

# HUMAN DEVELOPMENT AND INTERNATIONAL MIGRATION: LESSONS FROM LOW- AND MIDDLE-INCOME COUNTRIES

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## Abstract

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This paper analyses the relationship between human development and migration. In particular, it tests whether migration, as a function of human development, follows an inverted U-shaped curve, known as mobility transition. Understanding this relationship is important since many Western politicians have implemented socioeconomic development strategies in migrant source countries with the aim to reduce migration. Considering that previous studies have mainly concentrated on the economic factors of development, this study introduces the broader human development index, determined by income, health and education, as the main explanatory variable. Analysing the rate of migration from 111 low- and middle-income countries into the aggregate of 15 OECD countries between 2000 and 2010, the study finds strong support for the inverted U-shaped relationship between human development and migration. This indicates that development strategies aimed at reducing migration are misguided.

**Keywords:** Human Development, Migration, Mobility Transition

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## 1. INTRODUCTION

Since labour moves less freely than goods and capital across national borders, many previous papers have neglected migration in the study of international factor movements (Keohane & Milner, 1996; Gilpin, 2000; Garrett, 2000). However, Keohane and Milner (1996) themselves emphasised more than two decades ago: "In some areas...this assumption is already problematic; and in future work, serious attention should be given to including migration in the analysis of internationalisation" (p. 259). This is the starting point for the present study, which aims to investigate the main determinants of international migration. It uses the International Organisation for Migration's (IOM, 2011) definition of migration as "all cases where the decision to migrate is taken freely...for reasons of 'personal convenience' and without intervention of an external compelling factor" (p. 61). According to this definition, people move in order to improve their personal well-being.

The last two decades have witnessed rising cross-border migration, predominantly from low- and middle-income countries<sup>1</sup> to member states of the Organisation of Economic Development (OECD, 2016). Migrants account for more than ten percent of the population in these highly developed countries. This includes European states, which used to be typical emigration countries throughout the nineteenth century (Lucas, 2014). Global migration, particularly from Africa, is expected to increase further within the next years, posing challenges to sending and to receiving countries (Smith, 2019). While origin states have remained largely inactive in reducing emigration, receiving governments have strongly restricted immigration within the last century (Hanson, 2010). In face of the inability to manage growing immigrant pressures through legal barriers (de Haas, 2007), Western politicians have

<sup>1</sup> The study uses the World Bank's (2011) definition of low-income countries (GNI p.c. lower than \$1,026) and middle-income countries (GNI p.c. between \$1,026 and \$12,475). It will subsequently use this definition to refer to developing countries.

increasingly turned to policies that aim at reducing migration through fostering socioeconomic development in source countries. For instance, the recently proposed United Nations (UN, 2018) Global Compact for Migration seeks to “minimize the adverse drivers and structural factors that compel people to leave their country of origin” (p. 5).

This approach stands in strong contrast to the predominant academic literature on the development-migration nexus in the field of international political economy. The theory of mobility transition supposes an inverted U-shaped relationship between development and migration. Development increases individual capabilities and demographic pressure to migrate and therefore, at least in the short term, encourages international migrant flows. Only after some turning point, further, development raises people’s aspirations to stay at home and migration recedes again (Zelinsky, 1971).

The main aim of this study is to empirically reinvestigate the relationship between development and international migration. Previous analyses on global migration have primarily focused on its economic drivers (Borjas, 1987; Faini & Venturini, 1994). Yet, people do not only migrate due to economic reasons, most importantly income differentials, but also due to differences in infrastructure, demographics and politics (Issah et al., 2005). This study broadens the narrower, income-focused view of development by applying Amartya Sen’s capability approach of human development. Sen (1999) defines development as “a process of expanding the real freedoms that people enjoy” (p. 3). Freedoms include growth in individual income, but also social aspects such as education and healthcare as well as political and civil rights. Sen (1999) conceptualized these freedoms as human capabilities, which refer to the ability of people to lead lives that they consider valuable.

The present paper hypothesizes that the inverted U-shaped impact of development on global migration, as suggested by the theory of mobility transition, not only depends on economic growth but also on broader socioeconomic progress, particularly in the areas of health and education. In order to test this hypothesis in a panel analysis, the study uses the UN Development Program’s (UNDP) Human Development Index (HDI) as the main explanatory variable. The latter is inspired by Sen’s capability approach and includes proxies for wealth, health and education (UNDP, 2016). In a second model, the different components of HDI are included separately, in order to identify their individual effects on migration. The dependent variable is based on annual data covering migrant inflows to the aggregate of 15 OECD countries<sup>2</sup> from 111 low- and middle-income countries in Africa, Asia, Latin America, and peripheral Europe. The OECD International Migration Database provides this data.

The empirical results support the hypothesis of this paper. Progress in human development as proxied by HDI has the predicted inverse U-shaped effect on migration, even though its impact is stronger on the upside of the curve than on the downside. This infers that current socioeconomic development policies with the aim to reduce

migration may actually incite the contrary. Provided that such policies are effective, which may be a problematic proposition for itself, they may encourage migration in the short run.

The paper is organized as follows: Section 2 provides a comprehensive literature review on the fields of migration and development. It focuses on the challenges of global migration, analyses policy responses to migration, discusses the theoretical relationship between development and migration and reviews previous empirical evidence for this relationship. Section 3 describes the data set and the econometric model of the study. Section 4 illustrates and discusses the results of the statistical analysis. Section 5 concludes the paper.

## 2. LITERATURE REVIEW

This section aims at laying the foundation for the subsequent empirical analysis of the nexus between development and global migration by providing a comprehensive review of the current state of literature in the field of study. Relevant aspects encompass challenges of global migration from a home and host country perspective as well as two common, alternative policy responses to migration: immigration restrictions in host countries and development strategies in countries of origin. Moreover, the section discusses the theoretical relationship between development and migration and reviews previous empirical evidence for this relationship.

### 2.1. The challenges of global migration

Migration has controversial economic, social and political impacts on home as well as on host countries, providing ground for restrictive policies. The consequences for host countries are usually positive as long as migration is kept within certain boundaries. However, if it exceeds these limits, its effects turn to be negative (Collier, 2013). Looking at home countries, opportunities overweigh for large sending states. Yet, especially for small and poor countries, overall consequences are likely to be unfavourable.

#### 2.1.1. The host country perspective

Regarding the economic effects of migration on host countries, additional labour supply should raise the production output (Hamilton & Whalley, 1984). Furthermore, immigration of young workers could diminish the national pension problem, which Western countries encounter due to decreasing birth rates (UN, 2001). Yet, if host countries experience persistent, massive immigration, they might face negative impacts. First, an increased labour supply suppresses wages and can thereby cause distributional conflicts between domestic workers and migrants with skills that match their own (Borjas, 2003). Second, immigrants often lack the required skills and are thus difficult to integrate into the labour market. An unlimited number of unqualified people may increase a host state’s fiscal burden through the use of public goods and services without contributing to tax income (Hanson et al., 2007). In the face of these risks, natives tend to oppose immigration (Bermeo & Leblang, 2015).

<sup>2</sup> Australia, Austria, Belgium Canada, Denmark, Finland, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, United Kingdom, US.

Just like its economic effects, the social consequences of moderate migration are positive for host countries. Social diversity increases productivity through enhanced creativity and problem-solving perspectives. Moreover, it raises the liveliness of society (Collier, 2013). However, anti-immigrant sentiments among natives are often fuelled by the need to tolerate diverse and partly conflicting social norms. For instance, Mayda (2006) finds that “both security worries and cultural and national identity issues are key noneconomic factors affecting immigration opinions” (p. 525).

### *2.1.2. The home country perspective*

Looking at origin countries, emigration usually has a positive impact on the wages of those left behind. However, this effect is supposed to be rather small (Collier, 2013). In turn, the adverse impact of the so-called ‘brain drain’, a loss of qualified labour, should outweigh the positive effect on wages. It reduces domestic capacities for innovation and adaptation of new technologies within sending countries (Smith, 2019). Some scholars have suggested reconsidering this loss of qualified labour as ‘brain gain’. They base their argument on two grounds. On the one hand, source countries could benefit from migration if emigrants move abroad for educational purposes and subsequently return home (Kapur, 2014). On the other hand, financial remittances, “funds that migrants send to families in their countries of origin” (Easton & Montinola, 2017, p. 349), may benefit home countries. Nevertheless, these gains are neglectable for the majority of developing countries. While large countries such as China and India indeed benefit from well-educated returning migrants, smaller and more deprived countries face a minuscule probability that foreign students move back to their homelands (Collier, 2013). Furthermore, financial remittances should at most balance the emigration-induced drop in productivity.

The social consequences of emigration are the exact opposite of those of immigration. To the same extent that migration increases diversity in host countries, it decreases it in home countries. This may either be positive or negative.

Similarly, the political impacts of emigration on home countries are controversial. The leading academics Acemoglu and Robinson (2013) cite the lack of well-functioning democratic institutions, ensuring accountability towards voters, due regard of human rights and a proper rule of law, as the main reason for persistent poverty in certain countries. Social remittances, “ideas, behaviours, identities, and social capital that flow from receiving to sending country communities” (Levitt, 1998, p. 926), may increase people’s capacities to exercise pressure on political elites towards democratic reform (Maydom, 2017). However, according to Collier (2013) remittances cannot compensate for the decrease in political participation resulting from emigration. People who suffer from suppressive governments have the choice between exit or voice, they can either protest for political change or leave the country (Hirschman, 1970). Usually, the more educated and politically motivated people make use of their exit option and leave behind a quieter part

of the population that does not pressure politicians towards democratic reform.

## **2.2. Policy responses to migration**

Despite its partly negative impacts, most sending country governments do not restrict emigration. In turn, international migration policies are largely under the control of destination states (Hanson, 2010). Democratic receiving governments have strong incentives to reduce migrant flows. First and foremost, they are accountable to a public opinion shaped by anti-immigrant sentiments (Bermeo & Leblang, 2015).

### *2.2.1. Restrictive immigration policies*

The main response of host country governments to unsought migration in the post-war era has been the introduction of restrictive immigration laws (such as visas and residence permits), strict integration criteria, increased border controls, carrier sanctions and return migration policies. Without a doubt, restrictive immigration policies have significantly reduced the number of legal immigrants (de Haas, 2007).

At the same time, however, they have had the unintended effect of increasing illegal arrivals (ibid.). Even though international migration is no longer as unrestricted as it was for European emigrants in the nineteenth century, the economic and social forces driving migration in developing countries have become larger than they were in times of open borders. The demand for exit is huge, thus encouraging illegal immigration (Hatton & Williamson, 2003).

Furthermore, restrictive immigration policies often contain loopholes so that governments accept unwanted legal migrants. For instance, Western European countries had enacted a closed-door policy after the end of their guest worker programmes in the late 1970s. Nevertheless, family reunification policies led to continued immigration by that time (Mayda, 2010).

Finally, it is important to consider that immigration may not be as unfavourable as policymakers officially declare. Firms are interested in cheap labour demanding a minimum of security rights (Castles & Miller, 2003). Massey and colleagues (1998) note that “elected leaders and bureaucrats increasingly have turned to symbolic policy instruments to create an appearance of control” (p. 288).

### *2.2.2. Development policies as a tool to reduce migration*

One alternative to immigration restrictions, increasingly followed by receiving country politicians, is to encourage development in migrant source countries. These policies aim to reduce incentives for migration by decreasing differences in livelihood opportunities between sending and destination countries (Bermeo & Leblang, 2015). Over two decades ago, the then Danish Prime Minister Rasmussen used migration as a threat in order to increase foreign aid: “If you don’t help the third world...then you will have these poor people in

our society” (Rasmusen, as cited in de Haas, 2007, p. 827).

In recent years, the focus amongst development experts has shifted from foreign aid towards public-private partnerships for political, social and economic cooperation among ‘equals’ (BMZ, 2017). The goal of many of these strategies to combat migration through development has remained the same.

The French president Emmanuel Macron (2017) emphasised in his famous speech at the Sorbonne that “even the most robust borders and most ambitious security policy will not suffice to curb long-term migration flows. Only stabilization and development in countries of origin will dry them up” (p. 761). He called for a development partnership with Africa in order to encourage investment, education, health and energy.

Similarly, Germany turned its focus on Africa in 2017, mainly in response to the 2015 refugee crisis (Schuknecht et al., 2018). In its ‘Marshall Plan with Africa’, the German government re-oriented its federal development strategy to address social, political and economic issues in an overall approach (BMZ, 2017). Chancellor Angela Merkel described the importance of Africa for German politics with the following words: “The well-being of Africa is in the best interest of Germany” (Detjen, 2016, p. 1). Germany also made Africa a focus of its G-20 presidency in 2017 and initiated the ‘G-20 Compact with Africa’ (ibid.). The Compact is based on the insights of the development economist Paul Collier, who advocates mutual investment-agreements between G-20 members and the most ambitious African states in order to ameliorate their general investment climate (G-20, 2017). Again, the purpose is to reduce migrant pressures from Africa (Schuknecht et al., 2018).

Furthermore, the European Council initiated a new migration partnership framework in 2016 in order to encourage cooperation with five priority migrant source countries: Ethiopia, Mali, Niger, Nigeria and Senegal. The goal is to address the root causes of irregular migration through economic, social and political development initiatives (EC, 2016).

Finally, the UN General Assembly declared to develop a ‘Global Compact for Safe, Orderly and Regular Migration’ in September 2016. The compact is supposed to be the first intergovernmentally negotiated, holistic agreement on global migration and is planned to be agreed upon in December 2018 (UN, 2018). Objective two of the compact is to “create conducive political, economic and sustainable lives” in migrants’ own countries and to ensure that “desperation and deteriorating environments do not compel them to seek a livelihood elsewhere through irregular migration” (p. 7-8).

### 2.3. The mobility transition

In contrast to common beliefs among policymakers, in reality, it is frequently observed that emigration from developing countries increases with rising levels of development at the origin. Nineteenth-century emigration from Europe provides a perfect example of this trend. Emigration sharply increased when the differences in livelihood opportunities between home and abroad decreased. Only after

reaching a peak, it subsequently fell again (Massey, 1988; Hatton & Williamson, 1998). The theory of the mobility transition tries to explain this non-linear trend.

#### 2.3.1. Theoretical considerations

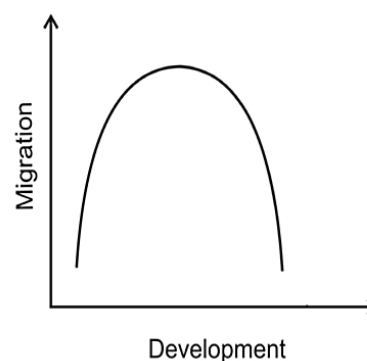
So far, no uniform and holistic theory of international migration exist. Instead, different sets of theories have evolved independently from one another (Clemens, 2014). This is because migration is a complex phenomenon, which is difficult to distinguish from other political and socio-economic processes (de Haas, 2007).

The conventional wisdom that development reduces migration is based on the earliest set of theories, collectively referred to as ‘the neoclassical migration model’. It concentrates on divergent wages and employment conditions between different countries as well as on migration costs. Rational individual actors decide to migrate if the benefits of moving from worse to better economic conditions exceed the costs (Isaac, 1947; Lewis, 1954; Ravenstein, 1885). Migration can thus be seen as a form of investment in human capital. Higher wages in source countries strictly decrease incentives to emigrate (Schultz, 1961; Sjaastad, 1962). Economic development and migration are perfect substitutes. Even as these theories have been further developed to account for income distribution (Roy, 1951; Borjas, 1987) and risk (Todaro, 1969; Harris & Todaro, 1970), they continue to predict that higher incomes at the origin decrease migration.

In contrast to this initial set of theories, scholars since the 1970s have conceptualised the evolution of international migration as dynamic progress from low mobility to high mobility with a subsequent drop in cross-border movements. Based on historical evidence, this inverted-U shaped relationship between development and migration is more realistic than the neoclassical model. It has been known under several names, including ‘mobility transition’ (Zelinsky, 1971), ‘migration curve’ (Akerman, 1976), ‘migration transition’ (Gould, 1979), ‘migration hump’ (Martin, 1993) and ‘emigration lifecycle’ (Hatton & Williamson, 1998). The present study uses Zelinsky’s (1971) definition and refers to the non-linear relationship between development and migration as ‘mobility transition’.

Figure 1 describes the mobility transition curve, where the horizontal axis represents the development and vertical axis migration.

**Figure 1.** Simple model of the mobility transition curve



Source: Own illustration

Similar to neo-classical migration scholars, the majority of researchers following the theory of mobility transition have primarily focused on income differentials and migration costs when analysing the development migration nexus. They explain the inverted-U shaped relationship as a result of the easing of poverty constraints through economic development (Vanderkamp, 1971; Faini & Venturini, 1994; Ghatak & Levine, 1994). Financing a long-distance move is often impossible for the very poor. Increases in income facilitate the investment in migration and international mobility rises to a peak. After some turning point, the negative effect of the diminishing income differential between origin and destination offsets the reduced poverty constraint and people stay at home again.

However, economic opportunities are not the only reason for migration. Another, not necessarily competing, the explanation for the non-linear relationship is that non-economic drivers such as demographic changes and improvements in education coincide with the growth in national income. These forces may encourage higher levels of migration in the initial stages of development (Hatton & Williamson, 2002).

Finally, there have been attempts to complement migration models based on economic forces by other mediating factors such as national migration policies, political circumstances and social networks at migrant destinations (Nyberg-Sorensen et al., 2002).

Different researchers have emphasised different theoretical components of the mobility transition. Many of these have been reviewed by de Haas (2010a), Clemens (2014) and Williamson (2014). As the present study views development as a process of expanding different kinds of freedoms, it subsequently provides a survey of the economic, social and political aspects influencing migration at the sending country supply side. It hypothesises that the inverse-U shaped curve of the mobility transition particularly depends on rises in income, education and health. The upside of the curve should be further enforced by network effects, structural changes and political repercussions.

#### *Poverty constraints and income differentials*

As briefly outlined, migration is a costly investment that prerequisites financial expenses for transportation, passports, visa fees and overseas accommodation (McKenzie & Rapoport, 2007). Progress in development may enable an increasing amount of people to finance these costs as a result of rising per capita income (Vanderkamp, 1971; Faini & Venturini, 1994; Ghatak & Levine, 1994; Hatton & Williamson, 1998). As soon as the first migrants have successfully settled down in destination countries, remittances often help friends or family members at home to finance subsequent migration, thus accelerating cross-border movements (Hatton & Williamson, 1998). Moreover, development at the origin may lead to an improved financial infrastructure, which allows loan-financed migration (Clemens, 2014). Hence, global migration should initially increase with proceeding development. However, at the same time, further development decreases the income gap between origin and destination, thus diminishing the incentives to leave.

After some turning point, people should, therefore, prefer to stay at home (Vanderkamp, 1971; Faini & Venturini, 1994; Ghatak & Levine, 1994; Hatton & Williamson, 1998).

#### *Demographic transition*

Human development is also inherent with improved and more widely accessible health service (Sen, 1999). In general, this leads to decreasing child mortality and increased life expectancy well before fertility rates decline (Lee, 2003). Thus, the population and especially the share of young people rise. Even in times of economic growth, the demographic transition may cause increasing unemployment and thus exert upward emigration pressure. This force is aggravated by the fact that young people are more mobile and therefore more likely to migrate than their elder compatriots. However, when the demographic transition ends, migration should decline again with further development. Easterlin (1961) first suggested the demographic transition as an explanation for initially simultaneous increases in development and migration. It has been further elaborated by Zelinsky (1971), Hatton and Williamson (1998) and Lucas (2006).

#### *Education revolution*

Another important indicator of human development is the expansion of education (Sen, 1999). Similar to rises in income and population, education should increase migration pressures in the first place. On the one hand, literacy and improved access to information through modern means of communication rise people's consciousness of economic, social and political opportunities in other parts of the world. This may increase their aspirations for migration (de Haas, 2010b). On the other hand, more educated people are more likely to fulfil legal immigration requirements in migrant-destination countries. Visa classifications like skilled-employment based work visas, business visas, 'points-based' settler visas and student visas are all more easily available to high-skilled migrants. The latter also have a higher chance to surpass non-visa barriers such as language requirements (Czaika & de Haas, 2012). Thus, as education rises in face of proceeding human development, emigration rates should be on the upside. However, educational advancement abates after some time and upward migration pressure should fade (Williamson, 2014).

#### *Network effects*

The upside of the mobility transition is additionally enforced by network effects between migrant origin and destination countries. Former migrants often keep close ties with their friends and families at home. The former can provide potential migrants at the origin with information about legal and illegal channels of movement, immigration requirements, job opportunities and accommodation possibilities at the destination (Bermeo & Leblang, 2015). Consequently, as soon as the first workers have migrated, network effects may significantly increase migration rates (Massey, 1988; Hatton & Williamson, 2002; Docquier et al., 2014).

### *Structural change and worker dislocation*

Especially economic development is accompanied by structural changes that alter individual preferences for migration at the origin. Industrialisation generally leads to declining labour demand in agriculture and increasing demand for workers in the industrial and services environment. This can be associated with rising rural-urban migration (Zelinksy, 1971). Indeed, internal migration is especially common in developing countries (Lucas, 2006). At the same time, high rates of internal migration are likely to increase international migration pressure (Massey, 1988).

### *Political transition*

To complicate matters, development within the most deprived sending countries is often accompanied by violent political transitions (Zolberg, 1981). Conflicts, limitations of political freedoms and human rights abuses in connection with state reformations are beyond the primary drivers of international cross-border movements. Mass outflows from Eastern Europe and the former Soviet Union in the early 1990s are typical examples of migration resulting from political transitions, but also from better opportunities to exit (Williamson, 2014). It is thus extremely difficult to clearly differentiate between voluntary and forced cross-border movement. What begins as development related migration may be transformed into forced movements and vice versa (Nyberg-Sorenson et al., 2002). For this reason, it is important to account for political factors when analysing the theory of mobility transition.

### *2.3.2. Previous empirical evidence*

To the best of this author's knowledge, only a few appropriate empirical analyses have been conducted to test the mobility transition theory for current international migration. Due to the limited availability of data, many studies have solely considered immigration to one single destination country (Hatton, 1995; Vogler & Rotte, 2000). Furthermore, even though research proposes various determinants of migration, most empirical models solely have concentrated on a limited number of exogenous variables, notably income, while neglecting other theoretically important influencing factors like education and political freedoms (de Haas, 2010b). For instance, explicitly concentrating on wages, Faini and Venturini (1994) found that emigration from Greece, Portugal, Spain and Turkey positively correlated with GDP growth at low-income levels, but negatively correlated with the same variable at higher income levels. Similarly, Vogler and Rotte (2000) provided evidence for the expected inverted-U shaped relationship between per capita income and immigration to Germany from 86 developing countries in Africa and Asia between 1981 and 1995.

One of the most comprehensive bilateral empirical studies of the mobility transition is the work by Hatton and Williamson (1998) on emigration from Europe to the United States (US) between 1850 and 1913. Their results indicated that European emigration initially rose as the income gap between

migrant origin and destination declined. They explained this trend as a result of demographic pressures, the easing of poverty constraints and to a lesser extent structural shifts away from agriculture. Furthermore, they provided evidence for the positive effect of migrant networks in host countries.

More recent empirical studies have analysed migrant flows to various destination countries, though most of these works did not directly test for the bell-shaped relationship between development and migration. Again, many of them have only considered a limited amount of variables. For example, Lucas (2006) investigated migrant flows from Sub-Saharan African countries to OECD destinations between 1990 and 2000. He found that countries with a per capita income above 1.000 US dollars had higher cross-border emigration rates than those below this threshold.

A more comprehensive analysis is provided by Mayda (2010). She looked at the determinants of migration into 14 OECD countries between 1980 and 1995. While she did not test for non-linear effects, one of her main results was that bilateral migration not only increased with rising per capita income in the destination country, confirming the positive effect of income differentials but also with rising per capita income in the source country. The latter result supports the upside of the mobility transition. Mayda (2010) also investigated the impact of demographic, geographical, cultural and network determinants. She found particularly strong evidence for network effects.

Similarly, Docquier and colleagues (2014) analysed economic, political, cultural and network effects on migrant flows from 138 source countries to 30 primary destination countries between 2000 and 2010. Again, they found strong evidence for positive network effects. Furthermore, they provided evidence for the positive pull effect of economic growth in destination countries. Comparable results delivered Ruysen et al. (2014) for immigrant flows to 19 OECD countries between 1998 and 2007.

With one exception of de Haas' (2010b) seminal work on migration patterns between 162 countries, there has been no comprehensive study that has analysed migrant flows to a variety of countries and has thereby accounted for the non-linear effect of development in a broader socioeconomic and political sense. Similar to the intention of the present study, de Haas (2010b) used HDI as a proxy for development. In a second step, he disaggregated HDI into GDP per capita and literacy. However, one significant limitation is the cross-sectional nature of his study. The remainder of this paper aims to provide a similar empirical test for panel data.

## **3. DATA AND EMPIRICAL STRATEGY**

### **3.1. Data**

The biggest challenge of estimating an empirical model of global migration flows is the limited availability of comprehensive and reliable data. Nevertheless, in recent years, the scope and quality of migration data has significantly improved (Fitzgerald et al., 2014). The OECD (2018) International Migration Database provides information on country-specific immigrant inflows to OECD member states based on residence and

work permits as well as on national population registers (the data is not completely equivalent as some states define the origin of immigrants based on citizenship, while others based on country of birth. According to Mayda (2010) it is however reasonable to assume that immigration changes over time are comparable). Thus, the dataset only covers legal immigration. However, not all OECD member states reliably report on annual legal migrant inflows. The present study only includes 15 OECD destination countries (Australia, Austria, Belgium, Canada, Denmark, Germany, Finland, France, Italy, Netherlands, Norway, Spain, Sweden, UK, US) for which full information on yearly immigrant inflows by country of origin is available. The final dataset covers immigrant inflows from 48 African, 35 Asian, 23 Latin American and 5 peripheral European countries between 2000 and 2010. According to the World Bank (2011), 37 of those countries are considered low-income and 74 middle-income states. Reliable and complete immigration data for all studied countries of origin is not available for the period before 2000. The observation period ends in 2010 for one important reason: In Spring 2011, the Arab Spring and the subsequent civil wars in the Middle East caused a sharp increase in forced migration (Bonfiglio, 2012). The present study aims to exclude thereto associated potential biases.

The OECD International Migration Database also provides data on migrant stocks per member states broken down by country of origin. Certain countries such as Canada only report these values every five years. The present analysis estimates

missing values based on average annual changes in migrant stocks.

In a second step, data from the International Migration Database is merged with socioeconomic and political information on the migrant origin and destination countries. Data on macroeconomic and demographic variables comes from the World Bank's (2018a) development indicators. The political indicators are taken from the Freedom House International (2018) and the World Bank (2018b) governance databank. The UNDP (2016) provides annual data on HDI, expected years of schooling and life expectancy at birth in migrant source countries. The final unbalanced panel data set includes 1221 observations.

### 3.2. Econometric model

Following Vogler and Rotte (2000), this study employs basic panel data regression methods to examine whether the relationship between development and the rate of immigration from developing country (*i*) to the aggregate of the selected 15 OECD countries (*d*) takes the expected bell-shaped form. However, in contrast to Vogler and Rotte (2000), who used country (*i*)'s income as a proxy for economic development, this paper wants to test the presumed added value of using a broader definition of human development instead of one solely considering income. Therefore, the primary model of the analysis replaces gross national income per capita (GNI p.c.) with HDI as the main explanatory variable:

$$m_{idt} = \beta_0 + \beta_1(HDI_{dt}/HDI_{it}) + \beta_2HDI_{it} + \beta_3HDI_{it}^2 + \beta_4GDPGrowth_{it} + \beta_5UrbPopGrowth_{it} + \beta_6PolRights_{it} + \beta_7PolStab_{it} + \beta_8Network_{it} + \beta_9Col_{dit} + \beta_{10}ComLan_{dit} + \varepsilon_{i,t} \quad (1)$$

In order to analyse the relative contribution of the different components within HDI, a second model replaces HDI and its squared term by

separate linear and quadratic proxies for wealth (income per capita), health (life expectancy at birth) and education (expected years of schooling):

$$m_{idt} = \beta_0 + \beta_1(HDI_{dt}/HDI_{it}) + \beta_2GNI_{it} + \beta_3GNI_{it}^2 + \beta_4LifeExp_{it} + \beta_5LifeExp_{it}^2 + \beta_6Schooling_{it} + \beta_7Schooling_{it}^2 + \beta_8GDPGrowth_{it} + \beta_9UrbPopGrowth_{it} + \beta_{10}PolRights_{it} + \beta_{11}PolStab_{it} + \beta_{12}Network_{it} + \beta_{13}Col_{dit} + \beta_{14}ComLan_{dit} + \varepsilon_{i,t} \quad (2)$$

To estimate the specified empirical models, the study uses three different panel data methods: ordinary least squares (OLS), random effects (RE) and fixed effects (FE). The latter two account for omitted country specific error terms (unobserved heterogeneity). In order to determine whether a pooled OLS model is appropriate, the Breusch-Pagan (1980) test can be conducted. It compares the OLS model to the RE model and tests the null hypothesis that the variance of the country-specific error terms is zero. If the null hypothesis is rejected, the OLS model is not appropriate. In a second step, the Hausman (1978) test determines whether country-specific determinants should be treated as FE or RE. It tests the null hypothesis of zero correlation between explanatory variables and unobserved heterogeneity. If it is refused, one should rely on FE estimates instead of RE estimates.

#### 3.2.1. Dependent variable

The dependent variable ( $m_{idt}$ ) represents the rate of immigration. It is defined as the natural logarithm

(*ln*) of bilateral migrant flows from a country of origin (*i*) to the aggregate of the 15 OECD destination countries (*d*) at time (*t*) divided by the population of sending country (*i*) at time (*t*) in percent. Most existing studies of migration determinants have analysed absolute migrant flows. However, it is important to note that large source countries send more migrants than small ones (de Haas, 2010b). In order to control for differences in population size between different sending countries, the study uses the annual immigration rate instead of absolute migrant inflows. The aggregate nature of the dependent variable is based on the following rationale: the model faces the difficulty that national fluctuations in restrictive immigrant policies by destination governments are hard to measure and quantify (Czaika & de Haas, 2013). Therefore, the proposed regression models do not control for legal immigration restrictions directly. However, the aggregate dependent variable should balance national fluctuations in restrictive immigrant policies.

### 3.2.2. Explanatory variables

#### Human development

The first set of explanatory variables covers measures used to estimate the average level of development in migrant source countries. Instead of controlling for development by employing per capita income indicators alone, this study uses the UNDP's broader HDI as a summary measure of the following three dimensions: 1) GNI p.c. in US dollars adjusted by purchasing power parity (PPP) as a proxy for wealth; 2) life expectancy at birth as a proxy for health and 3) expected years of schooling as a proxy for education. HDI is the average of standardized indices for each of the three dimensions. It takes values between 0 and 1 (UNDP, 2016).

The HDI ratio ( $HDI_{dt}/HDI_{it}$ ), as a proxy for differences in living standards between source country ( $i$ ) and destination countries ( $d$ ), is defined as average HDI of the 15 OECD destination countries divided by HDI of the sending country for each year. As an increase in this ratio is assumed to result in higher incentives for migration, the coefficient of the ratio is expected to be positive.

HDI ( $HDI_{it}$ ) and its squared term ( $HDI_{it}^2$ ), as measures of human development, are of crucial importance for this study. Their coefficients determine whether or not there exists an inverse U-shaped relationship between human development and migration. HDI is expected to have a positive coefficient. There are three reasons: first, the easing of the poverty constraint through rising income makes cross-border movements affordable to a broader share of the population (Williamson, 2014). Second, better health implies a decrease in child mortality. The latter is likely to exert demographic pressures on migration. Third, better education provides potential migrants with information about destination opportunities and equips them with the necessary skills to fulfil immigration criteria (de Haas, 2010b). However, these determinants are supposed to have the opposite effect after some turning point. On the one hand, a narrowing income gap between migrant origin and destination reduces incentives for migration (Faini & Venturini, 1994). On the other hand, the educational catch up and demographic pressures will end after some time (Williamson, 2014). Therefore, the quadratic term is expected to have a negative coefficient, revealing the classical pattern of the mobility transition.

In order to estimate the individual contribution of each of the dimensions within HDI, the study estimates a second model, which separately includes linear and quadratic proxies for wealth, health and education. As a proxy for wealth, the second model uses GNI p.c. in US dollars (PPP) ( $GNI_{it}$ ). It measures the average earning per resident in an economy. The information for the variable is provided by the World Bank's development indicators. For the explained reasons, it is expected to have a positive coefficient (Vogler & Rotte, 2000). To control for health, the second model includes information, provided by the UNDP, on life expectancy at birth in years within the sending country ( $i$ ) ( $LifeExp_{it}$ ). Again, it is expected to have a positive coefficient (Williamson, 2014). As a proxy for education, the second model uses UNDP's data on the expected years of schooling in country ( $i$ ) ( $Schooling_{it}$ ).

Likewise, this variable should have a positive coefficient (de Haas, 2010b). In order to capture non-linearity, the model includes the squared terms of all three variables ( $GNI_{it}^2$ ,  $LifeExp_{it}^2$  &  $Schooling_{it}^2$ ). In line with the theoretical considerations of the mobility transition, these should have a negative impact on migration (de Haas, 2010b; Williamson, 2014).

#### Structural factors

As argued earlier, migration may also be affected by structural change and worker dislocation (Zelinsky, 1971). The GDP growth rate ( $GDPGrowth_{it}$ ) in the migrant origin country ( $i$ ), provided by the World Bank, is a proxy for unemployment rates, which are barely available in developing countries. The growth in GDP captures a country's level of economic activity and should thus refer to the demand for labour (Vogler & Rotte, 2000). It is expected to have a negative coefficient.

The urban population growth rate ( $UrbPopGrowth_{it}$ ), also provided by the World Bank's development indicators, controls for the overall mobility of people in migrant sending countries as well as for rural-urban migration pressures resulting from structural change within the economy. Both factors should positively influence global migration.

#### Political factors

Political determinants potentially influencing migration are captured by two variables:  $PolRights_{it}$  and  $PolStab_{it}$ . Data for the political rights and civil liberties variable ( $PolRights_{it}$ ) comes from Freedom House International (2018). Political rights refer to the ability of citizens to participate in the political process. Civil liberties incorporate the freedom of individuals to express their political views, the provision of a rule of law and the protection of private property. Each category is assigned to a numerical rating, ranging from 1 (totally free) to 7 (not free at all). The ratings are based on reports from human rights organizations and governments, newspapers and other published source material. In order to ensure larger variation and better estimates, this study combines the two categories into one variable with a scale ranging from 2 to 14: 2 equals the best political conditions and 14 the worst. A restriction of civil liberties may incentivize people to leave their country of origin (de Haas, 2010b). Therefore, the variable is expected to have a positive coefficient.

The political stability and absence of violence variable ( $PolStab_{it}$ ) is based on the World Bank's governance indicators. It reflects the views of survey respondents and governance experts on the perceived likelihood that governments will be overthrown through violent actions. The index takes values between 0 (lowest rank) and 100 (highest rank) (World Bank, 2018b). The analysis of the present study uses this variable to control for involuntary forms of cross-border movements. It should influence migration negatively.



### Social and cultural factors

A final category of variables captures the social and cultural proximity between migrant origin and destination countries. As explained, social networks play a huge role in the choice of migrant destinations. People are more likely to migrate to countries where they have friends or relatives, facilitating and partly financing the arrival in a foreign environment (Docquier et al., 2014). In order to account for this effect, the analysis includes a network variable ( $Network_{it}$ ). It measures the number of foreigners of country ( $i$ ) living in the aggregate of countries ( $d$ ) as a percentage of the total population of country ( $i$ ). The variable should have a positive effect on global migration.

Moreover, the model includes a dummy variable ( $Col_{dit}$ ), which takes the value of 1 if one of the 15 destination countries ( $d$ ) was in a colonial relationship with country ( $i$ ). Otherwise, it assumes the value of 0. Past colonial connections may

provide better information of potential migrant destination countries. They should therefore encourage migration between those countries (Pedersen et al., 2008).

Another dummy variable ( $ComLan_{dit}$ ) controls for similar languages between countries. It equals 1 if the source country ( $i$ ) and one of the destination countries ( $d$ ) have a common language, 0 otherwise. As language similarities should encourage bilateral migration, the variable is expected to have a positive coefficient.

### Time trend

Finally, the analysis includes a time trend. Given that the other explanatory variables already account for a myriad of migration determinants, it should control for improved transportation and communication through technological progress (Vogler & Rotte, 2000).

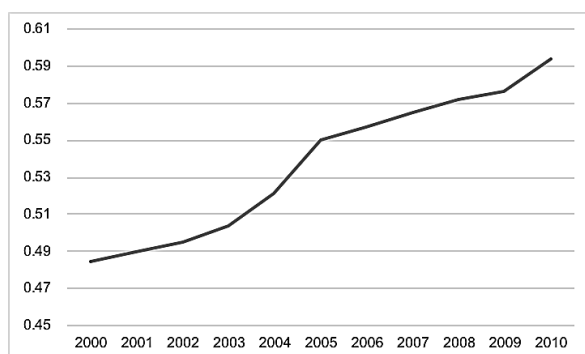
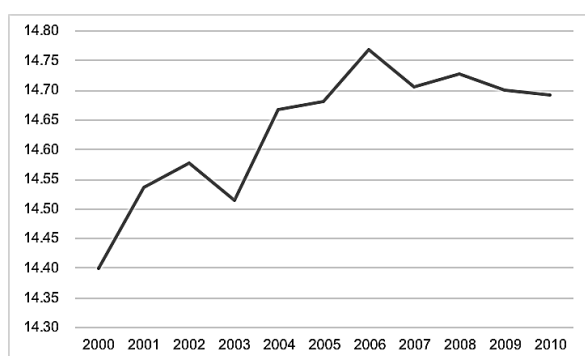
**Table 1.** Descriptive Statistics

| <i>Variables</i>                          | <i>Obs.</i> | <i>Mean</i> | <i>Std. Dev.</i> | <i>Min.</i> | <i>Max.</i> |
|---|-------------|-------------|------------------|-------------|-------------|
| <b>Dependent variable</b>                 |             |             |                  |             |             |
| Immigration rate (%)                      | 1221        | -2.903      | 1.499            | -7.184      | 0.619       |
| <b>Development variables</b>              |             |             |                  |             |             |
| HDI differential                          | 1165        | 1.457       | 0.471            | 1.140       | 3.393       |
| HDI                                       | 1165        | 0.568       | 0.135            | 0.255       | 0.787       |
| HDI squared                               | 1165        | 0.341       | 0.148            | 0.065       | 0.620       |
| GNI p.c.                                  | 1196        | 7.063       | 1.126            | 4.382       | 9.556       |
| GNI p.c. squared                          | 1196        | 51.150      | 15.968           | 19.200      | 91.320      |
| Life expectancy                           | 1210        | 22.200      |                  | 15.000      | 39.700      |
| Life expectancy squared                   | 1210        | 522.400     |                  | 225.00      | 1.576.000   |
| Schooling                                 | 1221        | 5.792       | 2.971            | 0.000       | 12.200      |
| Schooling squared                         | 1221        | 42.370      | 36.317           | 0.000       | 148.800     |
| <b>Structural factors</b>                 |             |             |                  |             |             |
| GDP growth (%)                            | 1213        | 5.082       | 5.478            | -33.100     | 63.380      |
| Urban pop. growth (%)                     | 1221        | 2.849       | 1.775            | -1.228      | 11.490      |
| <b>Political factors</b>                  |             |             |                  |             |             |
| Political rights & civil liberties        | 1221        | 8.483       | 3.317            | 2.000       | 14.000      |
| Political stability & absence of violence | 1221        | 32.900      | 21.946           | 0.000       | 94.690      |
| <b>Social and cultural factors</b>        |             |             |                  |             |             |
| Social network (%)                        | 1221        | -0.260      | 1.864            | -5.254      | 4.295       |
| Former colony                             | 1221        | 0.568       | 0.496            | 0.000       | 1.000       |
| Common language                           | 1221        | 0.550       | 0.498            | 0.000       | 1.000       |

*Notes:* All continuous variables are logged for convenience in explaining results except for life expectancy, years of schooling and growth rates.

Table 1 presents descriptive statistics for all variables. The ln of the immigration rate ranges from -7.18 to 0.62 with a mean of -2.90 and a standard deviation of 1.50. The HDI difference between OECD destination countries and the sending country lies between 1.14 and 3.39, while the average is 1.46. This implies that the differential (between Niger and the OECD destination countries) of 3.39 is an outlier. Remarkably, the separate values for income, life expectancy and schooling are significantly higher than those for the composite HDI, which takes values between 0 and 1. The average GDP growth rate is 5.08 percent and the average urban population growth rate 2.85 percent. Cape Verde, Costa Rica, Dominica and Uruguay report the best political rights and civil liberties

indices of only 2 respectively for most of the sample period. Afghanistan, Cuba, Iraq, Myanmar, Sudan, Syria, Turkmenistan and Uzbekistan suffer from the worst political rights and civil liberties and report at least once during the sample period an index of 14. Iraq also records the lowest political stability index of only 0 in 2004. The highest value of 94.69 reports Bhutan in 2006. Due to its small size, Dominica's population living abroad accounts with 4.30 percent for the highest logged share of its home country population. 57 percent of migrant-sending countries share a colonial history with one of the 15 OECD destination countries. 55 percent of migrant-sending countries have a common language with one of the destination countries.

**Figure 2.** Average HDI of all migrant sending countries over time**Figure 3.** Total logged immigration rate of all migrant-sending countries over time

Figures 2 and 3 give the first hint at a potential inverted U-shaped relationship between development and migration. While the average HDI of all migrant-sending countries rises continuously over time (Figure 2), the rate of immigration to receiving countries reaches a peak in 2006 and then slightly declines again (Figure 3).

#### 4. REGRESSION RESULTS

Table 2 presents the results of the regression analyses for the two main models. The Breusch-Pagan statistics for both models exceed the critical value of 3.84 (X<sup>2</sup>-distributed) at the 95 percent significance level. This indicates the existence of unobserved heterogeneity (Baltagi, 2011). Furthermore, the Hausman statistics for both models are higher than the critical value of 23.69 (X<sup>2</sup>-distributed) for a significance level of 95 percent. This implies that the FE estimates are most reliable (ibid.). Therefore, the present study focuses on the FE results in Columns 3 and 6. Nevertheless, OLS and RE estimates are reported for reasons of comparison. Noticeable is the relatively low R-squared values, which measure the goodness-of-fit when compared to the OLS estimates. This can be linked to the high degree of unobserved heterogeneity between different countries, which is common in social sciences. However, even when small, the values of the adjusted R-squared are significantly different from zero, indicating that the

regression models have significant explanatory power (Kutner et al., 2005).

Column 3 shows the FE results for model 1. The development variables confirm the hypothesised mobility transition. The HDI differential has a positive impact on the rate of immigration to the aggregate of OECD sample states. A one-unit rise in this ratio increases the rate of immigration by 2.39 percentage points. For a given HDI differential, the estimated coefficients for HDI and its quadratic term are large in size and highly significant. As HDI in sending country (*i*) rises, the rate of immigrants from that country to the OECD sample states rises too (positive coefficient of HDI variable). However, after some point, as HDI increases further, the rate of immigrants falls again (negative coefficient of HDI squared variable). As expected, this implies that an overall increase in the three dimensions of income, life expectancy and schooling within HDI initially encourages global migration. As soon as these dimensions exceed certain levels, they reduce migration pressures again.

Nevertheless, the composite HDI variable does not say anything about the individual contribution of its different dimensions. In order to deepen insight into the complex bell-shaped relationship between human development and migration, the study has estimated a second model, which disentangles the different components of HDI. FE results for this model are shown in Column 6. Notably, the impacts of the disentangled variables on the rate of immigration are smaller than the joint effect of HDI. This can be linked to differences in scales. As described in the descriptive part, the detached variables take larger values than HDI. Hence, a one-unit change in the detached variables is relatively smaller than a one-unit change in HDI.

Looking at the results in Column 6, the effect of GNI p.c. is positive and significant at the one percent level. The effect of its squared term is significantly negative. This confirms the assumption that rising income enables more people in developing countries to finance costly cross-border moves. However, after a certain point, the income gap between migrant sending and receiving countries has narrowed to a level where incentives for migration decline.

Similar to GNI p.c., life expectancy has a positive and significant impact on the rate of immigration to OECD sample states. The coefficient of its squared term is negative, but not significant for the FE regression. Even though, the evidence is weaker than for GNI p.c., the results support the hypothesised mobility transition. Higher life expectancy infers a decline in child mortality. This increases demographic pressures on migration, thus explaining the positive and significant coefficient of the variable. Usually, lower child mortality is at some point followed by lower fertility rates. This should decrease migration pressures again, supporting the negative coefficient of life expectancy's squared term. A possible explanation for the lack of significance is that this transition has not taken place yet to a sufficient extent.

Table 2. Main regression analyses

| Variables                                   | Ln Immigration rate   |                       |                       | Ln immigration rate  |                      |                      |
|---|-----------------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|
|   | (1) OLS               | (2) Random            | (3) Fixed             | (4) OLS              | (5) Random           | (6) Fixed            |
| Intercept                                   | 14.590***<br>(3.513)  | -13.373***<br>(3.360) |                       | -6.401***<br>(1.364) | -8.023***<br>(1.417) |                      |
| HDI differential                            | 2.303***<br>(0.640)   | 1.870***<br>(0.510)   | 2.388***<br>(0.579)   | -0.135<br>(0.166)    | -0.245<br>(0.176)    | 0.259<br>(0.194)     |
| HDI   | 23.380***<br>(6.967)  | 20.650***<br>(6.778)  | 27.810***<br>(6.667)  |                      |                      |                      |
| HDI squared                                 | -14.710***<br>(4.443) | -11.215**<br>(4.387)  | -15.843***<br>(4.203) |                      |                      |                      |
| GNI p.c.                                    |                       |                       |                       | 1.076***<br>(0.252)  | 1.010***<br>(0.250)  | 1.227***<br>(0.247)  |
| GNI p.c. squared                            |                       |                       |                       | -0.077***<br>(0.017) | -0.075***<br>(0.016) | -0.098***<br>(0.017) |
| Life expectancy                             |                       |                       |                       | 0.107***<br>(0.039)  | 0.268***<br>(0.059)  | 0.119*<br>(0.070)    |
| Life expectancy squared                     |                       |                       |                       | -0.002***<br>(0.000) | -0.004***<br>(0.001) | -0.002<br>(0.001)    |
| Schooling                                   |                       |                       |                       | -0.396***<br>(0.054) | -0.361***<br>(0.087) | -0.252**<br>(0.113)  |
| Schooling squared                           |                       |                       |                       | 0.028***<br>(0.003)  | 0.023***<br>(0.006)  | 0.021***<br>(0.007)  |
| GDP growth                                  | -0.001<br>(0.003)     | -0.003<br>(0.002)     | -0.005**<br>(0.002)   | -0.004<br>(0.004)    | -0.003<br>(0.002)    | -0.004*<br>(0.002)   |
| Urban population growth                     | 0.096***<br>(0.016)   | 0.097***<br>(0.022)   | 0.072***<br>(0.024)   | 0.059***<br>(0.018)  | 0.108***<br>(0.023)  | 0.085***<br>(0.024)  |
| Political rights and civil liberties        | 0.015**<br>(0.007)    | -0.024**<br>(1.149)   | -0.018<br>(0.013)     | 0.015**<br>(0.007)   | -0.022*<br>(0.012)   | -0.018<br>(0.013)    |
| Political stability and absence of violence | 0.001<br>(0.001)      | 0.000<br>(0.001)      | 0.000<br>(0.001)      | 0.001<br>(0.001)     | 0.002<br>(0.002)     | 0.002<br>(0.001)     |
| Social network                              | 0.072***<br>(0.017)   | 0.303***<br>(0.021)   | 0.134***<br>(0.022)   | 0.716***<br>(0.019)  | 0.322***<br>(0.021)  | 0.155***<br>(0.02)   |
| Former colony                               | 0.080<br>(0.045)      | -0.103<br>(0.120)     |                       | 0.056<br>(0.048)     | -0.121<br>(0.121)    |                      |
| Common language                             | 0.067<br>(0.049)      | 0.260**<br>(0.122)    |                       | 0.212***<br>(0.051)  | 0.347***<br>(0.124)  |                      |
| Observations                                | 1157                  | 1157                  | 1157                  | 1129                 | 1129                 | 1129                 |
| Adj. R2                                     | 0.800                 | 0.330                 | 0.169                 | 0.808                | 0.355                | 0.204                |
| Breusch-Pagan Test                          |                       | 114.06                |                       |                      | 120.72               |                      |
| Hausman Test                                |                       | 832.84                |                       |                      | 270.36               |                      |

Notes: Standard errors are robust to heteroscedasticity and reported in parentheses. \*\*\*, \*\*, \* indicate significance at the 1%/5%/10% levels. All regressions include a time trend. All continuous variables are logged for convenience in explaining results except for life expectancy, years of schooling and growth rates.

Surprisingly, schooling initially has a negative effect on the rate of immigration. Its quadratic term has a positive sign. These results are difficult to interpret, even though they support the potential value of disaggregating composite development indicators into different variables. One explanation for the unexpected relationship is that 'expected years of schooling' is an inaccurate proxy for education. For instance, Gruber and Kosack (2011) found that higher primary enrolment rates in developing countries are rarely accompanied by rising educational resources. Consequently, the quality of education available to primary students generally declines with an increase in schooling. However, it is difficult to explain why de Haas (2010b) found similar results to the present study when using 'literacy' as a proxy for education. Further analysis is necessary to investigate this U-shaped relationship, which is opposite to the effect of the other development indicators in this study.

The remaining explanatory variables show similar effects in both model specifications. As expected, the GDP growth rate has a negative effect on the rate of immigration, meaning that greater employment opportunities at home discourage migration. In turn, the urban population growth rate positively influences migration. This confirms the assumption that an increase in rural-urban

migration exerts pressure on international migration. The FE estimates for political variables are not statistically significant. Remarkable is the highly significant and positive effect of the social network variable. This supports the theoretical considerations that friends and family in migrant destination countries facilitate cross-border movements by providing information and social security. The dummy variables are dropped in the FE regressions, which only consider time-variant indicators (Baltagi, 2011). As presumed, the OLS and RE results infer that common languages between sending and receiving countries encourage migration.

To examine the relative importance of the different exogenous variables, Table 3 reports FE standardized beta coefficients for both regression models. The results show that development proxies have overwhelming importance in explaining the rate of immigration. Column 1 reveals that one standard deviation increase in HDI raises the rate of immigration by 3.76 percentage points. The coefficient of the squared HDI is negative but smaller in magnitude. This could infer that even though migration rates decline at higher levels of development, they do not drop to initial levels because of higher overall mobility (de Haas, 201b). GNI p.c. and its squared term appear to be the second most important explanatory variables,

followed by schooling and its quadratic term. However, the effect of schooling is difficult to explain and requires more detailed assessment. The

non-linear impact of life expectancy is slightly smaller than that of schooling, yet still higher than that of the remaining explanatory variables.

**Table 3.** Fixed effect regression analyses with standardized coefficients

| Variables                                 | Ln immigration rate |           |
|---|---------------------|-----------|
|   | (1)                 | (2)       |
| HDI differential                          | 1.124***            | 0.122     |
| HDI                                       | 3.762***            |           |
| HDI squared                               | -0.146***           |           |
| GNI p.c.                                  |                     | 1.381***  |
| GNI p.c. squared                          |                     | -1.562*** |
| Life expectancy                           |                     | 0.644*    |
| Life expectancy squared                   |                     | -0.526    |
| Schooling                                 |                     | -0.749**  |
| Schooling squared                         |                     | 0.774***  |
| GDP growth                                | -0.025**            | -0.023*   |
| Urban population growth                   | 0.129***            | 0.150***  |
| Political rights & civil liberties        | -0.058              | -0.060    |
| Political stability & absence of violence | -0.005              | 0.045     |
| Social network                            | 0.250***            | 0.289***  |
| Observations                              | 1157                | 1129      |
| Adj. R2                                   | 0.169               | 0.204     |

Notes:\*\*\*, \*\*, \* indicate significance at the 1%/5%/10% levels. All regressions include a time trend.

**Table 4.** Fixed effect regression analyses with standardized coefficients: Africa, Asia & Latin America

| Variables                                   | Ln Immigration rate (Top 5) |                     |                       | Ln immigration rate (Top 5) |                      |                      |
|---|-----------------------------|---------------------|-----------------------|-----------------------------|----------------------|----------------------|
|   | (1) Africa                  | (2) Asia            | (3) Latin America     | (4) Africa                  | (5) Asia             | (6) Latin America    |
| HDI differential                            | 0.633**<br>(0.306)          | 1.214<br>(0.968)    | 4.807*<br>(2.601)     | 0.019***<br>(0.089)         | -0.117<br>(0.214)    | 0.860*<br>(0.498)    |
| HDI   | 2.312**<br>(0.995)          | 5.503**<br>(2.794)  | 16.462***<br>(6.177)  |                             |                      |                      |
| HDI squared                                 | -1.784**<br>(0.704)         | -4.105**<br>(1.832) | -10.736***<br>(3.835) |                             |                      |                      |
| GNI p.c.                                    |                             |                     |                       | 0.526<br>(0.331)            | 2.212***<br>(0.462)  | -2.628**<br>(1.238)  |
| GNI p.c. squared                            |                             |                     |                       | -0.306<br>(0.310)           | -2.514***<br>(0.429) | 2.101*<br>(1.178)    |
| Life expectancy                             |                             |                     |                       | 0.844**<br>(0.396)          | -0.620<br>(0.623)    | -1.811<br>(1.168)    |
| Life expectancy squared                     |                             |                     |                       | -0.843**<br>(0.423)         | 0.572<br>(0.608)     | 1.693<br>(1.080)     |
| Schooling                                   |                             |                     |                       | 0.542 (0.295)               | -1.457**<br>(0.688)  | 4.191***<br>(1.071)  |
| Schooling squared                           |                             |                     |                       | -0.392<br>(0.264)           | 1.189**<br>(0.515)   | -3.842***<br>(0.927) |
| GDP growth                                  | 0.022<br>(0.014)            | -0.010<br>(0.020)   | -0.026***<br>(0.038)  | -0.025*<br>(0.014)          | -0.012<br>(0.025)    | -0.061*<br>(0.037)   |
| Urban population growth                     | 0.005<br>(0.041)            | -0.020<br>(0.073)   | 0.144<br>(0.164)      | 0.038 (0.042)               | -0.063<br>(0.070)    | 0.049<br>(0.174)     |
| Political rights, civil liberties           | -0.183***<br>(0.046)        | 0.060<br>(0.060)    | 0.471***<br>(0.151)   | -0.144***<br>(0.047)        | -0.037<br>(0.061)    | 0.585***<br>(0.156)  |
| Political stability and absence of violence | -0.099***<br>(0.036)        | 0.053<br>(0.055)    | -0.023<br>(0.135)     | -0.033<br>(0.039)           | -0.004<br>(0.062)    | 0.017<br>(0.146)     |
| Social network                              | 0.063**<br>(0.032)          | 1.100***<br>(0.138) | 0.026<br>(0.258)      | 0.086***<br>(0.032)         | 0.954***<br>(0.131)  | 0.114<br>(0.252)     |
| Observations                                | 506                         | 341                 | 249                   | 499                         | 331                  | 238                  |
| Adj. R2                                     | 0.266                       | 0.334               | 0.202                 | 0.293                       | 0.393                | 0.253                |

Notes: Standard errors are robust to heteroscedasticity and reported in parentheses. \*\*\*/ \*\*/ \* indicate significance at the 1%/5%/10% levels. All regressions include a time trend.

It is possible that there exist regional differences in migration predictions, depending on where developing countries are in their mobility transition. To further deepen empirical insights into the relationship between development and migration, separate regressions for each of the three main sending continents (Africa, Asia and Latin America) were run. The dependent variable was slightly adapted to only include inflows to the top five immigrant countries from the respective sending continents. Table 4 shows standardized coefficients for the sample splits. Columns 1, 2 and 3 reveal that an increase in the HDI differential

influences migration from Africa and Latin America positively. Furthermore, HDI has a positive and significant effect on migration from all three continents, with the effect being highest for Latin American sending countries. The impact of HDI squared is significantly negative for all sample splits, though again smaller in size than that of HDI. Columns 4, 5 and 6 provide information on the importance of the individual dimensions of HDI and give a hint at a more complex relationship.

Interestingly, among the development indicators for Africa (Column 4), only life expectancy and its squared term have significant coefficients.

Their impact on migration is as expected and larger than for the whole sample. Africa contains the most deprived of sending countries. Income may still be too low to have a significant effect on cross-border movements. At the same time, demographic pressures in Africa are high. As a result of decreasing child mortality combined with high fertility rates, 40 percent of the African population is less than fifteen years old (Smith, 2019). This leads to high demographic migration pressures and explains the highly positive impact of life expectancy on the rate of immigration. In line with the predictions that emigration pressures decline as soon as fertility rates decrease, the squared term of life expectancy for the African sample is negative. Similar to the total sample, GDP growth has a significantly negative and social network in destination countries a significantly positive impact on migration. Furthermore, political factors seem to play an important role in Africa. Surprisingly, the political rights and civil liberties variable has a negative coefficient, indicating that a worsening of political conditions leads to a decline in migration. This result is counterintuitive as one would expect more people to escape from suppressive regimes. It could be explained through stronger emigration restrictions by authoritarian regimes (McKenzie, 2005). However, further analysis to assess this relationship is necessary.

The results for Asia in Column 5 are similar to those for the whole sample. However, life expectancy and its squared term are not significant. GNI p.c. has a significant and positive effect on migration, while its squared term influences migration negatively. This may be explained by the dissolution of financial restrictions, which creates resources for migration. In the long run, rising income in sending countries decreases incentives for migration. Similar to the whole sample, schooling has a negative and its quadratic term a positive coefficient. This is difficult to explain and warrants more detailed assessment. Again, social networks have a significantly positive effect on the rate of immigration.

The estimates for Latin America in Column 6 are yet different. Other than expected, GNI p.c. has a significantly negative and its squared term a significantly positive coefficient. Hence, higher incomes initially decrease the rate of immigration. At the same time, schooling has the predicted positive effect on the rate of immigration while the coefficient of its squared term is negative. Schooling must thus significantly contribute to the bell-shaped effect of HDI in Column 3. It is important to note that the majority of Latin Americans immigrate to the US. The aggregate dependent variable for the Latin American sample may thus not properly offset changes in US immigration policies. The latter have become more restrictive in response to the 2001 terrorist attacks (Massey & Pren, 2012). Legal Latin American immigrants may, therefore, require high education levels. At the same time, these immigrants may have high wages in their countries of origin, so that increases in income levels between sending and receiving countries influence migration negatively, unless the increase in income is exorbitantly high. However, these potential explanations deserve further investigation. GDP growth has a significantly negative effect. The political rights and civil liberties variable has the expected positive impact on

migration from Latin America, indicating that less political freedom provides incentives to leave a country of origin.

## 5. CONCLUSION

Growing levels of global migration count as the world's greatest current and future challenges. While sending countries struggle with the adverse effects of brain drain, receiving countries face the challenge of integrating migrants from diverse cultures and nationalities into domestic labour markets and societies (Collier, 2013). Widespread anti-immigrant sentiments among citizens pressure democratically elected politicians in destination countries to limit immigration. One popular alternative to restrictive policies is to address the problem at the source. As most migrants leave their countries of origin in hope for improved living conditions abroad, Western politicians increasingly rely on development strategies aiming to reduce incentives for migration in sending countries (Bermeo and Leblang, 2013). However, this idea is in conflict with the theory of mobility transition, which predicts an inverse U-shaped relationship between development and migration (Zelinsky, 1971). This is because development increases people's capabilities and demographic pressure to migrate. Only in the long term, narrowing livelihood differences and decreasing population pressures will keep people from leaving their countries of origin. The present paper aimed to reassess the mobility transition curve. While previous studies had mainly focused on the economic determinants of development to explain the bell-shaped curve, this study tried to enrich the theoretical debate by introducing Amartya Sen's (1991) broader, the capabilities-based approach of human development. It hypothesised that the non-linear effect of development on global rates of migration, as proposed by the theory of mobility transition, not only depends on economic growth but also on broader socioeconomic progress. To test this hypothesis, the study ran several panel regressions based on a data set covering aggregate inflows to 15 OECD destination countries from 111 low- and middle-income countries in Africa, Asia, Latin America and peripheral Europe. It thereby estimated the impact of theoretically relevant development variables on migration.

The results supported the hypothesis of this paper. Progress in human development as proxied by HDI has the predicted inverse U-shaped effect on migration, even though its impact is stronger on the upside of the curve than on the downside. This could infer that even though migration drops after a certain point, it does not reach initial levels since higher human development leads to higher overall mobility. The explanatory power of HDI is higher than that of other exogenous variables. The robust outcomes indicate that the hypothesised mobility transition not only depends on rises in wealth but also on higher levels in health and education. The study also demonstrated the added value of disentangling different development indicators. This provided insights into partly opposite effects of detached development measures. While the linear and quadratic variables of GNI p.c. and life expectancy have the presumed bell-shaped effects, the U-shaped impact of schooling on the rate of

immigration is difficult to explain and deserves further assessment. Moreover, the analysis revealed that the effects of individual development indicators are contingent on region-specific circumstances. Especially the results for Latin America, whereby GNI p.c. has a negative and its squared term a positive impact on migration, require further research. While the study did not find strong support for a relation between political indicators and migration, the effect of social networks remained positive and significant throughout all estimates. This infers that friends and family in migrant destination countries play an important role in encouraging potential migrants to leave their countries of origin.

The present study is certainly not without limitations. Various theoretical and empirical puzzles remain and require more detailed assessment. In particular, it is difficult to understand why schooling initially has a negative effect on the rate of immigration, while its quadratic term has a positive sign. Further analysis is necessary to investigate this U-shaped relationship, which is opposite to the effect of the other development indicators in this study. Moreover, it is difficult to infer causality from a limited data set only accounting for legal, but not for illegal migration. One further weakness is that the study

did not directly control for immigration policies in destination countries. Future studies should account for the mentioned constraints by extending the observation period and controlling for immigration policies in destination countries.

Despite several limitations of the paper, the robust results imply that human development has the predicted bell-shaped effect on cross border movements. Hence, migration initially increases with higher levels of development. This leads the author of this paper to conclude that development strategies, aiming to reduce migration at the source, are based on a misguided assumption. Provided that such strategies are effective, they should initially incite the contrary to their intentions. More generally, this infers that migration has to be seen as an integral part of human development. Instead of considering migration as a 'problem to be solved', policymakers should face its challenges. They should encourage profound, transnational migration management, supporting orderly and secure forms of movement and strengthening the integration of immigrants in destination countries. Last but not least, metropolises such as London or New York give hope that the mutually enriching coexistence of different cultures in one society is possible.

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