point in time. This is why their size depends on a static comparison of income per person, capturing long-run present discounted values. Actual migrants, on the other hand, are a flow (the subset that realize migration potential within a period). Hence, the creation of opportunities to migrate which affects the flow is correlated to GDP and employment growth at destination. Such flows, however, may have a different impact on sending countries depending on the stock of potential migrants. New jobs and growth of productivity are needed to produce new opportunities for an existing stock of potential immigrants. We will test the premise that income levels (rather than growth) affect potential immigrants while income growth (rather than levels) affect net migration for given potential immigrants.

Potentially important in translating potential into actual migrants are also the policies in the destination country. We analyze the role of some specific policies (Policy$_{o,d}$). In particular, we consider visa waiver policies that regulate access to a country for all foreigners as well as free mobility of labor which is the closest policy to open borders. It is worth noticing that these two policy variables only affect entry conditions and not the conditions of stay in the destination countries (*e.g.* employment, taxation, etc.). Clearly, the details and nuances of immigration policies are large and very different across countries (for more sophisticated indices, *see* Ortega and Peri, 2013; Helbling and Vink, 2013), and our simple indicators may not be capturing important aspects of those policies. Finally, we can analyze whether the pool of potential migrants and economic and policy variables interacted with each other to increase the matching rate, and hence the realized migration rate. Linearizing the matching function given in equation (3), including country-of-origin fixed effects β_o^s and substituting the potential determinants of opportunities of migration, v_d^s, we have:

$$m^s_{o,d} = \beta^s_o + b^s_1 p^s_{o,d} + b^s_2 gy^{00-10}_d + b^s_3 ge^{00-10}_d + b^s_4 \text{Policy}_{o,d} + \varepsilon^s_{o,d} \qquad (4)$$

where $\varepsilon^s_{o,d}$ is the residual term.

  While we consider economic growth and receiving-country policies as the key determinants of migration opportunities for potential migrants in the empirical analysis, we will also include bilateral cost variables, network variables, and other economic variables as controls. In our empirical analysis, we will estimate the basic equations (2) and (4) in order to determine which factors affect the size of the pool of potential migrants and which factors affect their matching with migration opportunities.

DETERMINANTS OF POTENTIAL MIGRATION RATES

We first estimate several versions of equation (2) to analyze the determinants of potential migration rates, including a progressively larger set of determinants and controls. The dependent variable is the potential emigration rate for each skill group s from country o to country d in the period 2000–2010, $p^s_{o,d}$. As some values of the actual net emigration rate, $m^s_{o,d}$, are negative (due to return migration or migrants' mortality), we set them to zero before calculating the potential rate and, similarly, we censor the observations on bilateral migration at a value equal to the average plus five standard deviations as some of them are relative to very small countries and hence excessively noisy. Let us emphasize that, while customary in this literature, the identification of causal effects using a cross-sectional estimation has to be taken with caution. While controlling for country-of-origin-specific factors and for important bilateral factors, there are still unobserved bilateral and destination-specific factors that may bias the coefficients. While we will sometimes use a causal language referring to the explanatory variables as "determinants of potential migration," we are well aware that our estimates mainly identify correlates of potential migration and migration flows.

  Table 3 shows summary statistics for the migration variables, net emigration rates, and potential emigration rates and for the stock of migrants, divided by the native population and for the share of natives with at least one member of the household who migrated abroad during the previous five years.[7] The potential bilateral migration rate for

---

[7]The variable is constructed as the share of the resident population answering yes to the question: "Have any members of your household gone to live in a foreign country permanently or temporarily in the past five years?"

TABLE 3
SUMMARY STATISTICS: ACTUAL AND POTENTIAL MIGRATION RATES, AND MEASURES OF MIGRATION NET-
WORKS. AS PERCENTAGE OF THE NATIVE POPULATION AT ORIGIN IN 2000

	Observations	Mean	Standard deviation
Net emigration rate 2000–2010, Less educated	5,654	0.05	0.28
Net emigration rate 2000–2010, College-educated	4,239	0.21	0.62
Potential emigration rate 2000–2010, Less educated	4,239	0.49	1.67
Potential emigration rate 2000–2010, College-educated	4,100	0.71	1.72
Stock of migrants relative to native population, 2000	5,654	0.28	1.78
Share of residents with at least one member of household abroad in the last 5 years, non-college-educated	3,929	0.10	0.80
Share of residents with at least one member of household abroad in the last 5 years , college-educated	3,929	0.07	0.30

The unit of observation is a country of origin–country of destination pair. The average and standard deviation are calculated including all observations without weighting them. The definition of the actual and potential migration rates is given in the text.

non-college-educated has an unweighted average value equal to 0.49%, compared to 0.71% for college-educated.[8] The actual bilateral migration rate for non-college-educated was on average 0.05%, while for college-educated the average bilateral rate amounted to 0.21%. These rates are small but capture bilateral (not aggregate) migration net flows (not stocks) of migrants. Each country of origin has 30 destinations. Hence, average bilateral rates of 0.05% and 0.21% imply migration rates of 1.5% and 6% of the native population in total over the 2000–2010 period.[9]

Tables 4 and 5 display estimation results for non-college- and college-educated, respectively. They show the coefficients on economic, network, and policy variables in regressions whose dependent variable is the potential emigration rate for the two skill groups separately. In each regression, we include a set of 138 country-of-origin fixed effects to

[8]The total number of observations for actual migration from 143 origins into 30 destinations is 5,673. However, we are missing desired migration data for some countries of origin (mainly small developing countries) that therefore are dropped, leaving us with 4,247 observations. Eliminating observations five times larger than the standard deviation, we are left with 4,162 valid observations.

[9]The remaining summary, statistics for the other control and explanatory variables are reported in Table A1 in the appendix.

TABLE 4

DETERMINANTS OF POTENTIAL MIGRATION RATES ($p \times 100$) OF NON-COLLEGE-EDUCATED. ONE HUNDRED AND THIRTY EIGHT SENDING COUNTRIES TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable	(1) Basic, non-negative rates	(2) All rates	(3) Basic geography and culture	(4) Extended geography and culture	(5) Including contemporaneous growth rate	(6) Policies	(7) Only migrants from Asia–Africa–Latin America
Stock migrants/population in 2000	0.83*** (0.31)	0.46 (0.32)	0.77** (0.31)	0.73** (0.31)	0.77** (0.31)	0.77** (0.31)	0.95* (0.52)
Stock people with household member abroad/population	0.91** (0.44)	0.97** (0.45)	0.89** (0.43)	0.87** (0.42)	0.89** (0.43)	0.89** (0.43)	0.83* (0.44)
Real GDP per person (1,000 $ PPP), destination in 2000	0.02*** (0.003)	0.02*** (0.03)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.02** (0.004)
Empl/Pop 15+, destination in 2000	0.005** (0.002)	0.005** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004** (0.002)	0.004*** (0.002)	0.007*** (0.001)
Free labor movement dummy in 2000						0.046 (0.124)	
Visa waiver dummy in 2000						−0.016 (0.085)	
Growth of GDP per person 2000–2010					−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
Standard controls	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)	Origin FE, ln(Pop_d)
Geographical and cultural controls	None	None	ln(distance), border, common lang.	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	ln(distance), border, common lang	ln(distance), border, common lang	ln(distance), border, common lang

The dependent variable is the potential emigration rate from country of origin to country of destination, calculated as the sum of total 2000–2010 net migrants plus those that indicated willingness to migrate from origin to destination, divided by the population of natives in the country of origin as of 2000. Only individuals without college education are included. An observation is a country of origin–destination pair, for 138 origins and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects and the size of the population at destination. The observations are weighted by the country-of-origin population without college education, and we drop migration rates smaller than 0 and larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

TABLE 5
DETERMINANTS OF POTENTIAL MIGRATION RATES ($p \times 100$) OF COLLEGE-EDUCATED, ONE HUNDRED AND THIRTY EIGHT SENDING COUNTRIES TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable	(1) Basic, non-negative rates	(2) All rates	(3) Basic geography and culture	(4) Extended geography and culture	(5) Including contemporaneous growth rate	(6) Policies	(7) Only migrants from Asia–Africa–Latin America
Stock migrants/ population in 2000	1.03*** (0.33)	0.94*** (0.30)	0.98*** (0.27)	0.80*** (0.25)	0.99*** (0.27)	0.964*** (0.27)	1.90 (1.23)
Stock people with household member abroad /population	2.17*** (0.35)	2.17*** (0.35)	2.01*** (0.32)	2.01*** (0.32)	2.01*** (0.32)	1.9823*** (0.332)	1.70*** (0.34)
Real GDP per person (1,000 $ PPP), destination in 2000	0.03*** (0.002)	0.03*** (0.002)	0.03*** (0.003)	0.03*** (0.002)	0.03*** (0.003)	0.035*** (0.004)	0.03*** (0.006)
Empl/Pop 15+, destination in 2000	0.009* (0.005)	0.009* (0.005)	0.01** (0.005)	0.01** (0.004)	0.01** (0.04)	0.011** (0.005)	0.02*** (0.005)
Free labor movement dummy in 2000						0.207 (0.155)	
Visa waiver dummy						0.112 (0.078)	
Growth of GDP per person 2000-2010					−0.001 (0.001)	−0.001 (0.001)	−0.001 (0.001)
Standard controls	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)
Geographical and cultural controls	None	None	ln(distance), border, common lang.	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	ln(distance), border, common lang	ln(distance), border, common lang	ln(distance), border, common lang

The dependent variable is the potential emigration rate from country of origin to country of destination, calculated as the sum of total 2000–2010 net migrants plus those that indicated willingness to migrate from origin to destination, divided by the population of natives in the country of origin as of 2000. Only individuals with college education are included. An observation is a country of origin–destination pair, for 138 origins and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects and the size of the population at destination. The observations are weighted by the country-of-origin population with college education, and we drop migration rates smaller than 0 and larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

account for heterogeneity in characteristics and conditions in the countries of origin. We also include the logarithm of population at destination to account for the size of the destination country, which could affect the potential to migrate there if people are more likely to know of larger countries' opportunities relative to smaller ones. We also cluster the standard errors at the country of origin level to allow residuals to be correlated among individuals in the same country of origin. We progressively include more controls from column 1 to 6. In column 1, we only include the measures of migrant networks (i.e., the stock of natives from country o as of 2000, in percentage of the native population and the percentage of the native population with a household member abroad), income per person (thousands of 2000 US $ in PPP), and the employment rate in the destination country. In column 2, we allow the dependent variable to have negative values (i.e., the negative net migration rates were not set to zero). In column 3, we add some basic geographical and cultural distance controls: the logarithm of bilateral distance, a common border dummy, and a dummy for a common official language. In column 4, we also add variables proxying for more specific dimension of cultural and institutional distance between countries. They involve a dummy for common legal origin, one for common currency, the number of landlocked countries in the pair, a measure of religious distance, and a measure of genetic distance, taken from Ortega and Peri (2014) and Spolaore and Wacziarg (2009). These specifications identify the role of economic variables, networks, and costs driven by differences in determining potential migration rates. In column 5, we include also the 2000–2010 growth rate of income in the destination country to check whether it affects potential migration. As mentioned above, the comparison of benefits and costs in the decision to migrate should be based on long-run expectations, captured by average differences in income per person more than by recent growth rates. Specification 6 includes two measures of immigration policies: a dummy for those countries with free labor mobility between them in 2000, namely the EU18 countries among themselves and with Switzerland, the Nordic countries (Denmark, Sweden, Norway, Iceland, and Finland) among themselves, and a dummy for those countries having a visa waiver agreement for travel between them (Neumayer, 2006). Finally, in column 7, we include only non-rich countries in Asia, Africa, and Latin America as sending countries, and we analyze whether the determinants of potential migration from poorer countries systematically differ from those estimated using the whole set of countries. The

results reported in the tables focus on the role of economic, network, and policy variables. While it is important to control for geographical and cultural variables, those are hard to change or to affect. Therefore, we include them as controls and comment only on some main coefficient estimates, but we do not report their coefficients in the tables.

Migrant Networks and Economic Incentives

Let us first focus on the effects of network and economic variables on potential migration rates. The first two rows of Tables 4 and 5 show the impact of the stock of existing migrants abroad as of 2000 and the effect of the share of people in the country with a household member abroad. While the first variable was constructed based on the data of Artuç *et al.* (forthcoming) and Brücker *et al.* (2013) on the stock of migrants, the second is obtained from the Gallup poll data. It represents the share of natives in country o who said they had a household member who migrated to country d within the previous five years. This allows us to link individuals with their more recent and more direct "connections" then construct an aggregate measure of it. This measure of networks is related more directly to the possibility of natives receiving information about country d and assistance once in the destination. The correlation between these network variables equals 0.16 for the college-educated and 0.43 for the less educated. Both network variables have a positive and significant effect on potential migration for college- and non-college-educated (rows 1 and 2 of Tables 4 and 5). Both explanatory variables are divided by their standard deviation so that the coefficient shows the impact on potential migration rates from increasing the variable by one standard deviation. Table 4 reveals that an increase in the stock of natives in country d by one standard deviation increases the potential migration rate of non-college-educated to that country by 0.73 to 0.95 percentage points, while the effect for college-educated is around 1 percentage point. Increasing the share of people with household members in country d by one standard deviation increases the potential migration rate of college-educated by about 2 percentage points and of non-college-educated by 1 percentage point. Recall that the average migration rate for non-college (college)-educated was 0.49% (0.71%).

Hence, potential migration is very responsive to the stock of existing compatriots and household members abroad. This confirms previous evidence (*e.g.* Hanson and McIntosh, 2010; Hatton and Williamson, 2005)

and emphasizes the additional effect of recent household links in encouraging potential migration. For many important corridors, the network effect is a key correlate of potential migration. For example, potential migration rates from Mexico to the U.S. are equal to 16% and 17.5% for college-educated and the less educated. Two-thirds of those values can be explained by network effects. Indeed, the Mexican diaspora in the U.S. amounts to about 5.2 million people, representing 11.2% of the Mexican population aged 25 and over (6.3 standard deviations in the aggregate network variable). The proportion of Mexican households having a household member who migrated in the previous five years is equal to 2% for college-educated and 4.5% for the less educated (i.e., 2.5 and 5.6 standard deviations). Obviously, causal relationships are difficult to establish in a cross-country framework, and our estimates are more correlation than causation. Taken at face value, our estimates suggest that each network effect increases the potential migration rate by 5 to 6 percentage points. As for the Turkey-to-Germany corridor, the potential migration rate of low-skilled Turks equals 3%. Again, two-thirds of this rate (2.2 percentage points) is explained by the network effects. An important caveat is that the stock of migrants abroad may capture not only network effects but also the persistence of bilateral relations that have increased migration in the past and continue to do so. Controlling for that, the measure of people with household members recently migrated abroad has an additional and important effect. It could be more directly connected to the diffusion of information and the presence of potential support at destination, but could also reveal some aggregate collective decision of families due to unobserved factors affecting their willingness to migrate. The fact that we control for country-of-origin effects and that we focus on the aggregate (and not family level) effects reduces the risk of omitted variable bias.

Crucial to our analysis is the role of economic variables in determining potential migration. In the section describing the theoretical framework, we assumed that income per person and the employment rate at destination proxy for the long-term expected gains of migrating as they allow migrants to predict their future income and probability of employment. The large international differences in these variables are likely to be known to potential migrants and hence to affect their preferred destination. It is therefore reassuring to see that both variables strongly affect potential migration rates for both more and less educated. The coefficients are similarly significant for college- and non-college-educated, although

somewhat larger for the first group. From Table 4, we see that a difference in income per person of 10,000 PPP US $ in 2000 (which equals one standard deviation in the income per person distribution of the 30 destination countries and corresponds to the difference in income per person between the UK and the U.S.) increases the potential migration rate by 0.20 percentage points for the less educated (for an average of 0.49%) and by 0.30 percentage points for college-educated (for an average of 0.71%). An increase in the employment rate of 10 percentage points (also close to the standard deviation across destination countries) would increase potential migration by 0.05 percentage points for less educated and by 0.10 percentage points for more educated. The estimates are very significant and stable across specifications. Income per capita – for which information is more easily available – has the largest effect, and the response of the less educated to differences in that variable is only 50% smaller than the response of college-educated. This difference can be due to the fact that in richer countries, highly educated get a higher absolute wage premium implying that they would be more willing to migrate (Grogger and Hanson, 2011). This confirms that less educated migrants, when choosing whether to look for migration opportunities, are driven by the same considerations (income and jobs) as college-educated, and their response to those variables is also quantitatively similar to the response of college-educated.

The estimates in Tables 4 and 5 reveal two other important features of potential migration. First, focusing on the last column 7 in which the sample is limited to non-rich countries of origin (outside of Europe, North America. and Oceania), we see that the responses of desired migration rates from these countries to income per person and employment rates in the destination are very similar to the responses obtained with the full sample. College- and non-college-educated migrants from poor countries respond to income and employment at destination in a similar way as migrants from other countries. The only variable that seems to matter somewhat more for potential migrants in poor countries is the stock of nationals having migrated previously to d. Networks measured as the share of natives with a household member abroad, however, have the same impact on poor countries as in the full sample. This possibly implies that the stock of past migrants reveals past preferential relations between the poor country and the destination (driven by cultural, colonial, or other non-observable ties).

The second interesting fact is revealed by columns 5-7. While income per person levels as of 2000 has a strong and positive correlation with potential migration, the growth rate of income per person at destination in 2000–2010 has an insignificant effect. Potential migrants are less affected in their preferences for migrating and where to migrate, by recent/potential economic performance of the destination. The U.S. and Canada remain very attractive destinations for potential migrants from Guatemala, even in decades when their economy was not growing very fast. The marginal effect of growth over a decade on cross-country differences in GDP per person is small and hence does not affect much the pool of potential migrants. This is strongly confirmed by our results. We show evidence below that faster growth increases actual migration rates to a country. Our framework allows us to understand why. Faster growth means more *opportunities* for migrants as new firms and higher productivity generate vacancies and migration opportunities in destination countries. Whereas the flow of actual migrants benefits from that growth, the stock of potential migrants is not much affected.

Geography, Culture, and Policies

If the decisions to be a potential migrant is driven by cost-return calculations only and it is not affected by the probability of securing an opportunity to migrate, we would not expect the policy variables in the destination country, which affect only the opportunities but not the costs/benefits once migrated, to play a crucial role in determining potential migration. Policies are, however, expected to play a role in determining actual migration. Variables measuring geographical, cultural, and institutional distance, on the other hand, should affect the cost of migration through their impact on the transferability of skills and could as such have an effect on potential migration.

In columns 4 and 5, we include several controls capturing geography, culture, and institutions. We do not show their coefficients in the tables, but we comment on their estimates here. First, the addition of these controls does not change the size and significance of the coefficients of economic and network variables. Second, we should keep in mind that we are already controlling for the past stock of migrants and presence of household members abroad. Those clearly capture a large part of the effect of geography, culture, and institutions, which are slow to change or do not change at all, on past migration. Worth mentioning is that the logarithm of distance is not significant for either more or less educated. Common language is the only variable

significant for potential migration rates of both college- and non-college-educated (with a larger coefficient, 0.88, for college-educated than for the less educated, 0.44). No other geographical variable is significant at the 1% level for non-college-educated, while colonial ties (0.48, standard error of 0.17) and genetic distance (t-statistic of −4.93) appear significant for potential migration of college-educated. These checks confirm the relevance of geographical, cultural, and historical ties for bilateral migration as established in the empirical literature (see among others Hatton and Williamson, 2005; Pedersen *et al.*, 2008; Mayda, 2010; Grogger and Hanson, 2011).[10] Here, we are more interested in verifying that after including them as controls for bilateral migration costs, the magnitude and significance of the main economic variables affecting expected gains from migration are preserved. The results of columns 3 and 4 in Tables 3 and 4 confirm that this is the case as the coefficients on the income per person and employment rates remain virtually unchanged.

In column 6 of Tables 4 and 5, we introduce two policy variables. The first is a variable aimed at capturing free labor mobility across countries. The second is a dummy indicating a visa waiver agreement when traveling between the countries. Other papers (*e.g.* Mayda, 2010; Ortega and Peri, 2013) included several measures of immigration policies capturing the restrictiveness of provisions such as visa policies, quotas, or asylum policies to analyze how they affect migration. Here, we take a simpler approach. Since it is very complicated to measure or even rank the restrictiveness of immigration policies, we identify only two policies, which can substantially affect cross-border mobility in general, and for working purposes in particular. Specifically, we consider the elimination of all immigration restrictions to labor mobility between countries and the presence of a visa waiver agreement between countries that allow people to visit without obtaining a visa (shown by Bertoli and Fernández-Huertas Moraga, 2013, to be an important variable in determining bilateral mobility). In the presence of free labor mobility, people from a country can work freely at the same conditions as natives in a foreign country. This type of policy was established across countries of the European Union by the 1992 Maastricht Treaty. Moreover, since the 1990s, Switzerland and the Nordic countries of Europe (Norway, Sweden, Finland, Denmark, and Iceland) have signed bilateral agreements ensuring free labor mobility of their workers with all the EU countries. Hence, we include

---

[10]There is also a large literature analyzing the impact of these bilateral factors on trade. *See e.g.* Ortega and Peri (2014).

bilateral dummies to capture the free mobility arrangements across these countries which were in place as of 2000, the initial year in our analysis.

The estimates in column 6 reveal that neither the presence of free migration policies nor visa waiver agreements affect the pool of potential migrants both for college- and non-college-educated. While the presence of such bilateral agreements may proxy also for other bilateral policies, it makes sense to find that potential migration is not affected by them. Note that while these policies affect the probability of having an "opportunity" to migrate to a specific country, they do not affect costs or benefits from such opportunity. Potential migration reflects preferences, costs, and benefits for bilateral migration choices in the presence of an opportunity. Policies affecting the opportunities to migrate should not affect that calculation.

Robustness Checks

In Table 6, we subject our estimates of the determinants of potential migration rates to a number of robustness checks. The table shows specifications including all the controls from column 5 in Tables 3 and 4, to which we alternatively add different controls or for which we modify the sample in different specifications. Columns 1 to 3 show the results for the less educated, while columns 4 to 6 show those for college-educated. In specifications 1 and 4, we include continent-destination dummies in order to take into account the fact that destination countries in Europe or North America might have particular policies or characteristics in common, and in order to accommodate the possibility that the choice of migration within a continent is correlated (as pointed out by Bertoli and Fernández-Huertas Moraga, 2013). The estimates of the main coefficients are again stable in magnitude and significance. Only the employment rate becomes less significant, which is certainly due to the smaller within-continent variation of this rate across countries. The growth of GDP per person even becomes negative in this specification, confirming that people do not account for recent performance when choosing their "desired" migration countries, but rather compare long-lasting differences in income per person.

Columns 2 and 5 analyze whether considering only "desired" migration rates rather than potential (thus excluding people who actually migrated) changes the effect of economic determinants. This allows us to verify that the subset of actual migrants is not a "special" group among potential migrants in terms of their response to economic incentives. For both college- and non-college-educated, the estimates are similar to those of column 5 in Tables 4

TABLE 6

DETERMINANTS OF POTENTIAL MIGRATION RATES, ROBUSTNESS CHECKS, ONE HUNDRED AND THIRTY EIGHT SENDING COUNTRIES TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable:	Less educated			College-educated		
	(1) Including destination-continent dummies	(2) Only willing to emigrate as dependent variable	(3) Only most reliable data on willingness to emigrate	(4) Including destination-continent dummies	(5) Only willing to emigrate as dependent variable	(6) Only most reliable data on willingness to emigrate
Stock migrants/population in 2000	0.72*** (0.29)	0.69*** (0.28)	0.71** (0.32)	0.95*** (0.24)	0.62*** (0.14)	0.73*** (0.22)
Stock people with family abroad/population	0.86** (0.41)	0.83** (0.41)	1.20* (0.63)	1.70*** (0.30)	1.50*** (0.26)	2.87*** (0.47)
Real GDP per person (1,000 $ PPP), destination in 2000	0.014*** (0.003)	0.02*** (0.003)	0.02*** (0.003)	0.03*** (0.002)	0.03*** (0.002)	0.03*** (0.003)
Empl/Pop 15+, destination in 2000	0.001 (0.001)	0.005*** (0.001)	0.005*** (0.001)	0.002 (0.003)	0.008** (0.004)	0.009* (0.005)
Growth of GDP per person 2000–2010	−0.002** (0.001)	−0.001 (0.001)	−0.0007 (0.0007)	−0.002* (0.001)	−0.001 (0.001)	−0.001 (0.001)
Standard controls	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)	Origin FE, ln(Pop$_d$)
Geographical and cultural controls	ln(distance), border, common lang.	ln(distance), border, common lang.	ln(distance), border, common lang.	ln(distance), border, common lang.	ln(distance), border, common lang.	ln(distance), border, common lang.

The specification estimated corresponds to column (5) in Tables 3 and 4. Columns (1)–(3) refer to non-college-educated; columns (4)–(6) refer to college-educated. In columns 1 and 4, we include also destination-continent dummies. In columns 2 and 5, we use only the measure of people willing to emigrate relative to the population in 2000 as dependent. In columns 3 and 6, we select those bilateral observations on willingness to migrate that included at least 75 or 37 surveyed people, respectively. The observations are weighted by the country-of-origin population with college education, and we drop migration rates smaller than 0 and larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

and 5, confirming that those economic variables affect all potential migrants, independent of whether they succeed in migrating or not. Finally, as the data on desire to migrate are based on Gallup polls that include only a few hundred people in some small countries, we include a check on the reliability of those data. In particular, we drop from the regressions all the bilateral desired migration rates based on less than 75 respondents (for the less educated) and less than 37 respondents for college-educated. This reduces the sample (inclusive of all non-missing controls) from 3,744 observations to 3,278. The point estimates of the effects, however, show that the results are robust even to selecting only the most reliable bilateral potential migration rates and that economic and network variables play the same important role.

POTENTIAL MIGRANTS, MIGRATION OPPORTUNITIES, AND ACTUAL MIGRANTS

The analysis so far shows that income per person, employment probability, and the presence of networks from the same country of origin (either measured as the stock of previous immigrants or as the share of natives with a household member abroad) are robust and significant determinants of potential migrants. They contribute importantly to determining the size of the pool of people searching for migration opportunities. But how do these potential migrants turn into actual migrants? What factors affect the actual migration rates on top of the potential migration rates? Which share of potential migrants become actual migrants? These are the questions we will focus on in the present section.

In Tables 7, 8, 10, and 11, we estimate variations of equation (4) in which the dependent variable is the actual migration rate from country o to country d, $m_{o,d}^s$, with the potential migration rate as the first explanatory variable. We include an array of destination country characteristics that may affect migration opportunities and hence the number of actual migrants. We always control for country-of-origin fixed effects. Tables 7 and 8 show the results of the main specifications, for the less educated and college-educated, respectively. Table 10 analyzes whether labor mobility policies, networks, and growth of economic opportunities in the destination countries interacted with potential migrants affect actual rates. Table 11, finally, considers whether actual migration from low-income countries of origin (in Asia, Africa, and South America) responded differently to potential migration and other factors potentially affecting migration opportunities.

TABLE 7

DETERMINANTS OF NET MIGRATION RATES ($m \times 100$) of the Less Educated. One Hundred and Thirty Eight Sending Countries to Our 30 Destination Countries, 2000–2010

Explanatory Variable:	(1) Basic	(2) Control for levels	(3) Include network	(4) Add Free labor mobility 2000 and visa waiver	(5) Free labor, geography, and culture	(6) As (4) using desire to migrate permanently
Potential Emigration rates, Low Skilled	0.046*** (0.009)	0.046*** (0.009)	0.038*** (0.0009)	0.046*** (0.009)	0.047*** (0.0102)	0.058** (0.012)
GDP growth, destination 2000–2010	0.0002* (0.0001)	0.0002* (0.0001)	0.0002* (0.0001)	0.0003** (0.0001)	0.0002** (0.0001)	0.0002** (0.0001)
(Empl/Pop 15+) growth, destination 2000–2010	0.0005 (0.0003)	0.0005 (0.0003)	0.0005 (0.0003)	0.0004 (0.0003)	0.0006* (0.0003)	0.006 (0.005)
Stock people with family abroad/population			0.036** (0.017)			
Free labor movement dummy				0.0106** (0.0051)	-0.0114* (0.0060)	0.012** (0.004)
Visa waiver dummy				0.0108** (0.0047)	0.0076* (0.0042)	0.006 (0.005)
Real GDP per person (1,000 $ PPP), destination in 2000		-0.00004 (0.00007)				
Employment/Population working age destination in 2000		-0.0002 (0.0002)				
Standard controls	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE
Geographical and cultural controls	None	None	None	None	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	None

The dependent variable is the emigration rate from country of origin to country of destination, calculated as the sum of total 2000–2010 net migrants, divided by the population of natives in the country of origin as of 2000. Only individuals without college education are included. An observation is a country of origin–destination pair, for 138 origins and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects. The observations are weighted by the country-of-origin population without college education, and we drop migration rates larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

TABLE 8

DETERMINANTS OF NET MIGRATION RATES ($M \times 100$) OF COLLEGE-EDUCATED, ALL SENDING COUNTRIES TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable	(1) Basic	(2) Control for levels	(3) Include network	(4) Add Free labor mobility 2000 and visa waiver	(5) Free labor, geography and culture	(6) As (4) using desire to migrate permanently
Potential Emigration rates, High Skilled	0.13*** (0.03)	0.13*** (0.03)	0.12*** (0.03)	0.13*** (0.02)	0.13*** (0.03)	0.17*** (0.03)
GDP growth, destination 2000–2010	0.0008*** (0.0003)	0.0009*** (0.0003)	0.0008*** (0.0003)	0.0006 (0.0004)	0.0006 (0.0003)	0.0002 (0.0003)
(Empl/Pop 15+) growth, destination 2000–2010	−0.002* (0.001)	−0.003** (0.0015)	−0.002 (0.001)	−0.0023* (0.0013)	−0.0024* (0.001)	−0.0027** (0.0012)
Stock people with family abroad/population			0.06 (0.11)			
Free labor movement dummy				0.0056 (0.0145)	0.0235 (0.0216)	0.002 (0.01)
Visa waiver dummy				−0.0338 (0.0208)	−0.0351 (0.0236)	−0.04 (0.024)
Real GDP per person (1,000 $ PPP), destination in 2000		0.0001 (0.0002)				
Employment/Population working age destination in 2000		−0.0006 (0.0006)				
Standard controls	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE
Geographical and cultural controls	None	None	None	None	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	None

The dependent variable is the emigration rate from country of origin to country of destination, calculated as the sum of total 2000–2010 net migrants, divided by the population of natives in the country of origin as of 2000. Only individuals with college education are included. An observation is a country of origin–destination pair, for 138 origins and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects. The observations are weighted by the country-of-origin population with college education, and we drop migration rates larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

TABLE 9
SAME MATCHING FUNCTION FOR COLLEGE EDUCATED AND THE LESS EDUCATED. CHANGE IN IMMIGRATION FLOWS AND RATES IN THE DESTINATION COUNTRIES

	Net inflow 2000–2010 Less educated			Net immigration rate 2000–2010 Less educated		Net immigration rate 2000–2010 Total	
	Observed	Counterfactual	Change	Observed	Counterfactual	Observed	Counterfactual
Australia	−43,572	156,502	200,074	−0.6	2.2	6.5	8.7
Austria	131,191	245,474	114,283	3.1	5.7	4.0	6.4
Belgium	98,126	190,134	92,008	2.0	4.0	4.4	5.8
Canada	−106,830	203,246	310,076	−0.8	1.6	11.9	13.9
Chile	1,134,916	1,208,874	73,958	16.7	17.8	17.5	18.4
Denmark	84,565	117,438	32,873	2.9	4.0	3.9	4.8
Finland	71,786	97,746	25,960	2.4	3.3	2.8	3.6
France	531,354	1,423,387	892,033	1.8	4.7	2.7	5.2
Germany	343,256	878,725	535,469	0.8	2.0	0.8	1.7
Greece	437,392	532,983	95,591	7.1	8.6	9.5	10.8
Ireland	97,686	178,475	80,789	6.1	11.2	11.7	15.6
Israel	−205,390	−200,132	5,258	−18.7	−18.2	−10.6	−10.3
Italy	474,837	1,164,453	689,616	1.3	3.1	1.9	3.5
Japan	139,541	618,870	479,329	0.2	1.0	0.4	0.9
Luxembourg	18,538	26,751	8,213	10.5	15.2	12.3	16.4
Mexico	49,710	145,167	95,457	0.1	0.4	0.3	0.5
Netherlands	−310,625	−168,669	141,956	−4.3	−2.3	−3.5	−2.0
New Zealand	100,327	213,531	113,204	9.1	19.4	8.9	14.9
Norway	114,426	210,155	95,729	5.2	9.6	7.3	10.6
Poland	−189,459	−187,202	2,257	−0.9	−0.9	−0.7	−0.7
Portugal	424,044	540,023	115,979	6.7	8.6	8.2	9.8
Russian Federation	−1,117,531	−1,049,495	68,036	−2.7	−2.6	−0.7	−0.6
Saudi Arabia	997,625	2,294,148	1,296,523	20.4	46.8	31.1	54.8
South Africa	505,528	740,170	234,642	2.8	4.1	4.2	5.3
Spain	2,328,310	3,588,335	1,260,025	10.6	16.3	12.3	17.0
Sweden	198,125	307,922	109,797	4.7	7.3	7.1	9.1
Switzerland	94,586	292,052	197,466	3.0	9.1	3.1	8.1

TABLE 9 (CONTINUED)
SAME MATCHING FUNCTION FOR COLLEGE EDUCATED AND THE LESS EDUCATED, CHANGE IN IMMIGRATION FLOWS AND RATES IN THE DESTINATION COUNTRIES

	Net inflow 2000–2010 Less educated			Net immigration rate 2000–2010 Less educated		Net immigration rate 2000–2010 Total	
	Observed	Counterfactual	Change	Observed	Counterfactual	Observed	Counterfactual
United Arab Emirates	1,269,853	1,700,601	430,748	248.4	332.6	303.9	374.3
United Kingdom	275,684	1,457,422	1,181,738	0.9	4.6	4.1	7.3
United States	4,629,616	10,387,622	5,758,006	6.3	14.0	5.0	8.6
Total/Average	12,577,615	27,314,708	14,737,093	17.0	36.9	16.1	25.3

TABLE 10
EFFECTS OF INTERACTIONS OPPORTUNITY POTENTIAL ON MIGRATION RATES ($m \times 100$). ALL SENDING COUNTRIES TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable:	Less educated			College-educated		
	(1) Potential–growth	(2) Potential–policy	(3) Potential–network	(4) Potential–growth	(5) Potential–policy	(6) Potential–network
Potential emigration rates	0.04*** (0.015)	0.0464** (0.0229)	0.039*** (0.011)	0.13*** (0.03)	0.3080*** (0.1115)	0.12*** (0.03)
GDP growth, destination 2000–2010	0.00018 (0.00013)	0.0003** (0.0001)	0.0002 (0.0001)	0.0008*** (0.0002)	0.0008* (0.0004)	0.008*** (0.003)
(Empl/Pop 15+) growth, destination 2000-2010	0.001*** (0.0004)	0.0004 (0.0003)	0.0004 (0.0003)	−0.004*** (0.001)	−0.0022* (0.0012)	−0.002 (0.001)
Stock people with family abroad/population			0.015 (0.051)			0.08 (0.07)
Free labor movement dummy		0.0038 (0.0061)			−0.0348 (0.0372)	
Visa waiver dummy		0.0110** (0.0045)			−0.0019 (0.0233)	
Interaction (potential) x (GDP growth)	0.027** (0.013)			0.017 (0.016)		
Interaction (potential) x (free)		0.0145 (0.0151)			0.0597 (0.0447)	
Interaction (potential) x (visa waiver)		−0.0003 (0.0078)			−0.0716* (0.0404)	
Interaction (potential) x (network)			0.004 (0.013)			−0.01 (0.07)
Controls	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE

The dependent variable is the emigration rate from country of origin to country of destination, calculated as the sum of total 2000-2010 net migrants, divided by the population of natives in the country of origin as of 2000. Only individuals without college education are included in regressions 1–3, while only individuals with college education are included in 4–6. An observation is a country of origin–destination pair, for 138 origins and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects. The observations are weighted by the country-of-origin population in the relevant education group, and we drop migration rates larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

TABLE 11

DO POOR SENDING COUNTRIES HAVE A DIFFERENT EFFECT ON MIGRATION RATES? (M × 100). SENDING COUNTRIES IN ASIA, LATIN AMERICA, AND ASIA TO OUR 30 DESTINATION COUNTRIES, 2000–2010

Explanatory Variable:	Less educated			College-educated		
	(1) Basic with geo controls	(2) Control for income levels	(3) With potential-growth interaction	(4) Basic with geo controls	(5) Control for income levels	(6) With potential-growth interaction
Potential emigration rates	0.06*** (0.01)	0.05*** (0.01)	0.04** (0.02)	0.18*** (0.03)	0.22*** (0.04)	0.17*** (0.03)
GDP growth, destination 2000–2010	0.0006*** (0.0002)	0.0002* (0.0001)	0.0002 (0.0001)	0.0016** (0.0007)	0.0015*** (0.0005)	0.0008** (0.0004)
(Empl/Pop 15+) growth, destination 2000–2010	0.001** (0.0005)	0.0005 (0.0003)	0.001* (0.0005)	−0.006** (0.002)	−0.004** (0.001)	−0.006** (0.002)
Real GDP per person (1,000 $ PPP), destination in 2000		−0.00002 (0.00008)			0.0009 (0.0005)	
Empl/Pop 15+, destination in 2000		0.00007 (0.0001)			−0.001 (0.001)	
Visa waiver dummy		0.014* (0.007)			−0.059** (0.024)	
Interaction (potential) x (GDP growth)			0.03* (0.014)			0.03 (0.03)
Standard controls	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE	Origin FE
Geographical and cultural controls	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	None	None	ln(distance), border, common lang., colony, legal origin, currency, landlocked, religious prox., genetic distance	None	None

The dependent variable is the emigration rate from country of origin to country of destination, calculated as the sum of total 2000–2010 net migrants, divided by the population of natives in the country of origin as of 2000. Only individuals without college education are included in regressions 1–3, while only individual with college education are included in 4–6. An observation is a country of origin–destination pair, for Asian, African, and Latin American countries of origin and 30 (mainly OECD) destinations. All regressions include country-of-origin fixed effects. The observations are weighted by the country-of-origin population in the relevant education group, and we drop migration rates larger than the 99th percentile of the distribution. Standard errors are clustered by country of origin. ***, **, and * imply significance at 1%, 5%, and 10% level.

Economic Opportunities and Migration Policies

The basic specification (1) in Tables 7 and 8 includes only country-of-origin fixed effects, the potential emigration rate, and growth of GDP per person and of employment probability (employment/population at working age) in the destination countries. Growth in GDP per person between 2000 and 2010 and potential migration rates turn out to be the most relevant and significant determinants of actual migration rates. Growth in the employment rate between 2000 and 2010 appears to have a less relevant impact that is sometimes even negative for college-educated migrants. As a check, we included the GDP level, bilateral geography, and cultural controls and found neither significant effects nor impacts on the other coefficients. Let us focus, therefore, on the two most significant variables: growth of GDP per person and the potential migration rate. What is noteworthy is that while those variables affect migration rates for both non-college- and college-educated, the impact is much stronger and significant for the latter. While an increase in potential migration rates by 1% point produces an increase in actual migration by only 0.04 percentage points for the less educated individuals, it is associated with an increase by 0.13% for college-educated. Similarly, an increase in GDP per person by 20% in the decade (equivalent to 2% per year which is roughly the mean and standard deviation of this variable across destination countries) increases actual migration rates by 0.016 percentage points for college-educated and by only 0.004 percentage points for the less educated. Recall for comparison that the impact of GDP per capita levels at destination on potential migration rates was almost the same for college- and non-college-educated.

Overall, we find that the response of college-educated actual migration rates to growth rates and to potential migration rates is three times larger than for non-college-educated. Hence, on average, a much larger share of college-educated potential migrants turns into actual migrants, and favorable economic conditions at destination increase their actual migration rates much more than those of less educated individuals. This implies, for instance, that in spite of a much higher potential migration rate of non-college-educated from India to the U.S. (around 1%) than from India to Spain (around 0.003%), this will only translate in an actual rate to the US 0.05 percentage points higher than the one to Spain. For college-educated, in contrast, the desired migration rate to the U.S., which equaled 8% relative to Spain (equal to 0.02%), predicts a 1.04 percentage points higher actual

migration rate to the U.S. than to Spain. The actual difference in migration rates for college-educated from India to the U.S. and to Spain is 2.7 percentage points, and 40% of it can therefore be explained by the difference in the pool of potential migrants to each country. The difference in potential migration rates of non-college-educated to the two countries, on the other hand, did not explain much of their actual difference.

To illustrate the importance of the difference in realization rates between college-educated and less educated potential migrants, we simulated the net immigration rates under the assumption that the migration opportunity matching rate of the less educated was equal to that of college-educated (i.e., that they had a realization rate of 0.13 instead of 0.04). Our simulation assumes that corridors with zero migrants remain empty. This can be thought as a drastic policy experiment (such a policy is clearly not on the political agenda) that equalizes the migration opportunities of college and non-college-educated. Table 9 presents the simulated realization rates by destination country. Columns 1 to 3 show the change in immigration flows, whereas changes in immigration rates are obtained by comparing columns 4 and 5 (for the less educated) and columns 6 and 7 (for all migrants). The total inflow of less educated migrants to our destinations increases by 14.7 million (+117%) of whom 39% would move to the U.S. The other important destinations are Spain, Saudi Arabia, France, Italy, and Germany. In relative terms, the largest changes in low-skilled immigration rates are observed for New Zealand (+10.3 percentage points), the U.S. (+7.8), Switzerland (+6.2), and in the Persian Gulf countries. The same patterns are obtained for total immigration rates.

It could be argued that measuring migration potential in a bilateral way results in measurement error and hence in an underestimation of the effect of potential migration on actual migration if potential migrants have a clear preference for migrating but a weak preference for specific countries. To assess the severity of this bias, we redefine potential and net migration aggregated over all countries of destination and run a number of specifications keeping only the country-of-origin dimension. In order to avoid too demanding specifications (as we only have 138 observations), we only include the stock of people with a household member abroad and GDP per person in the country of origin as controls. Table A2 in the appendix shows the estimated coefficient of potential rates on actual rates. In the specification with networks and income controls, the estimate of the rate at which potential migrants turn into net migrants is 0.18 for

college-educated and 0.03 for non-college-educated. These rates are not too far from those estimated using the bilateral definitions (0.13 and 0.04, respectively), suggesting that the impact on actual migration rates from considering aggregate instead of bilateral potential migration is fairly similar. While bilateral preferences may be imprecise, they still seem to reveal useful information on the potential destination of migrants.

Coming back to our regression results, column 2 of Tables 7 and 8 analyze whether the *level* of GDP per person and the employment rate in the destination country affect actual migration for either skill level, after controlling for potential migrants and GDP growth. The estimates reveal that destination country GDP per person and employment probability do not matter in determining opportunities, *once potential migrants are controlled for*. This confirms the presumption that income levels in the destination country only affect migration through their effect on potential migrants (shown in Tables 4 and 5), as they serve as proxies for present discounted return from migrating. Also, in line with Grogger and Hanson (2011), positive selection in actual migration is positively associated with the GDP level at destination. A 10,000 PPP US $ increase in GDP per capita increases potential migration by 0.30 and 0.20 percentage points for college-educated and the less educated, which, in turn, increases actual migration by 0.026 and 0.008 percentage points (*i.e.*, 0.30×0.136 and 0.20×0.04), respectively. A simple numerical experiment reveals that the total migration flow would be 21% greater if income per capita in the 30 destination countries (an average of 27,606 PPP US $) was equal to the U.S. level (i.e., 39,175 PPP US $). College-educated would be more responsive (+25%) than the less educated (+17%).

Column 3 analyzes whether the presence of family networks affects opportunities to migrate, after controlling for potential migration rates. In Tables 4 and 5, we saw that networks were crucial to increase the pool of potential migrants to a destination country. The impact of networks, measured as the stock of existing migrants or the share of natives with a household member abroad, was estimated to be very large. A one standard deviation increase of the network in country d corresponded to a one percentage point higher potential migration rate for college- and non-college-educated (relative to an average of 0.49 and 0.71 percentage points for non-college-educated and college-educated, respectively). Do networks also increase actual migration once we control for potential migration? The estimates in column 3 of Tables 7 and 8 show that their impact on actual migration after controlling for the potential rate is smaller and not always

significant. For non-college-educated, the impact corresponds to a 0.03 per-centage points for each standard deviation. Considering that the direct effect of networks on potential rates was around 0.9 (for a standard deviation increase) and that potential rates translate into actual rates with a coefficient of 0.04 for non-college-educated, the effect of networks through potential migration ($0.9 \times 0.04 = 0.036$) is as large as the direct effect on creating opportunities for less educated migrants. For college-educated, the effect of their network on migration opportunities was not significant, as they probably become aware of them more easily through other (work or professional) channels. Still, the impact on potential migrants was very large.

Columns 4 and 5 introduce the free labor mobility and visa waiver dummies. In column 4, we include the policy dummies for all those pairs of countries with bilateral agreements as of 2000, the beginning of the period we consider. Free labor mobility could in principle significantly increase actual migration by creating migration opportunities that were previously denied. Similarly, the presence of a visa waiver agreement can make a country more accessible to foreign travelers, especially from less developed countries.

Neither policies automatically imply migration opportunities, jobs, or demand for migrants. The estimates show that both free mobility and visa waiver agreements increased actual migration rates for non-college-educated by around 0.01%, which is a very modest amount. For college-educated, the effects were not significant. This is a first sign that it may take more than simple bilateral mobility agreements to generate migration opportunities. One may also argue that countries agreeing to mutual free labor mobility or visa waiving are those with similar characteristics (Neumayer, 2006), which would result in lower gains for migrants. Hence, a free labor market or a visa waiving agreement does not *per se* need to stimulate mobility across those countries. Finally, one might reason that the 2000s formed a period of slow growth in Europe (with a deep recession and financial crisis toward the end of the decade), which may have discouraged migration altogether. In general, once geographical and cultural proximity are controlled for (distance, border, language, and legal origin dummies), the free labor mobility dummy becomes weakly significant, even for non-college-educated.

Thus, our results suggest that economic growth, more than free labor migration policies, is a proximate determinant of actual migration rates of non-college-educated, once we control for potential rates. Overall, we find that free labor mobility policies and the visa waiver policies did not have a

strong impact on migration, on creating actual migration opportunities over the 2000–2010 period, or on increasing the pool of potential migrants.

In column 6 of Tables 7 and 8, we calculate potential migration including only those individuals who revealed a preference for permanent migration. As net migration rates capture long-run permanent changes, they might be expected to be most affected by potentially permanent migrants. In line with this intuition, we find that the impact of permanent potential migrants on actual net migration is somewhat stronger than that of total potential migration (with a coefficient of 0.058 for non-college-educated and 0.17 for college-educated). The effect of the remaining variables remains largely unchanged. The intentions to migrate permanently and their distribution across country couples are in fact very strongly correlated to the overall intentions to migrate.[11]

Interactions with Potential Migration Rates

Economic growth in the destination countries encourages migration flows by creating new opportunities. Was this effect stronger for origin countries that had a larger potential migration rate to that destination? Similarly, did free migration policies and networks interact with the pool of potential migrants from specific origins so that their effect was not linear but larger for countries with more potential migrants? The linear form of equation (4) is a simplification. Including some interaction terms would allow for a different marginal effect of policies and economic opportunities depending on the size of the potential migrant pool.

In Table 10, we interact the "potential migration variable" with the growth of GDP per person at destination (columns 1 and 3), or with the free migration and visa waiver dummies (columns 2 and 4) or with the size of the network of household members abroad (specifications 3 and 6). The interaction variables are divided by their standard deviation, so that the coefficients are easier to interpret. The table shows the impact on non-college-educated (columns 1–3) and college-educated (columns 4–6) migration rates. The only interaction effect that turns out to be

---

[11]Further checks and regressions that we performed and do not report convinced us that potential migration rates (both bilateral and aggregate by origin) are very highly correlated whether calculated using total migration or only permanent migration intensions. Hence, we used total potential migration throughout the paper.

significant is that of GDP per capita growth and potential rates for the non-college-educated (as well as that of the visa waiver dummy with potential rates for college-educated, though only marginally significant and negative). In fact, an acceleration of GDP growth by 1.5% per year in the U.S. relative to an acceleration by 1.5% per year in Spain would generate an interaction with potential migration from India of about 15% in the U.S. and almost zero in Spain, which is about one standard deviation of the interaction. The actual migration rate of less educated from India would thus be 0.027 percentage points larger to the U.S. than to Spain as a consequence of their common higher growth rate but different migration potentials. This also implies, for instance, that growth in the U.S. would attract a much larger number of migrants from Mexico than a similar growth rate in Europe would. Faster growth in Germany would, vice versa, produce a larger effect on emigration for less educated Turkish nationals than would be produced by growth in any other country (as the potential migration rate for less educated from Turkey to Germany was larger than 3% compared to a potential rate of less than 1% toward any other country).

Interestingly, economic growth produced opportunities for actual migration and attracted less educated more strongly from countries with larger potential migration rates. Less educated actual migration appears to be higher for countries with a visa waiver agreement, yet the interaction term with potential migration appears insignificant. Free mobility of labor laws, on the other hand, did not affect the actual migration rates (for college nor for non-college-educated) nor did they affect them differentially depending on migration potentials. The strongest results from the analysis of actual migration are the difference between college- and non-college-educated in the rate at which potential migrants turn into actual migrants. This rate seems to be somewhat affected by economic growth at destination but does not seem to be systematically influenced by free mobility policies or by the presence of networks.

Differences Between Rich and Poor Countries of Origin

In Table 11, we analyze whether the relationship between potential migrants, migration opportunities, and actual migrants is different when considering only poor countries of origin. We select countries of origin in Asia, Latin America, and Africa (omitting therefore the rich continents of the world) and estimate specifications similar to the basic ones in Tables 7,

8, and 9. The basic specification (columns 1 and 4) shows that, as found for the total sample, potential emigration rates affect actual ones, and this effect is much stronger for college-educated (coefficient of 0.22) than for non-college-educated (coefficient of 0.05). The estimated values are close to those estimated for the whole sample and possibly somewhat larger, especially for college-educated. The sensitivity of actual migration rates to growth rates at destination, controlling for potential rates, is also roughly as before, and 3 to 4 times larger for college-educated than for non-college-educated. These results suggest that, for less developed countries, there is no particular intensity of selection of potential migrants into actual ones.

Furthermore, we see that income levels and employment rates at destination (columns 2 and 5) do not additionally affect actual migration rates aside from their impact on potential rates. Moreover, higher growth rates at destination stimulate actual migration, and they have a stronger effect (interaction) on countries with a larger migration potential (columns 3 and 6). Finally, the visa waiver policies have a minor positive effect on migration rates of non-college-educated. The similarity of the coefficients estimated in Table 11 with those for the whole sample in Tables 7 and 8 implies that migrants from poorer countries of origin, especially the less educated ones, are not different from migrants from richer countries in their response to incentives. Similarly, potential college-educated migrants from low-income countries of origin have a much larger probability of becoming actual migrants relative to the less educated. Hence, immigration opportunities in the considered destination countries (affected by the economy, policy and other factors) do not seem to "discriminate" based on the origin of immigrants, but are certainly more accessible for individuals with a college education. Alternatively, more educated people might simply be better in realizing migration potentials by searching for the right opportunities. Understanding better what determines the difference in transforming potential migrants into actual migrants between college and non-college-educated is a very important step to predict the future of migration flows in the world. The data and simple procedures used in this paper are a starting point for this analysis.

CONCLUSIONS

Potential migrants are those people who aspire to migrate and look for migration opportunities. Actual migrants are those among potential migrants, that found and took advantage of a migration opportunity and

moved to a foreign country. We first identify the pool of potential migrants and the success of that pool in becoming actual migrants, using original data on the desire (willingness) to migrate and effective net migration from 138 origin countries to 30 major destinations over the 2000–2010 period. We then empirically study the determinants of potential migration and its realization rate, highlighting the role of economic factors, networks, and migration policies.

Interestingly, our results are consistent with rational behavior – the income level and employment probability at destination, as well as the presence of networks of co-nationals, are crucial determinants of the pool of potential migrants. However, in turning potential migrants into actual migrants, the factors that matter most are having a college education and the growth perspectives in the receiving country. According to our estimates, one out of five college-educated potential migrants became an actual migrant (within the considered decade), while only one in twenty potential migrants among non-college-educated finally migrated.

The migration literature has established the value of analytically separating migration aspirations from opportunities to migrate (Carling, 2002). The economic literature, on the other hand, has mainly focused on actual migration rates without differentiating non-migrants by whether or not they are searching for migration opportunities (Grogger and Hanson, 2011). This study connects the two-step approach to migration with economic modeling. We emphasize the most interesting and selective step in the process: from potential to actual migrants. This is a passage that is only understood if we take a two-step approach. We hope that through the use of uniquely large-scale data, additional theoretical sources, and new methodological frameworks, we contribute to further strengthening the two-step approach to international migration.

DATA APPENDIX

We construct bilateral data on actual migration rates ($m_{o,d}^s$) and willingness (or desire) to emigrate ($w_{o,d}^s$) for college-educated and less educated individuals ($s = H,L$), for 138 countries of origin ($o = 1,...,138$) and 30 countries of destination ($d = 1,...,30$) for the period 2000–2010. These rates are expressed as percent of the non-migrant, native population aged 25 and over in country o in the year 2000. Potential migration rates are simply defined as the sum of actual and desired migration: $p_{o,d}^s \equiv m_{o,d}^s + w_{o,d}^s$. This appendix describes our data sources and methodology.

TABLE A1.
SUMMARY STATISTICS FOR EXPLANATORY VARIABLES AND CONTROLS

	Observations	Mean	Standard dev.	Min	Max
Real GDP per person, in 2000 PPP $, destination	5,363	27,606.65	11,633.00	5,893.64	62,626.35
Real GDP per person, in 2000 PPP $, origin	5,363	10,392.59	12,829.56	117.22	74,162.94
(Empl/Pop 15 years and older) ×100, destination	5,115	53.72	7.32	38.70	74.40
(Empl/Pop 15 years and older)×100, origin	5,115	57.43	11.03	35.40	85.50
Distance in KM	5,456	7,353.83	4,437.13	114.63	19,539.47
Border Dummy	5,456	0.02	0.14	0.00	1.00
Dummy for common language	5,456	0.12	0.33	0.00	1.00
Dummy for shared colonial past	5,456	0.03	0.18	0.00	1.00
Dummy for common legal origin	5,456	0.25	0.43	0.00	1.00
Dummy for common currency	5,456	0.02	0.15	0.00	1.00
Sum of landlocked dummies	5,394	0.35	0.53	0.00	2.00
Measure of Religious proximity	5,673	0.26	0.25	0.00	0.98
Genetic distance (Spolaore and Wacziarg 2010)	5,672	912.53	647.90	0.00	3,115.87

TABLE A2.
CORRELATION BETWEEN POTENTIAL AND ACTUAL MIGRANTS: AGGREGATE REGRESSIONS ACROSS COUNTRIES OF ORIGIN

	College-Educated		Non-college-Educated	
Explanatory Variable	(1) Basic	(2) Including controls	(3) Basic	(4) Including controls
Potential Emigration rates	0.45*** (0.09)	0.18* (0.11)	0.054** (0.023)	0.031 (0.026)
Stock of people with household members abroad/population		1.31*** (0.29)		0.16 (0.10)
Real GDP per person in origin (1,000 $ PPP)		−0.0009** (0.0004)		−0.0001 (0.00008)

The dependent variable is the emigration rate from country of origin, calculated as the sum of total 2000–2010 net migrants, divided by the population of natives in the country of origin as of 2000. Each observation is one of 138 countries of origin. The observations are weighted by the country-of-origin population with college education, and we drop migration rates. Standard errors are heteroskedasticity robust.***,**, and * imply significance at 1%, 5%, and 10% level.

Actual migration

Our starting point is the recent IAB database described in Brücker *et al.* (2013). They document the bilateral migration stocks (Stock$M_{o,d}^{s,t}$) of individuals aged 25 and over by education level, from 195 origin countries to 20 destination countries, from 1980 to 2010 in 5-year intervals (t=1980,...,2010). We only use the 2000 and 2010 waves and proxy net

TABLE A3.
ACTUAL AND DESIRED IMMIGRATION RATES OF COLLEGE-EDUCATED AND THE LESS EDUCATED BY ORIGIN COUNTRY

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Desired rates Less educated	Desired rates College-educated	Population Ratio of college-educated to Less educated
Afghanistan	0.378	6.177	10.992	19.133	0.080
Albania	9.800	66.976	31.793	37.139	0.077
Algeria	0.869	14.494	14.581	11.298	0.057
Argentina	1.011	5.362	10.009	16.731	0.129
Armenia	1.068	23.480	22.542	27.471	0.250
Australia	0.354	4.507	9.368	13.170	0.264
Austria	−1.683	−1.435	7.172	13.164	0.129
Azerbaijan	−2.652	9.143	9.429	11.751	0.128
Bahrain	0.273	25.890	1.624	1.286	0.039
Bangladesh	0.625	9.568	19.274	39.107	0.043
Belarus	−4.283	3.939	10.854	19.675	0.267
Belgium	0.563	2.863	10.592	14.828	0.313
Belize	2.682	112.886	20.548	23.120	0.082
Bolivia	3.819	12.268	12.754	16.509	0.161
Bosnia and Herzegovina	−8.676	30.384	8.992	12.029	0.074
Botswana	1.911	18.839	13.689	26.923	0.041
Brazil	0.266	2.692	11.186	16.786	0.078
Bulgaria	2.344	9.667	9.399	17.075	0.222
Burundi	0.259	55.932	6.835	100.000	0.006
Cambodia	0.692	93.310	22.932	35.913	0.006
Cameroon	0.535	50.278	23.027	26.316	0.012
Canada	−0.110	4.879	10.531	14.435	0.215
Chad	0.086	6.766	7.625	9.536	0.013
Chile	0.564	2.641	15.608	22.114	0.265
China	0.058	2.132	3.986	16.260	0.044
Colombia	1.259	11.135	25.792	27.996	0.118
Comoros	4.424	62.206	23.615	27.083	0.014
Congo, Dem. Rep.	0.200	17.908	21.740	32.340	0.013

ACTUAL AND DESIRED IMMIGRATION RATES OF COLLEGE-EDUCATED AND THE LESS EDUCATED BY ORIGIN COUNTRY

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Desired rates Less educated	Desired rates College-educated	Population Ratio of college-educated to Less educated
Costa Rica	0.981	4.720	14.774	12.217	0.198
Cote d'Ivoire	1.183	5.692	18.648	31.635	0.114
Croatia	−13.400	15.867	5.505	3.586	0.049
Cyprus	1.019	16.455	8.017	20.576	0.308
Czech Republic	0.223	3.481	6.125	10.748	0.112
Denmark	0.044	5.510	10.245	17.892	0.202
Djibouti	0.163	9.730	15.035	25.041	0.023
Dominican Republic	5.648	28.502	47.102	41.319	0.141
Ecuador	5.656	18.771	17.558	21.474	0.173
Egypt	0.757	17.673	8.988	11.011	0.046
El Salvador	16.468	52.111	30.475	43.006	0.102
Estonia	9.479	34.634	16.532	15.811	0.374
Finland	−0.912	4.077	12.253	17.788	0.158
France	0.391	3.402	10.026	21.906	0.207
Georgia	−4.758	4.129	13.510	17.428	0.128
Germany	0.247	1.977	17.467	19.090	0.244
Ghana	0.391	21.397	38.529	38.106	0.044
Greece	−3.072	2.909	8.294	18.251	0.177
Guatemala	6.856	56.715	21.976	25.288	0.036
Guinea	0.733	16.814	25.030	40.866	0.022
Haiti	3.262	413.808	30.746	46.658	0.009
Honduras	8.275	64.760	27.495	32.201	0.041
Hong Kong	0.048	31.626	12.892	26.892	0.163
Hungary	−0.238	4.948	13.174	12.595	0.143
Iceland	3.630	26.855	17.259	20.385	0.183
India	0.202	6.138	2.151	10.789	0.051
Indonesia	0.034	2.520	2.714	8.042	0.028
Iran	0.001	6.424	15.280	34.391	0.100

TABLE A3.   (CONTINUED)
ACTUAL AND DESIRED IMMIGRATION RATES OF COLLEGE-EDUCATED AND THE LESS EDUCATED BY ORIGIN COUNTRY

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Desired rates Less educated	Desired rates College-educated	Population Ratio of college-educated to Less educated
Iraq	0.745	11.618	5.714	10.998	0.099
Ireland	2.048	25.211	11.822	18.579	0.298
Israel	0.977	6.125	11.773	19.336	0.622
Italy	−1.128	4.189	11.418	29.441	0.103
Japan	−0.032	0.113	9.924	16.476	0.400
Jordan	5.707	26.634	15.854	21.073	0.168
Kazakhstan	−2.768	18.240	9.080	10.397	0.147
Kenya	0.241	34.199	22.248	34.018	0.023
Korea, Rep.	0.220	4.794	17.631	29.832	0.367
Kuwait	4.772	365.757	3.155	3.810	0.015
Kyrgyz Republic	2.167	18.820	11.721	17.599	0.181
Laos	0.989	39.954	5.569	5.214	0.043
Latvia	−0.148	13.470	15.229	17.260	0.153
Lebanon	2.567	106.875	17.914	20.382	0.051
Liberia	0.566	72.704	36.635	50.322	0.025
Libya	−0.031	20.362	14.197	13.045	0.024
Lithuania	−0.416	10.454	14.590	19.149	0.184
Luxembourg	1.973	10.770	14.294	23.526	0.159
Macedonia	−1.651	2.225	20.411	23.354	0.077
Malawi	0.574	58.055	25.671	22.212	0.005
Malaysia	0.072	7.300	3.694	13.611	0.094
Mali	0.793	30.780	12.955	33.952	0.007
Malta	−0.073	82.980	15.248	32.181	0.066
Mauritania	0.912	24.469	14.241	18.200	0.017
Mexico	8.082	13.677	14.990	21.899	0.134
Moldova	0.284	19.020	23.324	26.176	0.101
Mongolia	−0.253	2.819	11.524	24.488	0.138
Morocco	2.845	30.630	13.345	14.496	0.080

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Desired rates Less educated	Desired rates College-educated	Population Ratio of college-educated to Less educated
Namibia	4.218	147.195	9.838	0.000	0.023
Nepal	0.130	7.705	9.658	30.391	0.038
Netherlands	0.366	5.904	13.125	17.603	0.292
New Zealand	1.208	10.634	18.953	18.219	0.740
Nicaragua	3.130	20.994	21.204	29.015	0.143
Niger	0.022	4.017	4.457	24.315	0.008
Nigeria	0.086	13.993	38.182	45.891	0.022
Norway	0.102	2.834	10.681	18.430	0.304
Pakistan	1.263	12.676	7.844	19.147	0.076
Palestinian Territory	24.910	462.255	8.352	14.915	0.039
Panama	0.120	−0.456	12.473	18.372	0.261
Paraguay	2.539	14.275	5.643	16.226	0.074
Peru	2.066	6.774	27.216	26.472	0.266
Philippines	1.263	8.927	17.689	36.457	0.338
Poland	0.555	8.927	8.761	10.529	0.143
Portugal	0.459	14.386	8.222	18.336	0.108
Qatar	0.344	7.166	3.943	3.664	0.130
Romania	3.559	21.593	17.650	25.497	0.100
Russian Federation	0.105	0.196	6.168	12.775	1.146
Saudi Arabia	0.102	2.845	1.677	1.138	0.119
Senegal	1.451	42.790	31.836	50.986	0.024
Serbia and Montenegro	6.023	10.734	15.799	14.764	0.150
Sierra Leone	0.604	159.058	36.755	58.638	0.008
Singapore	0.242	17.872	5.143	9.596	0.088
Slovakia	−3.928	5.773	13.226	22.771	0.131
Slovenia	−2.241	0.424	11.271	13.831	0.192
Somalia	2.013	68.930	21.398	24.950	0.015
South Africa	0.141	6.880	8.557	12.060	0.094

TABLE A3. (Continued)

ACTUAL AND DESIRED IMMIGRATION RATES OF COLLEGE-EDUCATED AND THE LESS EDUCATED BY ORIGIN COUNTRY

Destination	Net rates 2000–2010 Less educated	Net rates 2000–2010 College-educated	Desired rates Less educated	Desired rates College-educated	Population Ratio of college-educated to Less educated
Spain	−0.622	1.020	6.926	15.131	0.223
Sri Lanka	0.265	6.927	9.796	17.767	0.159
Sudan	0.476	42.557	15.457	30.189	0.010
Sweden	0.590	3.088	14.710	14.997	0.286
Switzerland	0.501	5.725	8.036	3.627	0.221
Syria	1.235	21.870	16.570	20.079	0.048
Taiwan	0.054	4.110	11.572	21.201	0.255
Tajikistan	0.768	24.293	10.230	15.363	0.074
Tanzania	0.055	23.923	14.821	48.836	0.009
Thailand	0.237	3.912	3.024	4.772	0.057
Trinidad and Tobago	3.520	280.268	14.799	21.332	0.036
Tunisia	0.041	12.257	15.095	21.749	0.058
Turkey	−1.532	4.039	8.785	14.523	0.100
Turkmenistan	−0.213	4.151	5.913	13.173	0.182
Ukraine	−3.318	2.398	11.449	17.524	0.611
United Arab Emirates	5.127	13.111	1.047	3.816	0.196
United Kingdom	0.500	13.984	21.765	27.524	0.147
United States	0.202	0.322	8.223	11.708	1.149
Uruguay	2.447	12.497	9.220	10.507	0.122
Uzbekistan	0.817	11.082	6.428	8.857	0.125
Venezuela	0.536	4.595	6.729	12.209	0.170
Vietnam	0.673	32.555	7.173	15.427	0.024
Yemen	1.514	103.992	16.277	29.681	0.012
Zambia	0.477	37.382	15.698	22.855	0.021
Zimbabwe	2.255	203.604	24.296	33.774	0.010
Average	1.149	33.341	14.221	21.437	0.145

The net migration rate is constructed as described in the text, namely as net emigration 2000–2010 divided by the population of natives in the country of origin as of 2000, and then multiplying this fraction by 100. Countries with negative rates have a net inflow of their nationals (return), countries with net rates larger than 100% (only for college-educated) may have some of their expatriates obtain a degree abroad.

migration flows by taking the difference between the migrant stock in 2010 and 2000: $M^s_{o,d} = \text{Stock}M^{s,2010}_{o,d} - \text{Stock}M^{s,2000}_{o,d}$ (as in Beine *et al.*, 2011; or Docquier *et al.*, 2014).

The IAB database relies on census and register data collected from 20 major OECD destination countries. As for the year 2000, they obtained census or register data from all countries. As far as 2010 is concerned, they obtained census data for eight countries (Denmark, France, Finland, Germany, the Netherlands, Norway, Sweden, and the U.S.); 2010 was extrapolated on the basis of 2005–2006 census data in four other cases (Australia, Canada, Ireland, and New Zealand). In the other eight cases (Austria, Chile, Greece, Luxembourg, Portugal, Spain, Switzerland, and UK), they imputed 2010 stocks on the basis of the 1990–2000 growth rates.

To cover the most important receiving countries of the world (many of which are reported as preferred destinations of would-be migrants), we extend the IAB database and construct estimates of net migration flows to 10 additional destination countries (Belgium, Israel, Italy, Japan, Mexico, Poland, Russia, Saudi Arabia, South Africa, and United Arab Emirates). For these countries, bilateral migration data of individuals aged 25 and over are provided for the year 2000 and by education level in Artuç *et al.* (forthcoming). We combine them with the United Nations database on bilateral migrant stocks from 1990 to 2010 without education breakdown and the 25-year-old threshold. Specifically, we multiply the 2000 bilateral stocks of Artuç et al. by the 2000–2010 bilateral growth factors of the United Nations. This simply means that we assume the growth rate of total bilateral migrant stocks to be identical to that of the bilateral stock of migrants aged 25 and over. We also assume there are 10 percentage points more college-educated in the 2000–2010 net migration flow than in the 2000 migration bilateral stock, an assumption in line with the IAB database.

The database of Artuç et al. also documents the size and structure of the non-migrant population in each origin country in 2000, $N^s_o \equiv \text{Stock}M^{s,2000}_{oo}$. Actual migration rates during the period 2000–2010 are thus defined as $m^s_{o,d} = M^s_{o,d}/N^s_o$.

Willingness to emigrate

The Gallup World Polls identify individuals expressing a desire to emigrate permanently or temporarily to another country. Individual data are available on a yearly basis from 2007 to 2013: We aggregate the seven waves to compute desired emigration rates around the year 2010. This allows us to limit

the number of missing cells and increase the accuracy of our estimates. Adding these desired migrants in 2010 to the actual net migration flows will give the potential net migration flows between 2000 and 2010.

A typical Gallup survey interviews about a 1,000 randomly selected individuals within each country. In some large countries such as China, India, and Russia as well as in major cities or areas of special interest, oversamples are collected resulting in larger total numbers of respondents. The data are collected through telephone surveys in countries where the telephone coverage represents at least 80% of the population. In Central and Eastern Europe, as well as in the developing world, including much of Latin America, the former Soviet Union countries, nearly all of Asia, the Middle East, and Africa, on the other hand, an area frame design is used for face-to-face interviewing. As such, the sampling frame represents the entire civilian, non-institutionalized population aged 15 and over covering the entire country including rural areas (with the exception of areas where the safety of the interviewing staff is threatened, scarcely populated islands in some countries, and areas that interviewers can reach only by foot, animal, or small boat). The survey covers 394,459 respondents, that is, an average of 2,761 observations per country. In some cases, the number of respondents is, however, small. As a robustness check, we will only consider countries where the willingness to emigrate has been computed from at least 37 college-educated and 75 less educated respondents.

The Gallup survey documents individual characteristics (such as age and education) and includes two relevant questions on intentions to emigrate; these questions were asked in 138 countries: (Q1) *Ideally, if you had the opportunity, would you like to move permanently or temporarily to another country, or would you prefer to continue living in this country?* And (Q2) *To which country would you like to move?* In line with the actual migration data, we only consider respondents aged 25 and over and distinguish between individuals with college education and the less educated. The skill structure of the Gallup database is, however, different from the one in ADOP and IAB. ADOP and IAB define a high-skilled individual as anyone who has obtained at least one year of college education. In the Gallup survey, education obtained by the respondent is classified using the answer to the question: "What is your highest completed level of education? (possible answers: completed elementary education or less (up to 8 years of basic education), secondary up to 3 year tertiary (9-15 years of education), completed 4 years of education beyond high school and/or received a 4-year college degree, don't know, refused)." Tertiary educated individuals are defined as those

who reply: "Completed 4 years of education beyond high school and/or received a 4-year college degree." Since the propensity to emigrate increases with education, we might overestimate the desire to migrate of both high-skilled and low-skilled individuals. By 2013, the 138 countries represented about 98% of the worldwide population aged 25 and over.

The first step consists of computing the aggregate proportion of individuals who express a willingness to leave their country, whatever their preferred country of destination. We denote this proportion by $\widehat{w}_{oT}^s$ (T for all destinations) for individuals of education type s living in country o. To compute desired emigration rates, we aggregate individual responses to Q1 and weigh each observation by the relevant Gallup sample weight. These weights are designed to compensate for the low coverage of certain groups (by gender, race, age, educational attainment, and region) in the whole population. Gallup assigns a weight to each respondent "so that the demographic characteristics of the total weighted sample of respondents match the latest estimates of the demographic characteristics of the adult population available" for the country (Gallup, 2012). The willingness to migrate is given by the weighted proportion of respondents who answered positively to Q1.

In the second step, we use responses to Q2 to disaggregate the number of desired migrants by country of destination. For each origin country o and skill type i, bilateral desired migration rates $(\widehat{w}_{o,d}^s)$ are obtained by multiplying the total willingness to emigrate $(\widehat{w}_{oT}^s)$ by the proportion of respondents to Q2 who declared that country d is their preferred destination $(\sigma_{o,d}^s)$. A few desired migrants did not mention a desired destination (i.e., did not respond to Q2), but this is rarely the case. Given the large response rates to Q2, we ignore those who did not respond to Q2 to compute the bilateral shares. Finally, a few respondents answered to Q2 and mentioned a preferred destination without responding to Q1; we considered that they responded "Yes" to Q1.

Given that we want our actual and desired emigration rates to be expressed as percent of the non-migrant, native population aged 25 and over in the year 2000, we correct for the change in the native population between 2000 and 2010 and compute our index of willingness to emigrate as $w_{o,d}^s = \widehat{w}_{o,d}^s N_{o,2010}^s / N_{o,2000}^s$.

Explanatory variables

The definition and source of the variables used in the regressions are the following:

The stock of people born in country o resident of country d in 2000, in percent of the population of non-migrant natives in o in 2000 (Netw$_{o,d}$). *Source*: See the actual migration section in the data appendix.

The share of people aged 25 and older in and native to country o who report to have a household member abroad times the share of people aged 25 and older in and native to country o who report to have a household member in country d, merged over all available waves between 2007 and 2013 (alternative measure of Netw$_{o,d}$). *Source*: Gallup's World Poll Database (see $w_{o,d}^{s}$ for more details on data collection). Specifically, the propensity to have a household member abroad is obtained by combining the following questions: "Have any members of your household gone to live in a foreign country permanently or temporarily in the past five years?" and "In which country does/did he/she live?." The intensity of the diaspora connection is thus calculated as the product of the propensity for natives of country o to reply positively to the first question and the propensity that natives of country o report country o as a settlement country for their household members abroad, each time merging all survey waves between 2007 and 2013. Note that these propensities are obtained using sample weights so that the demographic characteristics of the total weighted sample of respondents match those of the adult population in the respective country in terms of gender, race, age, educational attainment, and region (*see* Gallup, 2012). Again, we correct for the change in the native population between 2000 and 2010 in order to express the stock of people with household members abroad as a share of the non-migrant, native population aged 25 and over in country o in the year 2000.

Gross domestic product per capita in the destination country in purchasing power parities in 2005 international \$ (Chain series) in 2000 ($y_{d,2000}$). *Source*: Penn World Tables 7.0.

Employment as percentage of the population aged 15 and over in the destination country ($e_{d,2000}$). *Source*: World Development Indicators and Total Economy Database.

Growth in gross domestic product per capita in the destination country in purchasing power parities in 2005 international \$ (Chain series) between 2000 and 2010 (gy_{d}^{00-10}). *Source*: Penn World Tables 7.0.

Growth in employment as percentage of the population aged 15 and over in the destination country between 2000 and 2010 (ge_{d}^{00-10}). *Source*: World Development Indicators and Total Economy Database.

Size of the population aged 25+ in the destination country in 2000 (ln Pop$_{d}$). *Source*: Brücker *et al.* (2013).

Set of bilateral variables capturing geographical, cultural, and genetic distance across countries ($Dist._{o,d}$), including:

Population-weighted distance in kilometers between o and d (taken in logs). *Source*: CEPII Dyadic Distance Database (Mayer and Zignago, 2011).

Dummy for sharing a border. *Source*: CEPII Dyadic Distance Database.

Dummy for sharing a common official primary language. *Source*: CEPII Dyadic Distance Database.

Dummy for sharing a common colonial past. *Source*: CEPII Dyadic Distance Database.

Dummy for sharing a common legal origin. *Source*: Ortega and Peri (2014).

Dummy for sharing a common currency. *Source*: Ortega and Peri (2014).

Number of landlocked countries in the country pair. *Source*: CEPII Dyadic Distance Database.

Religious proximity between o and d, that is, the probability that two individuals randomly selected from o and d share the same religion. *Source*: Own calculations based on CIA World Factbook data on country-specific religious adherence.

Genetic distance between o and d, that is, the probability that two alleles (a particular form taken by a gene) at a given locus selected at random from two populations are different (proxy for time since isolation). *Source*: Spolaore and Warcziag (2009), definitions p. 480–485.

Dummy for free labor mobility between o and d as of 2000 or 2010 (in $Policy_{o,d}$). The corridors which had free mobility in 2000 besides EU15-EU15 involve the EU15 and Switzerland as well as Nordic countries, that is, Denmark, Finland, Iceland, Norway, and Sweden. In 2010, new corridors involve free mobility between (i) new accession countries that joined the EU between 2000 and 2010 (i.e., Bulgaria, Cyprus, Czech Rep, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia, and Slovenia) and the EU15, Switzerland, Poland, and Czech Republic. *Source*: Own calculations.

Dummy for the presence of a visa waiving agreement between o and d in 2004 (in $Policy_{o,d}$). This visa waiving dummy is based on country of citizenship rather than on country of birth. *Source*: Neumayer (2006) based on the November 2004 edition of the International Civil Aviation Association's Travel Information Manual.

REFERENCES

Autor, D., L. Katz, and M. Kearney
2008   "Trends in U.S. Wage Inequality: Revising the Revisionists." *Review of Economics and Statistics* 90:30–23.

Artuç, E., F. Docquier, Ç. Özden and C. Parsons
(forthcoming) "A Global Assessment of Human Capital Mobility: The Role of Non-OECD Destinations." *World Development*.

Bahna, M.
2008   "Predictions of Migration from the New Member States After Their Accession into the European Union: Successes and Failures." *International Migration Review* 42 (4):844–860.

Bauer, T., and K. F., Zimmermann
1997   "Network Migration of Ethnic Germans." *International Migration Review* 31 (1):143–149.

Becerra, D.
2012   "The Impact of Anti-Immigration Policies and Perceived Discrimination in the United States on Migration Intentions among Mexican Adolescents." *International Migration* 50(4):20–32.

Becerra, D., M. Gurrola, C. Ayón, D. Androff, J. Krysik, K. Gerdess, L. Moya-Salas and E. Segal
2010   "Poverty and Other Factors Affecting Migration Intentions Among Adolescents in Mexico." *Journal of Poverty* 14(1):1–16.

Beine, M., S. Bertoli, and J. Fernández-Huertas Moraga,
(forthcoming) "A Practitioners' Guide to Gravity Models of International Migration." *World Economy*.

———, F. Docquier, and Ç. Özden
2011   "Diasporas". *Journal of Development Economics* 95(1):30–41.

Bertoli, S., and J. Fernández-Huertas Moraga
2013   "Multilateral Resistance to Migration." *Journal of Development Economics* 102:79–100.

Borjas, G. J.
1987   "Self-selection and the Earnings of Immigrants." *American Economic Review* 77 (4):531–553.

Brücker, H., S. Capuano, and A. Marfouk.
2013   ."Education, Gender and International Migration: Insights from a Panel-dataset 1980–2010." mimeo. URL: http://www.iab.de/en/daten/iab-brain-drain-data.aspx

Carling, J.
2002   "Migration in the Age of Involuntary Immobility: Theoretical Reflections and Cape Verdean Experiences." *Journal of Ethnic and Migration Studies* 28(1):5–42.

Chassamboulli, A., and G. Peri
2014   *The Labor Market Effects of Reducing Undocumented Immigrants*. NBER Working Paper No. 19932. Cambridge, MA: NBER, February 2014.

Clark, X., T. J. Hatton, and J. G. Williamson
2007   "Explaining U.S. Immigration 1971–1998." *Review of Economics and Statistics* 89 (2):359–373.

Creighton, M. J.
2013   "The Role of Aspirations in Domestic and International Migration." *Social Science Journal* 50(1):79–88.

Czaika, M., and M. Vothknecht
2014 "Migration and Aspirations – Are Migrants Trapped on a Hedonic Treadmill?" *IZA Journal of Migration* 3(1). doi: 10.1186/2193-9039-3-1#sthash.Wp8ISHVb.dpuf

Docquier, F., Ç. Özden, and G. Peri
2014 "The Labour Market Effects of Immigration and Emigration in OECD Countries." *The Economic Journal* doi: 10.1111/ecoj.12077.

De Jong, G. F.
2000 ."Expectations, Gender, and Norms in Migration Decision-making." *Population Studies* 54(3): 307–319.
———, K. Richter, and P. Isarabhakdi
1996 "Gender, Values, and Intentions to Move in Rural Thailand." *International Migration Review* 30(3):748–770.

Fawcett, J. T.
1989 "Networks, Linkages, and Migration Systems." *International Migration Review* 23 (3):671–680.

Gallup
2012 *Worldwide Research Methodology and Codebook.* Washington, DC.

Goldin, C., and L. F. Katz
2008 *The Race Between Education and Technology.* Cambridge, MA: Harvard University Press.

Grogger, J., and G. H. Hanson
2011 "Income Maximization and the Selection and Sorting of International Migrants." *Journal of Development Economics* 95:42–57.

Gregg, P., and B. Petrongolo
2005 "Stock-flow Matching and the Performance of the Labor Market." *European Economic Review* 49(8):1987–2011.

Hagen-Zanker, J., M. Siegel, and C. de Neubourg
2009 "Strings Attached: The Impediments to Migration in Albania and Moldova." *Southeast European and Black Sea Studies* 9(4):459–479.

Hanson, G. H., and G. McIntosh
2010 "The Great Mexican Emigration." *The Review of Economics and Statistics* 92(4):798–810.

Hatton, T. J.
2005 "Explaining Trends in UK Immigration." *Journal of Population Economics* 18 (4):719–740.
———, and J. G. Williamson
2005 "What Fundamentals Drive World Migration?" In *Poverty, International Migration and Asylum.* Ed. G. Borjas and J. Crisp. Hampshire, UK: Palgrave-Macmillan. Pp. 15–38.

Helbling, M., and M. P. Vink
2013 "The Use and Misuse of Policy Indices in the Domain of Citizenship and Integration." *Comparative European Politics* 11(5):551–554.

Hooghe, M., A. Trappers, B. Meuleman and T. Reeskens
2008 "Migration to European Countries: A Structural Explanation of Patterns 1980–2004." *International Migration Review* 42:476–504.

Esipova, N., J. Ray, and A. Pugliese
2011 *Gallup World Poll: The many faces of global migration.* IOM Migration Research Series 43, Switzerland, Geneva: International Organization for Migration.

Jónsson, G.
2008 *Migration Aspirations and Immobility in a Malian Soninke Village, IMI.* Working
       Paper No. 10-2008. Oxford, UK: International Migration Institute.
Karemera, D., V. Iwuagwu Oguledo, and B. Davis
2000 "A Gravity Model Analysis of International Migration to North America."*Applied
       Economics* 32:1745–1755.
Manchin, M., R. Manchin, and S. Orazbayev
2014 "Desire to Migrate Internationally and Locally and The Importance of Satisfaction
       with Amenities." paper presented at the FIW-wiiw Seminars in International Eco-
       nomics, 10 April 2014, Austria, Vienna.
Mayda, A. M.
2010 "International Migrations: A Panel Data Analysis of the Determinants of Bilateral
       Flows." *Journal of Population Economics* 23(4):1249–1274.
Mayer T., and S. Zignago
2011 Notes on CEPII's distances measures (GeoDist). CEPII Working Paper 2011-25.
McFadden, D.
1974 "Conditional Logit Analysis of Qualitative Choice Behavior." In *Frontiers in Econo-
       metrics*. Ed. P. Zarembka. New York, USA: Academic Press. Pp. 105–142.
Moretti, E.
2012 *The New Geography of Jobs*. New York: Houghton Mifflin Harcourt Publishing.
Neumayer, E.
2006 "Unequal Access to Foreign Spaces: How States Use Visa Restrictions to Regulate
       Mobility in a Globalised World." *Transactions of the British Institute of Geographers*
       31(1):72–84.
Ortega, J.
2000 "Pareto-improving Immigration in an Economy with Equilibrium Employment."
       Economic Journal 110:92–112.
Ortega, F., and G. Peri
2013 "The Role of Income and Immigration Policies on International Migrations."
       Migration Studies 1(1):47–74.
———, and ———
2014 "Openness and Income: The Roles of Trade and Migration." *Journal of Interna-
       tional Economics* 92(2):231–251.
Papapanagos, H., and P. Sanfey
2001 "Intention to Emigrate in Transition Countries: The Case of Albania." *Journal of
       Population Economics* 14(3):491–504.
Paul, A. M.
2011 "Stepwise International Migration: A Multistage Migration Pattern for the Aspiring
       Migrant." *American Journal of Sociology* 116(6):1842–1886.
Pedersen, P. J., M. Pytlikova, and N. Smith
2008 "Selection and Network Effects: Migration Flows into OECD Countries, 1990–
       2000." *European Economic Review* 52(7):1160–1186.
Petrongolo, B., and C. Pissarides
2006 "Scale Effects in Markets with Search." *Economic Journal* 116(508):21–44.
Pissarides, C. A.
2000 *Equilibrium Unemployment Theory*. Cambridge, MA: MIT Press.
———, and B. Petrongolo
2001 "Looking into the Black Box: A Survey of the Matching Function." *Journal of Eco-
       nomic Literature* 39(2):390–431.

Putterman, L., and D. N. Weil

2010 "Post-1500 Population Flows and the Long-run Determinants of Economic Growth and Inequality." *The Quarterly Journal of Economics* 125(4):1627–1682.

Rogers, A.

1990 "Requiem for the Net Migrant." *Geographical Analysis* 22(4):284–300.

Roy, A. D.

1951 "Some Thoughts on the Distribution of Earnings." *Oxford Economic Papers* 3:135–146.

Ruyssen, I., G. Everaert, and G. Rayp

2014 "Determinants and Dynamics of Migration to OECD Countries in a Three-dimensional Panel Framework." *Empirical Economics* 46(1):175–197.

Sjaastad, L. A.

1962 "The Costs and Returns of Human Migration." *Journal of Political Economy* 70 (5):80–93.

Smith, S. K., and D. A. Swanson

1998 "In Defense of the Net Migrant." *Journal of Economic and Social Measurement* 24 (3):249–264.

Spolaore, E., and R. Wacziarg

2009 "The Diffusion of Development." *Quarterly Journal of Economics* 124(2):469–529.

van Dalen, H. P., G. Groenewold, and T. Fokkema

2005a "The Effect of Remittances on Emigration Intentions in Egypt, Morocco, and Turkey." *Population Studies* 59(3):375–392.

——, ——, and J. J. Schoorl

2005b "Out of Africa: What drives the pressure to emigrate?" *Journal of Population Economics* 18 (4): 741–778.

Wood, C. H., C. L. Gibson, L. Ribeiro and P. Hamsho-Diaz

2010 "Crime Victimization in Latin America and Intentions to Migrate to the United States." *International Migration Review* 44(1):3–24.

Yang, X.

2000 "Determinants of Migration Intentions in Hubei Province, China: Individual Versus Family Migration." *Environment and Planning* 32(5):769–787.