



# A Global Assessment of Human Capital Mobility: The Role of Non-OECD Destinations

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**Summary.** — Discussions of high-skilled mobility typically evoke migration patterns from poorer to wealthier countries, which ignore movements to and between developing countries. This paper presents, for the first time, a global overview of human capital mobility through bilateral migration stocks by gender and education in 1990 and 2000, and calculation of nuanced brain drain indicators. Building on newly collated data, we use a novel estimation procedure based on a pseudo-gravity model. We identify key determinants of international migration, which we subsequently use to impute missing data. Non-OECD destinations account for one-third of skilled-migration, while OECD destinations are declining in relative importance.

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## 1. INTRODUCTION

Among the various dimensions of international migration, movements of the highly skilled are arguably the most topical. On the one hand, governments of more developed countries are implementing policies to attract the best and the brightest in an increasingly competitive market for skills. On the other hand, many poorer countries, especially those already suffering from low levels of human capital, are deeply concerned about retaining their most skilled workers, whose absence ultimately impinges upon their long-term economic and political development. Until now, the literature has almost exclusively examined high-skilled movements to OECD countries, often termed the “brain drain.” Even a casual observation of basic migration patterns, however, indicates that such a focus fails to capture the complete global picture.

The absence of detailed and high quality data is the main obstacle that prevents us from properly quantifying the extent of skill mobility across the world. These data shortcomings not only impede many important avenues of research, but in light of the paucity of immigration and emigration flow data by skill level, also militate against countries’ ability to assess their net human capital situation and thus the effectiveness of their immigration, education, and labor market policies.<sup>1</sup> This paper is the first to seriously address this issue, by first developing a global overview of human capital mobility and then subsequently by introducing refined brain drain indicators, which, in comparison with the existing literature, provide superior estimates of gross and net human capital levels across the world.

There have been several efforts to analyze bilateral migration patterns. The Eurostat database<sup>2</sup> provides data on the size of migration flows, by age, gender, and country of citizenship, but solely between EU member states and numerous missing observations exist. More broadly, Özden, Parsons, Schiff, and Walmsley (2011) referred to as OPSW henceforth, construct five 226 × 226 comprehensive matrices of origin–destination stocks that correspond to the last five

completed census rounds, thereby extending the work of Parsons, Skeldon, Walmsley, and Winters (2007). However, while OPSW significantly broadens the time, gender, and geographical coverage of the available data, different skills or education levels are not distinguished.

Another set of studies investigates the education structure of migration, but only for a limited set of destination countries for which data are more readily available. Docquier and Marfouk (2004, 2006) and Dumont and Lemaître (2004) collect detailed census and register data on immigration from all the host countries of the Organization for Economic Cooperation and Development (referred to as OECD henceforth). Aggregating these numbers allows them to characterize the size and structure of low-skilled and high-skilled emigration stocks to the OECD from all the countries of the world. Docquier, Lowell, and Marfouk (2009, referred to as DLM henceforth) and Dumont, Martin, and Spielvogel (2007) introduce the gender breakdown in the above analyses.

Existing data sets of bilateral migrant stocks disaggregated by education level only capture the size and structure of migration to OECD destinations. This is an important limitation, since migration to non-OECD countries is significant. Figure 1 shows that the share of non-OECD destination countries in the world immigration stock has gradually decreased since the 1960s (from 57% to 49%). Nevertheless, non-OECD

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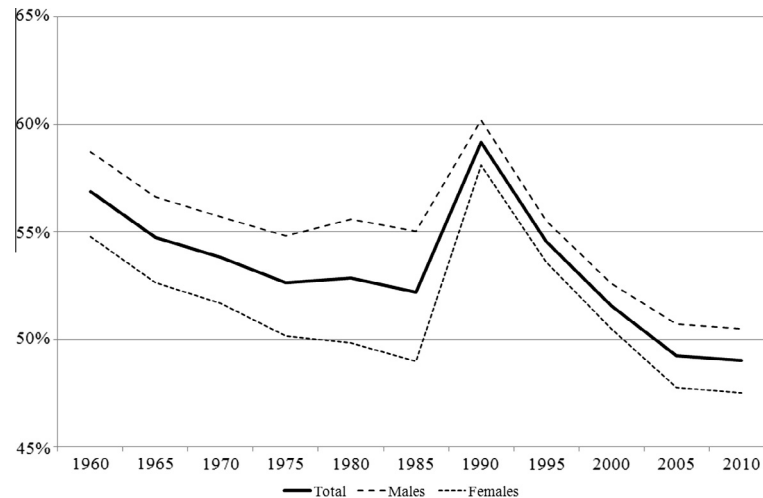


Figure 1. Share of non-OECD destinations in the world migration stock (Data by gender, 1960–2010) Source: United Nations Population Division (2007, 2012).

countries still host about half of all current international migrants. This share is not homogenous across gender since it is larger for men (51.3% in 2000) than for women (48.7%). Countries such as Russia, Ukraine, India, and Pakistan attract large numbers of migrants, mostly from neighboring countries and as a result of political events that changed national boundaries. As far as high-skilled migration is concerned, countries such as South Africa, the member states of the Gulf Cooperation Council (referred to as GCC henceforth) and some East Asian countries (e.g., Singapore or Hong Kong SAR) are among the most important non-OECD destinations. Omitting these destinations from any analysis results in an important piece of the global puzzle remaining missing, thereby limiting our understanding of the full nature of international human capital mobility.

In this paper, we perform, for the first time, a global analysis of bilateral migration patterns by gender and for two education levels, i.e., for four labor types. Compared to previous analyses, we account for migration to all non-OECD country destinations by introducing new data and utilizing appropriate estimation methods where actual bilateral data are missing. Furthermore, we are able to refine existing measures of immigration and emigration rates by expressing immigrant and emigrant stocks relative to a more appropriate measure of the labor force, the *natural* labor force, i.e., the number of workers from a particular origin country regardless of where they currently reside.

Our analysis shows that migration to non-OECD countries increased at a slower pace (+23%) than migration to the OECD (+39%) during 1990–2000. Nevertheless, these former groups constitute about 47% of the world adult migration stock, which is characterized by both lower shares of college graduates (approximately half the level of migration to OECD countries) and women. The selection on skills is particularly pronounced in the case of least developed countries, increasing with regional income levels and for most global regions during 1990–2000. These patterns demonstrate the continued and increasing attractiveness of OECD destinations for high-skilled and female workers. Conversely however, we find the opposite pattern in terms of the international emigration of females. In other words, although OECD destinations are still broadly favored by female migrants, the extent of this selection on gender decreased during 1990–2000, which highlights the rising appeal of non-OECD destinations for female

migrants. Emigration to non-OECD countries accounts for about one-third of the total brain drain from low-income and the least developed countries and adding non-OECD destinations increases the high-skilled emigration rate of 32 countries by more than 50%. These countries are predominantly those close to South Africa, members of the former Soviet Union, or else those that send large numbers of workers to oil-producing Persian Gulf countries. The influence of our introducing additional countries on female high-skilled emigration, however, is less pronounced, given the continued tendency for female migrants to migrate to OECD countries.

High-income and OECD countries exhibit negative net brain drain rates, which show that the incoming pool of educated talent to these regions more than compensates for any skill loss suffered as a consequence of their high-skilled nationals emigrating abroad. The converse is true of developing regions since, although gross and net rates are strongly correlated, their net rates are broadly lower. Finally we compare the proportions of educated natives and country residents, the results from which show that globally, countries' natural work forces are typically more highly educated than the workforce that resides in those countries. In other words, high-skilled immigration for such countries, fails to compensate for the skill losses endured when college-educated natives move abroad.

Before delving into the details of the empirical exercise and our analysis of the data, we first present summary statistics of the numbers of high-skilled migrants in the database in Table 1. We distinguish between migration to OECD and non-OECD countries and between raw data and estimated/imputed data. For each year, the migrant stock in the 34 OECD countries is shown in the second column. There are 59.3 million migrants above age 25 in 2000, of which 20.9 million (35%) have college education, and 30.2 million (51%) are women. For 1990, we identify 42.5 million migrants to OECD countries of which 30% are highly educated and 51% are women. The third and fourth columns show the data obtained or estimated for non-OECD countries. There are 52.6 million migrants, of which 7.9 million (15%) are highly educated and 24.3 million (46%) are females in 2000. For 1990, we identify 42.7 million migrants, including 8.7% highly educated and 45% women. In comparison with OECD destinations, the shares of both the high-skilled and female migrants in non-OECD countries are lower. Finally, for completeness, the fifth and sixth rows present the numbers and the proportions of

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