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Migration from Africa, the Middle East and European Neighbouring Countries to the EU:

An Augmented Gravity Modelling Approach

Isilda Mara and Michael Landesmann

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Abstract

The South-North migration corridor, i.e. migration flows to the EU from Africa, the Middle East and EU neighbouring countries in the East, have overtaken the East-West migration corridor, i.e. migration flows from Central and East European countries to the EU15 and the European Free Trade Association (EFTA). This is likely to dominate migration flows into the EU+EFTA over the coming decades. This paper applies a gravity modelling approach to analyse patterns and drivers of the South-North migration corridor over the period 1995-2020 and explores bilateral mobility patterns from 75 sending countries in Africa, the Middle East and other EU neighbours to the EU28 and EFTA countries. The study finds that income gaps, diverging demographic trends, institutional and governance features and persisting political instability, but also higher climate risks in the neighbouring regions of the EU, are fuelling migration flows along the South-North corridor and will most likely continue to do so.

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Annex

1. Introduction

The purpose of this study is to investigate the main drivers of mobility to the European Union (EU) from Africa, the Middle East and the EU's East European neighbours (AME),[1] the importance of the push-and-pull factors of mobility, and the role played by migration policies to determine migration flows from these regions towards the EU. We have used a gravity modelling approach at a pair country level to investigate the impact that different determinants – such as economic and demographic ones, social and cultural linkages, migration restrictions and also climate and political or conflict risk – have on mobility.

The motivation for such an analysis stems from recent developments of migratory movements from AME into the EU. Over the past three decades the fall of the Berlin Wall and the EU's enlargement towards the East have been important events that have generated high migration flows into the EU and increased mobility within it. Nevertheless, in the coming decades immigration flows into the EU will most likely be dominated by another corridor of mobility, which runs from the South to the North. The leading role in the South-North mobility corridor is taken by the African and Middle Eastern (ME) countries, as illustrated by the stock of migrants from Africa into the EU15, which in 2020 was estimated to be almost equal to the stock of migrants from the countries which joined the EU15 in 2004 and subsequently (see Figure 1).

The drivers of mobility from AME to the EU have been manifold, starting with the wide income gaps and lack of employment opportunities in AME and the frequent and continuous wars which have afflicted the regions, but also the impact of climate change and massive displacements of populations, especially on the African continent as a result of hazardous weather conditions. Apart from these important push factors there is also the big asymmetry in the population structure and dynamics between the EU and African or Middle Eastern countries. While the population in Europe is ageing and its growth rate is approaching zero or becoming negative, Africa still benefits from a working-age population which grows at a rate of 2.5% per annum (Mara, 2019). Such demographic trends – representing an important 'demographic complementarity' between North and South – are very likely going to remain an important source of mobility along this corridor.

South-North mobility has important implications for the EU. First, migrants from Africa and the Middle East are quite mixed in terms of their sociodemographic characteristics, and their motives for migration are manifold. It is often difficult to separate an economic migrant from a humanitarian one; the distinction is clouded by the fact that high poverty rates, high inactivity levels and lack of opportunities are strong push factors for those who come from conflict areas. Second, the stance of most EU countries with respect to humanitarian crises is not yet clear. EU countries have shown generous hospitality to humanitarian migrants in the past, but a number of governments of EU member states have tailored their programmes and migration-/asylum-related polices to the mood of their electorates and populist movements in their countries.

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[1] In this report we refer to Africa, the Middle East and the EU's six East European neighbours (Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine - the Eastern Partnership, or EaP) as the AME group of countries. The sending countries that have been included in this study are listed in the Annex.

Figure 1 / The stock of migrants from Africa and group of EU enlargement countries to EU15, 1990-2020
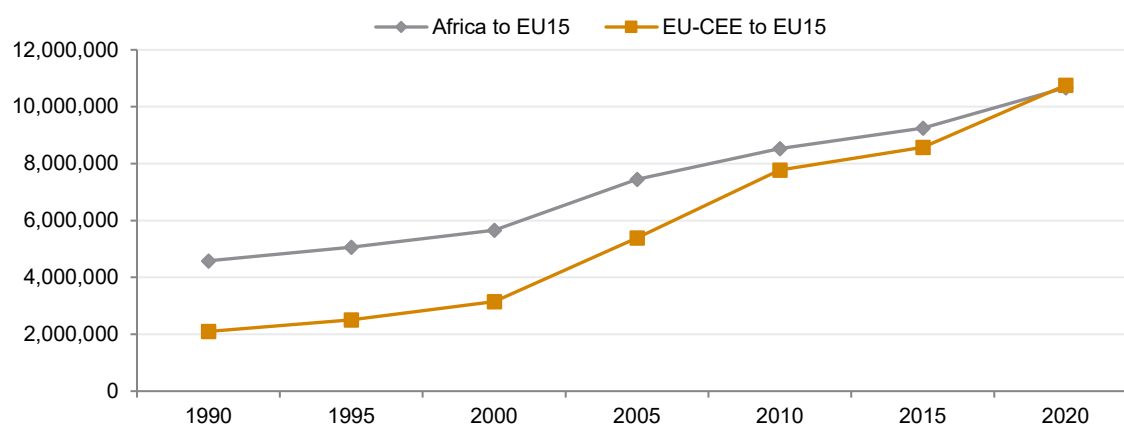
Sources: Own elaboration; UN Statistics. Note: migrant defined by country of birth.

The EU migration policy response to the humanitarian crisis has mainly consisted of short-/mid-term measures rather than a long-term solution, being primarily aimed at restricting the inflow of refugees arriving in Europe. The EU's 2016 deal with Turkey helped to reduce the refugee flow temporarily. Arrivals in Greece dropped significantly, but this only contributed to shifting the inflow towards Italy, and more recently Spain. In 2019 the number of migrants/refugees arriving in the EU via the sea route was around 123,600, which was a substantial reduction from 2015, when 1,032,408 refugees arrived.[2] The EU response has been deficient not only as far as the management of borders is concerned, but also with respect to other migration and asylum policies, such as the quota allocation schemes, as a number of EU countries are refusing burden sharing. While the EU approach to immigration from Africa and the Middle East seems generally to be less favourable, a different and more positive attitude – especially among Central and East European EU members – is apparent for immigrants from the Eastern Partnership (EaP) countries and Russia.

The South-North mobility corridor will become increasingly important in the future as long as the gap in economic development between the two regions remains high. Despite the negative attitude towards South-North mobility the corridor will widen further, given the large gaps between the sending countries (AME) and the EU in terms of economic development levels, demographic changes and political and climate risks – but also because of historical ties. The expectation regarding future scenarios is that the South-North migration corridor will be the main channel of immigrants arriving in the EU.

Following the above discussion, the mobility patterns can be investigated by taking into account a number of determinants, such as legal, economic, social and environmental ones, which are important drivers of mobility. We make an attempt to investigate patterns of mobility from AME to the EU using an augmented gravity model. The study is structured as follows: the second section briefly presents the literature, the third section discusses the stylised facts about push-and-pull factors of mobility from AME to the EU, section four presents the gravity model and data sources, section five discusses the estimation results, and the final section concludes with the main findings and points to further research needs.

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[2]   Source: https://data2.unhcr.org/en/situations/mediterranean

2. Literature review

The objectives of this section are to present some of the main findings from the literature about mobility drivers, to study the usefulness of gravity models for the analysis of mobility and its main determinants, to demonstrate how such studies might be useful for analysing recent mobility patterns and drivers from AME to the EU, and lastly, to show the role played by the EU migration policy framework in shaping the mobility patterns of these groups of countries towards the EU.

Intra-regional migration is dominating migration from/in Africa and the Middle East (ME). The EU has been the main destination for only one-third of emigrants from Africa (JRC, 2018). In particular, over the past two decades humanitarian crises in the Middle East, Northern Africa and Sub-Saharan Africa have been frequent, most likely contributing to the increase in importance of the South-North migration corridor.

There are already a number of partnership agreements between the EU and Africa dealing with the issues of security, development, border management, illicit trafficking and migration. Nevertheless, the impact is not immediately evident or measurable.[3] Given the challenges that lie ahead over the coming decades, what will be needed is more synergy between the EU countries in tackling mobility, integration, EU funding allocation and burden sharing, as well as a revision of the Dublin Agreement and other migration-related policies applying to non-EU migrants.

Colonial, cultural, language and geographical ties matter for migratory movements. Only a few centuries ago migration from Europe to other continents, including Africa, was considered one of the main migratory movements. Post-WWII mobility has gone in the opposite direction, driven by colonial ties, cultural and language proximities, common borders or routes via sea and land and big gaps in the levels of development (affecting especially income levels and employment opportunities, but also social and legal infrastructures) between AME and the EU.

The difference in the levels of economic development is certainly one of the main causes fuelling mobility. Apart from colonial and cultural ties that remain relatively constant over time, economic indicators – such as income gaps between Europe and AME countries, growth prospects and labour market opportunities – are considered to be important drivers of mobility (Hatton, 2016); JRC, 2018). However, the literature does not suggest a clear-cut relationship between income levels and migration. The utility maximisation models suggest that emigration is driven by a wide income gap between source and (potential) destination country. Other studies suggest that starting from a low level of income, rising income might be accompanied by more emigration. The former hypothesis is supported by the seminal work of Sjaastad (1962), while the second hypothesis was initially put forward by Zelinsky (1971) and subsequently featured in the works of Hatton and Williamson (1994), Dao et al. (2018) and Clemens (2014), who suggest an inverted-U relationship between migration and income levels, the so-called transition migration curve. The initial positive correlation between income and migration is explained by

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3   https://africa-eu-partnership.org/en; https://africa-eu-partnership.org/en/strategic-priority-areas/migration-and-mobility; https://ec.europa.eu/commission/presscorner/detail/en/MEMO_15_4832.

the costs of migration, which act as a barrier to migration as liquidity constraints may limit their decision to move (JRC, 2018). Of course, such migration costs (and the uncertainty surrounding them) will differ and depend on geographical distance, migration policy barriers and potential dangers along the way to the destination. They will also differ with respect to the personal characteristics of the migrants themselves, such as language ability, familiarity with regulations, network connections etc.

Migration is quite responsive to income levels and policies in the destination country. Income levels in the destination country are an important pull factor (see e.g. Ortega and Peri, 2013), but restrictive migration policies matter for shaping migration flows. Furthermore, Collier (2013) argues that the use of a range of policies – which would include quotas, selection, legalisation and integration – would be more effective and desirable to meet the needs of both the sending and the receiving countries, rather than fully liberalising or overall restricting mobility towards the destination country.

Recent migratory movements have shown that migration is not only a choice for improving life prospects but is also driven by conflicts. This has been particularly the case in Africa and the ME region, where recurring episodes of violence have pushed millions of people to move away from their homes in search of a safer place to settle (JRC, 2018; IOM, 2020). In 2019 one out of five internally displaced persons (IDPs) as a result of conflict – or close to 6.7 million – was from Syria. Ten years of political, civil and military unrest have forced more than 12.4 million people in Africa and the Middle East to be displaced internally.[4] On top of that, natural disasters connected to climate change have become an important push factor to move. Worldwide, estimates suggest that climate change has been the reason why 9.8 million people were internally displaced in the first half of 2020. Over the same period, conflict and violence caused 2.9 million displacements in Sub-Saharan Africa, while disasters led to the internal migration of close to 1.7 million people in the region. In the Middle East and North Africa the number of IDPs driven by conflicts and disasters amounted to 1.6 million and 128,000, respectively, in the first half of 2020 (IDMC, 2020).[5]

The impact of climate change on migration has found its place in the literature, although the relationship is complex to analyse. The mechanisms by which the environment and climate change affect migration can be both direct and indirect, and consequently very complex (see Backaus et al., 2015; Beine and Parsons, 2017; Siddiqui and Hossain, 2019; Sherbinin, 2020)). Aburn and Wesselbaum (2017) analysed the mobility flows between 198 sending countries and 16 countries of destination between 1980 and 2014 using an augmented gravity model. They find that climate change can act as a stronger push factor on migration than income levels and political freedom. They argue that it is also important to analyse migration responses to shocks as a useful tool for designing policies which could anticipate such responses.

The demographic need for migration in the EU is an important topic of discussion motivated by the shrinking working-age population in the EU. In contrast to Europe, where the population is getting older and older, the African and Middle Eastern countries have populations that are growing and emigration rates that do not exceed their population growth rates (JRC, 2018; IOM, 2020; IIASA and EU, 2018). Furthermore, population growth in the Middle East and North Africa is expected to be higher than in the rest of the world. It is also expected that higher emigration rates will have no significant effect on the age

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4   https://reliefweb.int/report/syrian-arab-republic/decade-displacement-middle-east-and-north-africa.

5   https://www.internal-displacement.org/publications/internal-displacement-2020-mid-year-update.

structure of the remaining population, supporting a picture of a high demographic dividend in this group of countries. Similar benefits from the demographic dividend are also expected for the countries of Sub-Saharan Africa (Lutz et al., 2018, pp. 68 and 79 respectively). In contrast, Lutz et al. (2018, pp. 35, 129) show that the size and structure of the population in the EU is likely to change mainly through extra-EU migration. Hence, the high demographic dividend in the 'southern' countries is perfectly complementary to counteract the ageing and shrinkage of the population in the EU.

Attitudes towards the new waves of migrants in the EU are not uniform, but certain trends are visible. In general, according to Eurobarometer surveys, EU citizens are relatively comfortable with the migration flows of recent decades (i.e. East-West within Europe) but are opposed to large inflows of non-European migrants, especially if they are Muslim.[6]

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[6]   https://www.chathamhouse.org/expert/comment/what-do-europeans-think-about-muslim-immigration

3. Stylised facts

Over the past three decades immigration from AME to the EU28 and the countries of the European Free Trade Association (EFTA) has increased substantially, to above 23 million (see Figures 2 and 3). In 2019 the stock of migrants was more than four times higher than in 1990. The strongest increase in the stock of migrants from AME is observed in the African and ME countries, which have each more than doubled their stock over the past three decades. The EU has experienced the highest net immigration from Africa, especially between 2000 and 2010, while the exodus from Middle Eastern countries to the EU was particularly high over the past decade, given the ongoing conflict in Syria and surrounding areas. In stocks, migrants from countries such as Morocco, Turkey, Algeria and India, but also Russia and Ukraine account for more than 50% of the total stock of migrants from AME to the EU. Over the past decade the AME countries with the highest net migration rates to the EU have been Syria and also Turkey (where most likely a significant number of migrants from Middle Eastern countries are included, given the role Turkey played during the refugee crisis in 2015 and 2016). Other African countries, such as Algeria and Morocco, but also Eritrea and Somalia, are among the top ten sending countries from AME to the EU.

The distribution of AME migrants throughout the EU seems to be quite diverse. Countries such as Germany host a relatively large number of migrants from the Middle East (mainly Syria), followed by migrants from the EaP (mainly Ukraine), with only a small share of migrants from Africa. France, on the other hand, hosts a large community of migrants from Africa, which can be attributed to colonial ties and geographical proximity. The UK – which was the third-highest receiving country of AME migrants when it was a member of the EU – is the host country for a large community from Africa and the ME region (in almost equal shares) and a small community of migrants from the EaP. Geographical proximity also explains why other countries, such as Italy, Spain and Portugal, predominantly host larger communities of migrants from Africa than from the Middle East or the EaP. The opposite applies to countries such as Sweden and Finland, but also to Austria and Denmark.

Figure 2 / Stock of migrants to the EU28 and EFTA by main region of origin
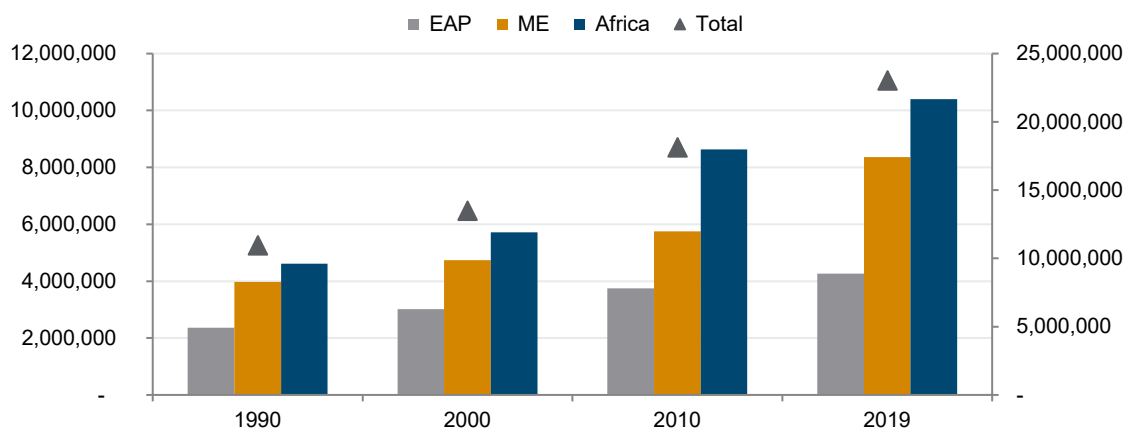
Sources: Own calculations; UN statistics. Note: Migrant defined by country of birth. Migrant stock by region of origin: left axis. Total migrant stock: right axis.

In contrast to the EU15, the Central and East European EU members (EU-CEE) have attracted mainly migrants from the EaP, and only marginally migrants from Africa and the ME. This relocation of migrants from AME across the EU28 and EFTA countries indicates a strong divide between receiving countries, which is certainly connected to geographical proximity, i.e. migrants from African countries move mainly to EU countries on the border with the Mediterranean Sea, while EaP migrants tend to move to the EU-CEE neighbouring countries which share a common border. However, historical ties and commonality of language or cultural affinities also play a role.

Apart from these factors, mobility is also driven by economic and demographic factors as well as migration policies and negotiated terms between the EU and AME countries. There is an important per-capita income gap between the AME countries and the EU. GDP per capita in the EU has more than doubled over the past three decades. The EaP is the only region where income growth accelerated during this period. Still, the income gap ratio with the EU is 1 to 5. The income gap in the aggregate between Africa and the ME and the EU, on the other hand, did not close (although there is a lot of differentiation within these large regions), and it remains at a ratio of 1 to 10, especially in Africa (see Figure 5 below and Figure A11 in the Annex).

Strong differences can be observed between the demographic and population structure in the EU in comparison with Africa. The share of the young population (0-24 years) stood at 35% in the EU in 1990. Over time this share declined continuously, and by 2020 it was close to 25%. In contrast, in Africa and the Middle East the share of young people is much higher. In Africa, in particular, the share of the population aged 0-24 years is 60%; in absolute numbers this corresponds to 1.8 times the total population of the EU27 as of 2020. The demographic dividend in Africa is very apparent, in contrast to the EU, which features a high dependency ratio of elderly versus young-age cohorts.

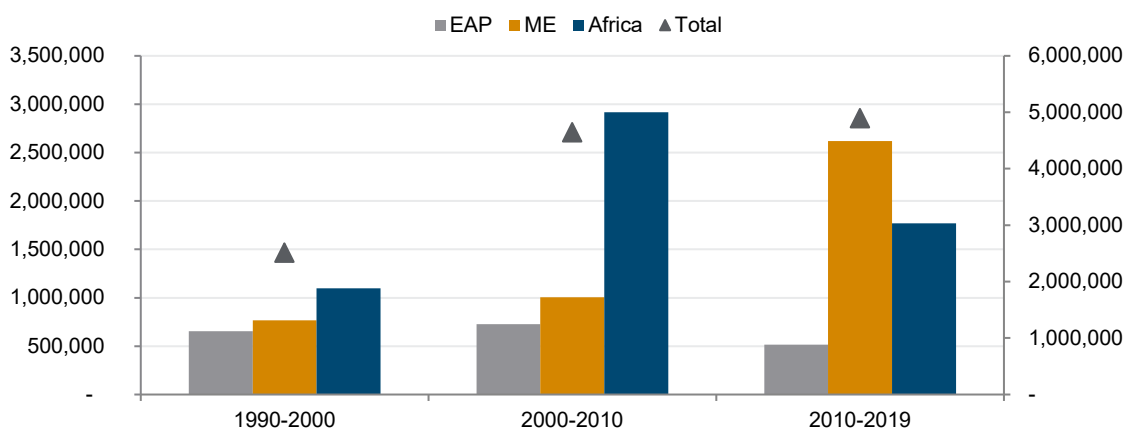**Figure 3 / Net migration to the EU28 and EFTA by main region of origin**

Sources: Own calculations; UN statistics. Note: Migrant defined by country of birth. Migrant stock by region of origin: left axis. Total migrant stock: right axis.

The push factors to migrate out from AME, especially from Africa and the ME region, also include conflicts, wars, climate risks (see Figure 7 and Figure A12 in Annex), political turmoil, poor quality of institutions and lack of freedom (see Figure 6). In particular, since 2013 the number of humanitarian crises in the Middle East, Northern Africa and Sub-Saharan Africa has increased, most likely contributing

to the increase in South-North migration, but especially to the high number of IDPs resulting from natural disasters and conflicts (see Figure 3 and Figure A13-A16 in the Annex).

Figure 4 / Population aged 0-24, share of total population, in %
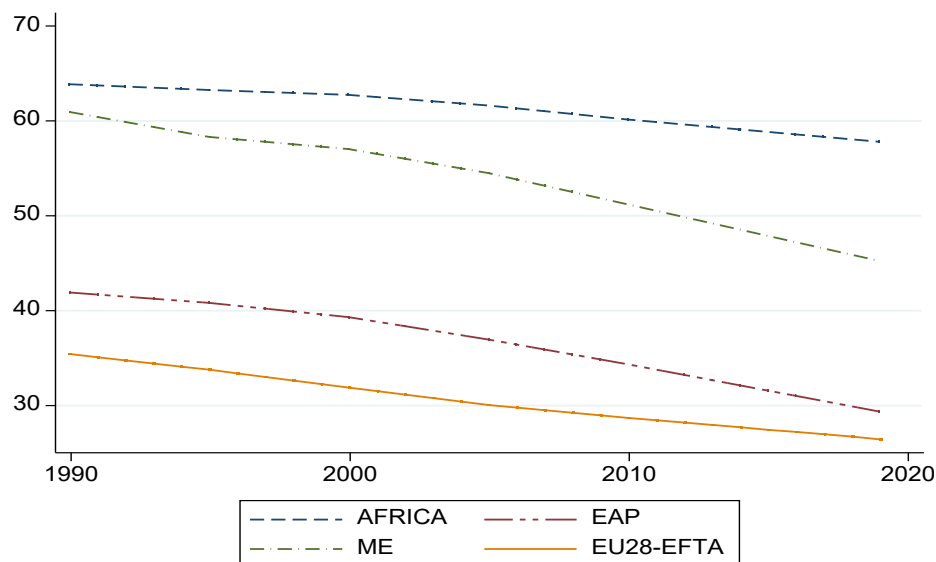
Sources: Own calculations; UN statistics.

Figure 5 / Log of GDP per capita in PPP, current prices, in USD
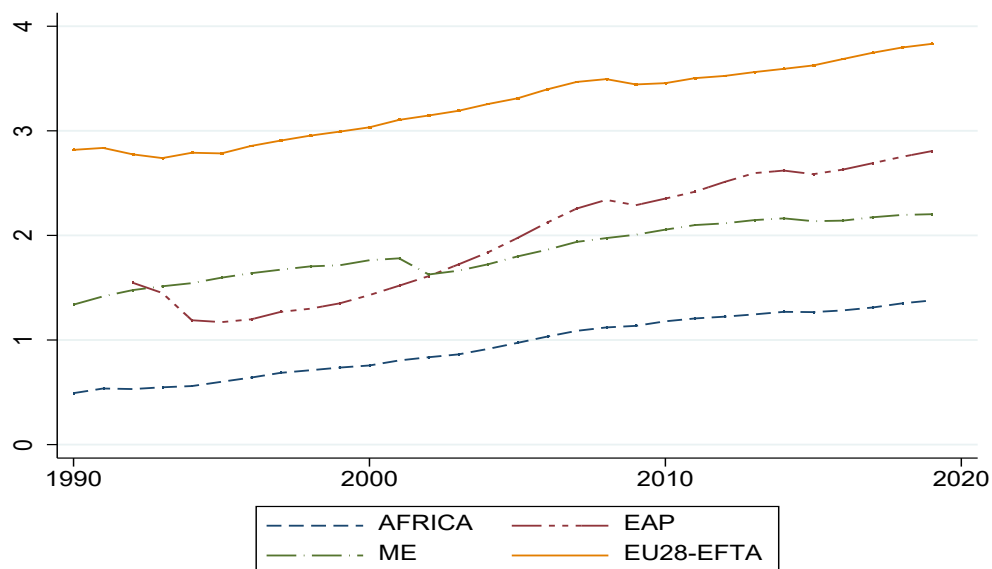
Sources: Own calculations; IMF-WEO statistics. The group of ME excludes Gulf countries. (GDP per capita scaled by 1,000 and log transformed).

Figure 6 / Degree of freedom in the country/POLITY
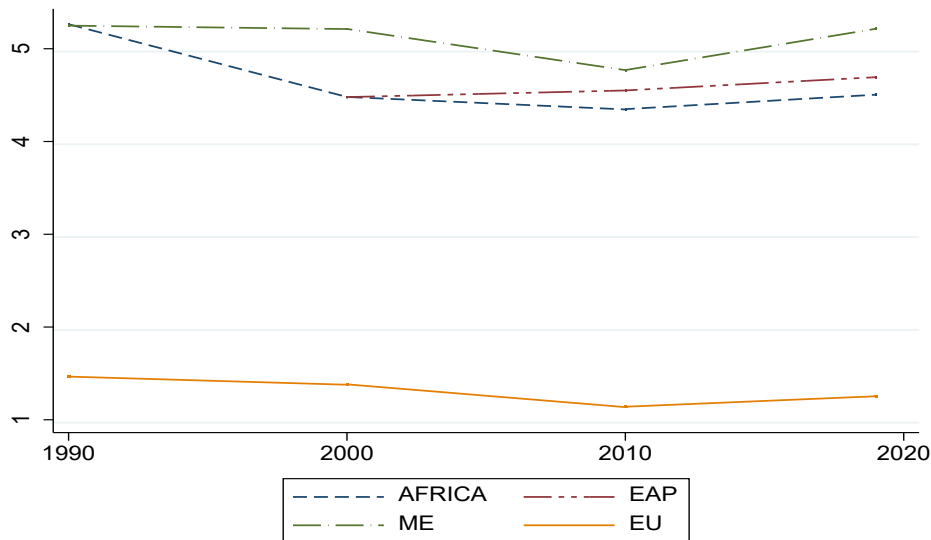
Sources: Own calculations; Freedom House. Note: The degree of freedom in a country is an index constructed by Freedom House[7] following the definition of political rights and civil liberties as stipulated by the Universal Declaration of Human Rights, adopted by the UN General Assembly in 1948. The 'Political Rights' and 'Civil Liberties' sub-indexes are defined within a range of 1 to 7, with 1 representing the highest degree of freedom and 7 the lowest. The degree of freedom in the country is calculated as the average of these two sub-indexes.

Figure 7 / Climate hazards/vulnerability
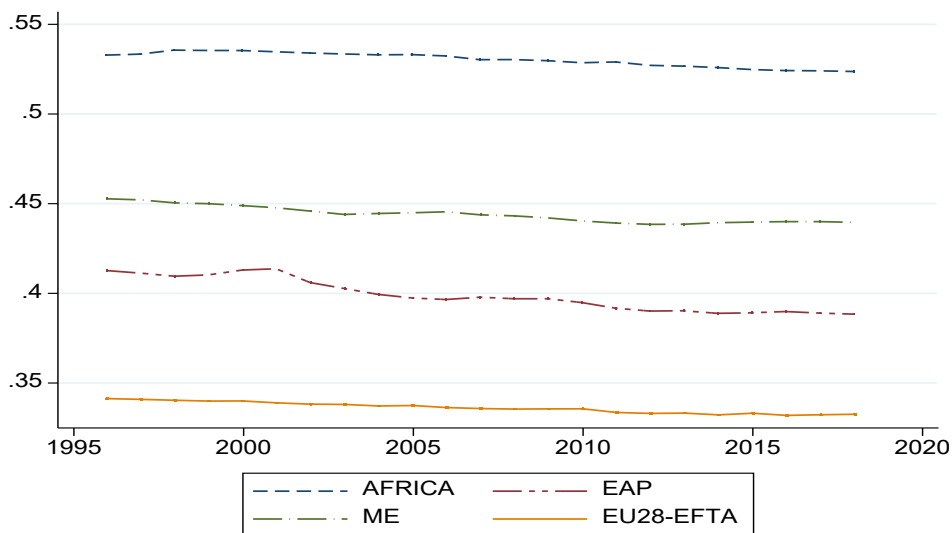
Sources: Own calculations using ND-GAIN Country Index.[8]

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[7]   Source: https://freedomhouse.org/report/freedom-world/2020/leaderless-struggle-democracy.

[8]   Source: ND-GAIN Country Index. https://gain.nd.edu/our-work/country-index/. Climate vulnerability is defined as propensity or predisposition of human societies to be negatively impacted by climate hazards. It is defined between 0 and 1, with 0 implying 'no vulnerability' and 1 implying 'high vulnerability'. The vulnerability of a country is defined by considering six life-supporting sectors: food, water, health, ecosystem services, human habitat and infrastructure. For each of the sectors the exposure to climate-related or climate-exacerbated hazards, the *sensitivity* of that sector to the impacts of the hazard and the *adaptive capacity* of the sector to cope or adapt to these impacts is assessed.

4. The gravity model: methodology and data

Given the complexity of international mobility and its push-and-pull factors, gravity models have proven to be a useful setting for analysing the drivers of mobility. In analogy to the movement of goods and services, gravity models are now frequently used to analyse the mobility of people and understand the forces that drive migration flows between two countries, but they also include relationships with other destination countries. The set-up of gravity models includes exogenous variables which do not vary over time, such as geographical distance, language proximity or sharing common borders, and these are further augmented with other economic, demographic, political, institutional or policy-related variables which might contribute to explain migration patterns between countries. Ramos (2016) provides a concise overview of gravity models and some of the advantages or disadvantages of using them as a tool for analysing mobility. In the Africa-EU mobility context, Lucas (2015) has applied an augmented gravity model to analyse net migration from Africa, distinguishing between refugees and non-refugee migrants. The study shows that push/pull factors such as income gaps are strong drivers of migration.

Theoretical underpinning exists for using gravity models to explain the international mobility of people. A number of empirical studies rely on utility maximisation models, starting with Sjaastad (1962) or Harris and Todaro (1970). More recently this is also supported by the work of Anderson (2011), Dao and Peri (2016) and Aburn and Wesselbaum (2017). Some of the challenges faced while testing the gravity models empirically relate to data availability at a pair country level and the type of indicators to be used for measuring mobility – e.g. flow or stock data. A number of suggestions have been provided by Ramos (2016), Beine et al. (2016), Lucas (2015), IOM (2017) and Larch (2018). Another difficulty arises with the data at pair country level where the mobility of people is inexistent and the issue of a large number of zeros is acute. As Lucas (2015) shows, a number of solutions have been offered to solve this issue, such as scaled ordinary least squares or pseudo maximum likelihood Poisson regressions to estimate gravity models. Often some transformation might be needed for quantifying the qualitative variables, such as migration policy-related variables, political context or climate change-related variables. Ortega and Peri (2013), Yotov et al. (2016), Bertoli and Fernández-Huertas Moraga (2013) but also Beine et al. (2016) suggest the use of multilateral resistance terms, which capture the relative pull effects of other destination countries for attracting migrants from a given sending country other than the pair.

Following the literature, this study analyses country pair mobility from AME to EU28+EFTA countries using a gravity modelling approach. Mobility patterns are investigated, taking into account a number of determinants, such as economic, demographic, legal/institutional as well as social/cultural linkages and conflicts and crises, which are important drivers of mobility. We investigate the drivers of mobility for AME to EU28+EFTA countries over the period 2000-2020 by augmenting the gravity model with a number of determinants which in the literature are suggested as being relevant for explaining mobility. We follow a similar approach to the one used in Landesmann et al. (2013) and Mara and Vidovic (2015).[9] In this context the gravity model is applied to a larger set of countries, i.e. African, Middle Eastern and EaP

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[9]   Further information about the gravity approach we propose here can be found in our previous works: https://wiiw.ac.at/free-movement-of-workers-transitional-arrangements-and-potential-mobility-from-croatia-p-3630.html;https://wiiw.ac.at/auswirkungen-der-arbeitsmarktoeffnung-am-1-jaenner-2014-auf-den-wirtschafts-und-arbeitsstandort-sterreich-p-3032.html

countries. We also take advantage of a new database of migration polices – the wiiw-POLMIG database[10] in combination with DEMIG database of Oxford University – which provides valuable information about migration policy changes for the 2013-2019 period and the 2000-2012 period, respectively, and allows us to make new inferences about how migration governance affects mobility.

The equation of mobility is specified in the following form:

$$Ln(M)_{ift} = \beta_1 * \ln(M)_{ift-1} + \beta_2' * \ln(EI)_{ift} + \beta_3' * \ln(DI)_{ift} + + \beta_4' * \ln(GI)_{ift} +$$

$$\beta_5' * \ln(SFI)_{ift} + \beta_6' * \ln(CI)_{ift} + \beta_7' * MP_{ft} + + \varepsilon_{fit}$$

where

› M_{ift} denotes the stock of migrants from sending country (i) residing in destination country (f) at time (t).

› M_{ift-1} is the lagged stock of migrants from a particular sending country in a destination country, representing network effects.

› *EI* refers to economic development indicators such as income per capita levels in sending country (i) relative to income per capita levels in destination country (f). The squared level of income per capita in sending country (i) is also included to test the hypothesis of the inverted U-shape relationship between migration and level of development proxied by income per capita. Another indicator used as a proxy for relative opportunities at home relative to destination country is captured through the employment rate both at home and abroad.

› *DI* stands for the population size and population structure indicators. They are respectively represented by population sizes of origin and destination countries, which are used as proxies for the size of the potential migrant force of source economies on the hand, and the absorption capacity of a potential destination country on the other hand. Because of pronounced asymmetries in the population age structure between the sending countries and the destination countries – especially as concerns Africa and the ME vs. the EU28+EFTA – and possible differences in the propensity to migrate of the young, we include among the determinants the share of the population aged 0-24 years in the origin and destination country and test its effect on migration.

› *GI* stands for other gravity model determinants that are country-specific, most of which are constant over time and are represented by:

-    $dist_{if}$, the geographical distance between the sending and the host country.

-    *Colonial ties* between sending and receiving countries covered by a dummy taking the value 1 if such relationship exists resp. existed, and zero otherwise.

-    $com\_language_{if}$ is about sharing the same official language.

-    $ethnic\_language\_c_{if}$ when at least 9% of the populations of the sending and host countries share the same language.

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[10]   See Kovacevic and Mara (2021) and De Haas et al. (2014) for further details.

-    *Religious affinity* ($RelAf_{if}$) between the sending and the destination country is another indicator we have included in the deterministic part of the equation.

› *SFI* stands for indicators which capture the quality of institutions, governance and the level of democracy, but also civil conflicts or wars which are proxied by using POLITY indicators,[11] i.e. an indicator which represents the degree of freedom in the country and the State Fragility Index, which is a proxy of state fragility.[12]

› *CI* stands for environmental and climate change indicators. Given that climate change and rising concerns about water safety and food or nutrition security due to rising temperatures, droughts and frequent floods in Africa and the ME region have become serious concerns, their possible impact on mobility will be captured through a climate vulnerability index in the country of origin and in the country of destination.

› *MP* stands for migration policies that are put in place in the receiving country to regulate entry and stay. Policies that are taken into account are those that contribute to restricting or facilitating entry into and stay in the country of destination. The first group of policies are represented by a dummy taking the value 1 if the destination country (f) has made changes to migration policies at time (t) that are considered to have restricted the entry or stay of migrants, and zero otherwise. The second group of policies is represented by a dummy taking the value 1 if the destination country (f) has made changes to migration policies at time (t) that are considered to have facilitated the entry/stay of migrants, and zero otherwise. The information regarding such policies has been attained from the Oxford POLMIG database for the 2000-2012 period, which we have newly constructed for the 2013-2020 period as the wiiw-POLMIG database,[13] which follows a similar approach and structure as the Oxford POLMIG database.

4.1. DATA SOURCES

Migration stock statistics have been obtained from the UN Global Migration Database and cover the period 1995-2019. The compiled database uses a number of national data sources, such as census statistics, registers and survey data. The information is mainly provided by country of birth or citizenship; we use the statistics about the stock of migrants by country of birth.[14] The indicator at (t-1) is also used as a proxy for the possible pull effect of pre-existing migration networks.

Economic-related indicators, which include income (GDP per capita in terms of PPP) and the employment rate for both sending and receiving countries have been compiled from the World Development Indicators database, the Penn World Table and from other international data sources such as the IMF and the International Labour Office (ILO).

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[11]   http://www.systemicpeace.org/polity/polity4.htm

[12]   http://www.systemicpeace.org/inscrdata.html. The State Fragility Index is defined as follows. Country effectiveness and legitimacy are represented by four dimensions, e.g. security, political, economic and social dimensions. For each of the dimensions a score system (0 to 3) is applied. A 0 score implies no fragility, 1 = low fragility, 2 = medium fragility and 3 = high fragility. For the economic dimension, the score system applied is on a scale of five (including 4 = extreme fragility). The eight indicators are combined into a common State Fragility Index, which ranges from 0 = no fragility to 25 = extreme fragility and aims to capture state capacity to manage conflict, make and implement public policy, deliver essential services, respond effectively to challenges and crises, and sustain progressive development.

[13]   See Kovacevic and Mara (2021) for further details.

[14]   http://www.un.org/en/development/desa/population/migration/data/estimates2/estimates15.shtml

Demographic indicators such as population size and population structure (0-24 age group as a share of the total population) have been obtained from UN Population Statistics covering the period 1995-2019.

Gravity modelling variables such as geographical distance, contiguity or sharing common borders, language proximity or other cultural, colonial and religious ties have been obtained from the CEPII **database.**[15]

Institutional indicators such as civil conflicts or wars, governance (SFI) and democracy level (e.g. POLITY indicators) have been obtained respectively from the Centre for Systemic Peace[16] and Freedom House. SFI is an indicator which ranges from 0 = no fragility to 25 = extreme fragility. The POLITY variable – the degree of freedom in the country – takes a value from 1 (highest degree of freedom) up to 7 (lowest degree of freedom). Freedom status is represented by 'Political Rights' and 'Civil Liberties' status.

Migration policy-related indicators have been obtained from the POLMIG database launched by Oxford University and the wiiw POLMIG database. The database allows the evaluation of migration policy changes, the years when the policy change occurred, the policy area and the target group, also in relation to the geographical origin of the target group.

The climate vulnerability index has been attained from the Notre Dame Global Adaptation Initiative (ND-Gain)[17] of the University of Notre Dame. The climate vulnerability index is defined as the propensity or predisposition of human societies to be negatively impacted by climate hazards, with values ranging from 0 to 1, where 1 implies high vulnerability. The researchers at Notre Dame have constructed the index based on six life-supporting sectors: food, water, health, ecosystem services, human habitat and infrastructure. Each sector includes six indicators which represent three cross-cutting components: the exposure of the sector to climate-related or climate-exacerbated hazards; the sensitivity of that sector to the impacts of the hazards; and the adaptive capacity of the sector to cope with or adapt to these impacts.

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[15] These variables are intensively used in gravity models and we have downloaded them from:
http://www.cepii.fr/CEPII/en/bdd_modele/presentation.asp?id=8

[16] http://www.systemicpeace.org/polity/polity4.htm

[17] https://gain.nd.edu/

5. Estimation results

The econometric model was estimated for the bilateral relationships between the EU+EFTA countries and the countries of three groupings: African economies, Middle Eastern countries (without the Gulf states)[18] and the EaP countries.

The model was set up to study the determinants of bilateral stocks of migrants from these countries in the various EU+EFTA countries over the period 2000-2019. The model was estimated for all bilateral relationships and then for sub-groups, i.e. among the countries of destination (CoD): only the EU15 or only the EU-CEE countries; and separately for the African, Middle Eastern and EaP groups as countries of origin (CoO). All the specifications include time and sending country dummies and multilateral resistance terms (MRT). Column 1 in Table 1 presents the results, which have all EU28 and EFTA members as countries of destination. Column 2 presents the results, which have only EU15 members as countries of destination. Column 3 presents the results, which have African countries as sending countries and EU28 plus EFTA members as countries of destination. Column 4 presents the results, which have EaP countries as sending countries and EU28 plus EFTA members as countries of destination. Column 5 presents the results, which have ME countries as sending countries and EU28 plus EFTA members as countries of destination.

The explanatory variables were:

› The migrant stock in the previous year (always highly significant, as was to be expected)

› GDP per capita in the country of origin (CoO) and the country of destination (CoD) (in PPP)

› The squared term of GDP per capita in CoO

› Population sizes in CoO and CoD

› Shares of the population in age group (0-24)

› An interactive term between the share of the population below the age of 24 and GDP per capita to take account of differences in the propensity of the young to migrate when income levels are higher (to cover migration costs more easily)

› Employment rates in CoO and CoD

› Distance – bilateral (variable from CEPII database)

› Distance interacted with CoD region dummies (i.e. Africa, Middle East, EaP as base)

› Colonial relationship

› Common language and common ethnic language

› Various political and environmental fragility variables (state fragility, degree of freedom, climate hazard).

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[18]   We leave them out, given their low population density, high income levels and a high share of temporary migrant populations.

The main OLS estimation results, which include sending country dummies, time dummies and multilateral resistance terms, are presented in Table 1. We shall, at times, also refer to results estimated separately for sub-groups of destination countries (such as Africa-EU15 or Middle East-EU15 or EaP-to-EU-CEE) as well as separate estimates for sub-periods (i.e., for the first or second decade of the overall estimation period 2000-2019) which are not contained in Table 1, but which can be obtained from the authors. These more detailed estimates served to get a better understanding of some of the results presented in Table 1. See also the discussion on sensitivity analysis below.

Economic-related determinants

› The first issue which interested us was whether we would obtain confirmation of what we call the 'Zelinsky hypothesis', or the inverted U-shape relationship between migration and development, i.e. that at very low income levels there would not be much 'far-away migration' as migration costs would be high; then, as real incomes increase, migration increases and subsequently flattens out and declines at higher levels of income,

This hypothesis was confirmed for Africa – EU28+EFTA and Africa – EU15 migrations, but not for the sample as a whole. In the latter case – basically driven by Middle Eastern (ME) – EU15 relationships - the opposite was found, i.e. the poorer the CoO, the higher the migration stock abroad. One explanation for this difference could be that because of the shorter distance and the recent increase in refugee flows from the ME migration, costs and entry conditions (asylum status) differ between ME and African migrants.

The results indicate that income in the destination country is an important and strong pull factor, and this is confirmed for all the specifications.

› For the employment rate in the countries of origin we obtained the expected result, i.e. the higher the employment rate in the country of origin, the lower the rate of migration. This seems to be mainly relevant for Africa-EU28+EFTA mobility (specification 3), suggesting that better employment opportunities on the continent of Africa would reduce the migratory movements to the EU and EFTA.

› The high employment rate in the country of destination is important as a pull factor except for the earlier period (2000-2010, when it has a negative sign) but highly significant for the second (post-financial crisis) period – the negative sign seems to be driven by EaP migrants, who mostly migrated to the EU10 (i.e. the new member countries that joined the EU in 2004 and 2007).

Demographic-related indicators

› The population share of the young in the CoO had a sign which we had not initially expected, i.e. a negative sign, so that a younger population would have a lower stock of migrants abroad. However, when we interacted it with GDP per capita the sign became positive, so that a CoO with a young population but with a relatively higher level of income has more migrants abroad (this is an adaptation of the 'Zelinky hypothesis', which relates also to the demographic/age profile of a country).

› The population share of the young in the CoD has a robust and highly significant negative sign, which indicates that an 'ageing' profile in the CoD acts as a pull factor, as such countries need to attract migrants to improve their demographic profile.

Gravity indicators

› Colonial relationships have the expected positive sign. This finding confirms that the ties built in the past remain relevant and explain the choice of destination country.

› The distance variable for the pooled data across all countries of origin and destinations has an unexpected positive sign. However, when it is interacted with an African and Middle Eastern dummy it obtains a negative sign. The overall parameter estimate for the ME region (i.e. adding the two parameter values) remains nonetheless positive. The separate estimates by region (Africa, Middle East, EaP) are all over the place, and it is difficult to present a consistent picture. It does seem to indicate that geographical distance (while remaining relevant for African-European migration) plays by now less of a role than traditionally emphasised by gravity models.

› Sharing a common official language, which is the case in many African countries where English is recognised as an official language (24 out of 54 countries in Africa have English as their official language), certainly plays an important positive role when choosing to move to a certain destination.

› Among the 'fragility' indicators, what is interesting is the relatively persistent negative sign for the 'common religion' variable, which indicates higher migration stocks in the CoD who do not share a common religion, i.e. there is a pull in the direction of making the CoD more diverse from a religious/ethnic perspective. The parameters show this as a negative (and significant) sign for migrations to EU28+EFTA countries, but if we just look at migrations into EU-CEE members, then it changes into a positive sign (which might indicate preferences or discriminatory patterns in migration flows into these countries).

Institutional indicators

› The POLITY ('freedom') variable in the CoD is an important pull factor for EaP-EU28+EFTA and EaP-EU-CEE as well as ME-EU28+EFTA migrations. It has, however, a significant negative sign for Africa-EU15 migrations (the reason could be that from the point-of-view of African CoO, EU15 countries might not differentiate very much with regard to this variable).

Climate-related indicator

› Finally, we obtain a significant negative sign for climate hazard in the CoD, so that migrants are attracted to countries with low climate hazard. This is a strong effect for the AME country sample as a whole, and particularly for Africa-EU28+EFTA and Africa-EU15 migrations, but less so for ME migrations, and for EaP-EU15 it even changes signs.

› We also attain a positive sign as concerns the CoO climate hazard, suggesting that climate risk is an important and significant push factor of mobility. This result is obtained for the estimates when all the destination countries are included in the regression as well as when only the EU15 countries are considered as destinations.

Migration policy-related indicators

› The estimates obtained for migration policies indicate a negative and significant effect of policy changes which restrict mobility especially for the specifications that have the EU15 as their main destination (specification 2). A similar result is also attained for specification 1, where all pair countries are included, and specification 5, where only the ME as sending region has been included, but the results are less robust. Policy changes which facilitate/improve access and stay in the destination country have a positive sign and are slightly significant only for specification 2, suggesting that the impact of such policies on mobility may be positive but not robust.

Table 1 / Main estimation results

Dependent variable Ln(stock of migrants)	(1) Total to EU28-EFTA	(2) Total to EU15	(3) Africa to EU28-EFTA	(4) EaP to EU28-EFTA	(5) ME to EU28-EFTA
Stock of migrant Ln(stock) (t-1)	0.99***	0.99***	1.00***	0.98***	0.98***
	(0.00039)	(0.00057)	(0.00046)	(0.0014)	(0.0012)
Ln(GDP, cap, PPP)origin	-0.29***	-0.46***	0.20*	-0.077	-0.36
	(0.043)	(0.049)	(0.100)	(0.42)	(0.44)
Ln(GDP, cap, PPP), squared, origin	0.0058***	0.012***	-0.0043*	-0.011	0.0055
	(0.0015)	(0.0017)	(0.0022)	(0.026)	(0.011)
Ln(GDP, cap, PPP) destination	0.033***	0.053***	0.013***	0.076***	0.048***
	(0.0032)	(0.0055)	(0.0039)	(0.012)	(0.0082)
Ln(employment rate), origin	-0.088**	-0.049	-0.076*	-0.061	-0.11
	(0.032)	(0.037)	(0.038)	(0.14)	(0.16)
Ln(employment rate), destination	0.014	0.044	0.019	-0.032	-0.012
	(0.019)	(0.028)	(0.023)	(0.072)	(0.050)
Ln(population), origin	0.046***	0.020+	0.065***	0.021	-0.0052
	(0.0088)	(0.010)	(0.018)	(0.074)	(0.038)
Ln(population), destination	0.0040***	0.0055***	0.0013	0.013***	0.010***
	(0.00070)	(0.0011)	(0.00085)	(0.0024)	(0.0020)
Ln(population share 0-24), origin	-0.20***	-0.33***	-0.059	0.0064	-0.18
	(0.040)	(0.045)	(0.059)	(0.22)	(0.29)
Ln(population share 0-24), destination	-0.077***	-0.28***	-0.064***	-0.13***	-0.052*
	(0.0086)	(0.014)	(0.010)	(0.030)	(0.025)
(Ln(population share 0-24), origin) X (Ln(GDP, cap, PPP) origin)	0.064***	0.098***	-0.046*	0.041	0.075
	(0.010)	(0.011)	(0.023)	(0.086)	(0.10)
Colonial relationships	0.020***	0.020***	0.010+	.	0.0094
	(0.0048)	(0.0045)	(0.0053)	.	(0.013)
Ln(distance)	0.048***	0.061***	-0.0024	-0.015	-0.023+
	(0.0083)	(0.014)	(0.011)	(0.023)	(0.012)
Ln(distance) X Africa	-0.034***	-0.0100			
	(0.0071)	(0.011)			
Ln(distance) X ME	-0.020***	-0.0076+			
	(0.0023)	(0.0039)			
Common official language	0.0088+	0.020***	0.012*	.	0.0098
	(0.0046)	(0.0047)	(0.0055)	.	(0.011)
Common ethnic language	-0.00041	-0.0048	-0.0089	-0.037	0.0022
	(0.0045)	(0.0048)	(0.0057)	(0.033)	(0.0086)
Common religion	-0.015*	-0.031***	-0.017*	-0.18+	-0.020
	(0.0068)	(0.0074)	(0.0068)	(0.095)	(0.035)
Stage fragility, origin	-0.010+	-0.0076	0.0015	0.017	-0.014
	(0.0059)	(0.0068)	(0.0081)	(0.019)	(0.019)
POLITY, origin	0.0037	-0.00033	0.0046	0.010	0.021
	(0.0053)	(0.0060)	(0.0058)	(0.026)	(0.019)
POLITY, destination	0.015***	0.021**	0.00070	0.050***	0.050***
	(0.0039)	(0.0079)	(0.0048)	(0.014)	(0.0098)
Climate hazard, origin	0.14**	0.13*	0.080	0.37	-0.14
	(0.050)	(0.056)	(0.058)	(0.24)	(0.20)
Climate hazard, destination	-0.029**	0.031*	-0.063***	0.053	-0.047+
	(0.010)	(0.013)	(0.012)	(0.038)	(0.026)
Migration policies: Less restrictive	-0.0013	0.0052+	-0.0019	0.0059	-0.0081
	(0.0023)	(0.0027)	(0.0027)	(0.0084)	(0.0059)
Migration policies: More restrictive	-0.0041+	-0.0065*	-0.0016	-0.0014	-0.012+
	(0.0024)	(0.0026)	(0.0028)	(0.0092)	(0.0065)
_cons	-4.65*	-8.39***	1.32	2.62	0.36
	(1.81)	(2.08)	(2.80)	(4.71)	(4.16)
Fixed effect					
Year	YES	YES	YES	YES	YES
Sending country	YES	YES	YES	YES	YES
MRT	YES	YES	YES	YES	YES
N	27687	14462	17858	3165	4462
R²	0.998	0.999	0.999	0.997	0.998

Standard errors in parentheses: + p < 0.10, * p < 0.05, ** p < 0.01, *** p < 0.001

5.1. SENSITIVITY ANALYSIS

To test the sensitivity of our results we estimated different specifications of the augmented gravity
model, distinguishing between the main regions of sending countries, such as Africa, the Middle East
and the EaP, as well as different groups of destination regions, such as the EU28, EFTA, the EU15 and
the EU-CEE, or excluding countries which have a small number of migrants abroad, both in terms of
absolute numbers but also as a share of their population. We also ran other regressions distinguishing
between refugees and the overall stock of migrants, which we do not discuss here but which are
available on request. Other specifications consisted of leaving out sending countries with small stocks of
migrants (fewer than 1,000 and those countries where the outward stock of migrants was below 1% of
the population). Furthermore, we estimated on yearly data and also on five-year data points (as the in-
between years for migration stocks had to be interpolated by us). We also checked two sub-periods –
2000-2010 and 2010-2019 – separately. Part of these results are presented in Table A2 in the Annex,
the rest can be available on request.

6. Main findings and conclusions

In this study we have analysed mobility patterns and drivers of mobility from AME to the EU+EFTA. A number of African, Middle Eastern and EaP countries have been afflicted by civil wars, military and ethnic conflicts and more frequently also by climate change. The wide discrepancy between the levels of development in AME and the EU+EFTA has persisted over time, as have concerns regarding political rights or the degree of freedom. An old and rich EU+EFTA is situated close to a young and poor (though not in natural resources) Africa and an unstable and economically stagnating region in the Middle East. While these two regions show a strong 'demographic complementarity' with the EU+EFTA countries, this is not the case for the EaP region, where demographic developments – low natural population growth plus high emigration rates – have been very unfavourable for some time. Using an augmented gravity model, we analysed the push-and-pull factors that determine mobility from AME – 75 sending countries from Africa, the Middle East and other EU neighbours – to the EU28 and EFTA over the 2000-2019 period.

The income level in the destination country is an important pull factor, while income at home in general suggests that a smaller gap with income abroad would deter migration. In Africa we find evidence for an inverted U-relationship between the level of income and migration. This finding suggests that only in the long run will higher levels of income deter outward mobility from Africa, which leads us to the conclusion that outward mobility from Africa will continue to stay high as long as the income gap is not significantly reduced.

From the perspective of destination countries, the EU has responded to migratory movements from Africa and the ME by signing a number of partnership agreements dealing with the issues of security, development, border management, illicit trafficking and migration. In our study we have tested those migration policies that affect entry and stay in the country of destination, i.e. policies that either facilitate or restrict migration. Changes towards more restrictive migration policies regarding access and entry to the destination country appear to be important factors for deterring mobility. In contrast, factors that facilitate mobility seem to play only a minor role in spurring mobility.

Our results suggest that push-and-pull factors driving outward migration from Africa and the Middle East to the EU are likely to persist for many years, or as long as the gaps in terms of income, quality of institutions and state fragility remain wide and the risk of natural disasters and conflicts remains high. Demographically, the ageing of the EU populations also acts as an important pull factor for young migrants from AME. Furthermore, the mobility of younger age cohorts in AME is positively related to the level of income.
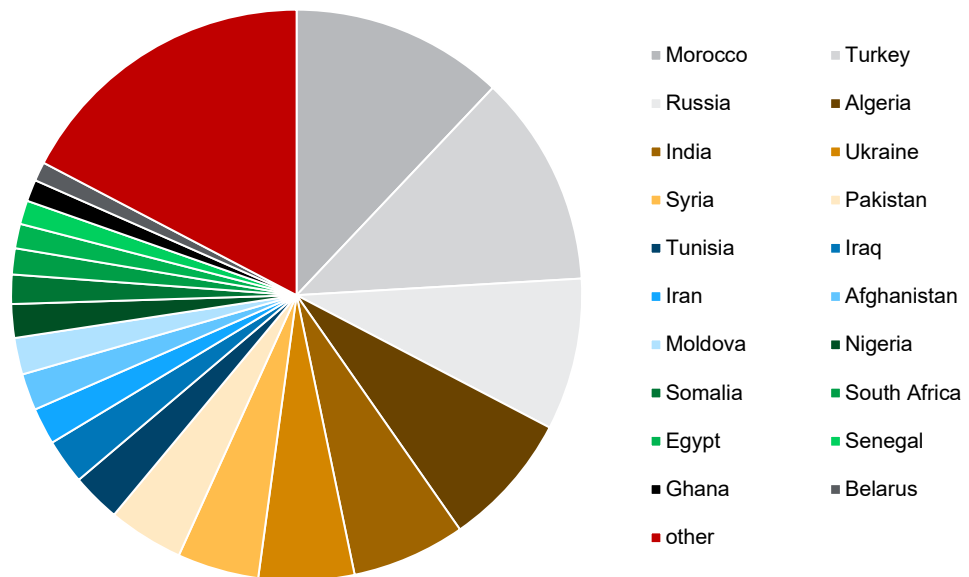
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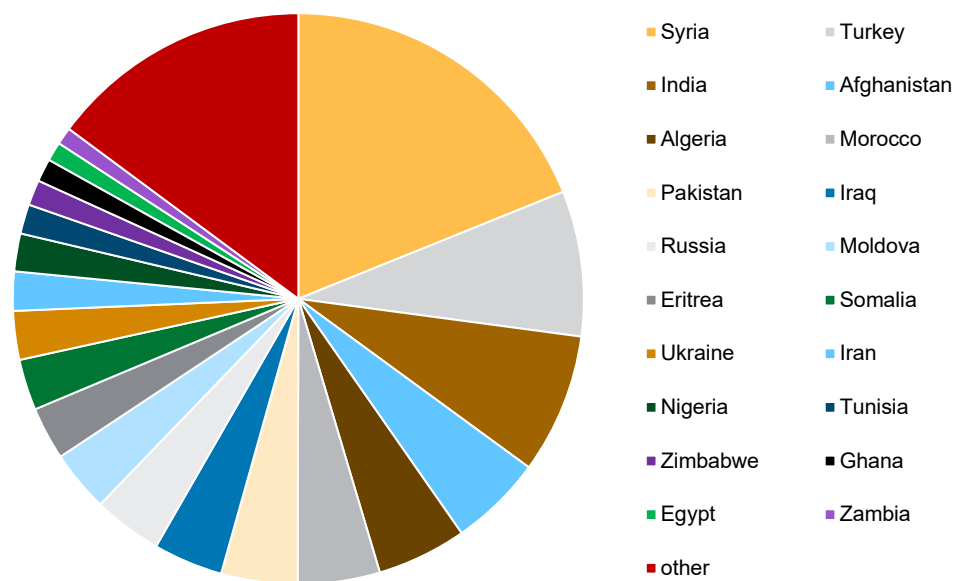# Annex

Figure A 1 / Top 20 sending countries of migrants from Africa, ME and EaP to EU28-EFTA, stock, 2019

Legend:
- Morocco
- Turkey
- Russia
- Algeria
- India
- Ukraine
- Syria
- Pakistan
- Tunisia
- Iraq
- Iran
- Afghanistan
- Moldova
- Nigeria
- Somalia
- South Africa
- Egypt
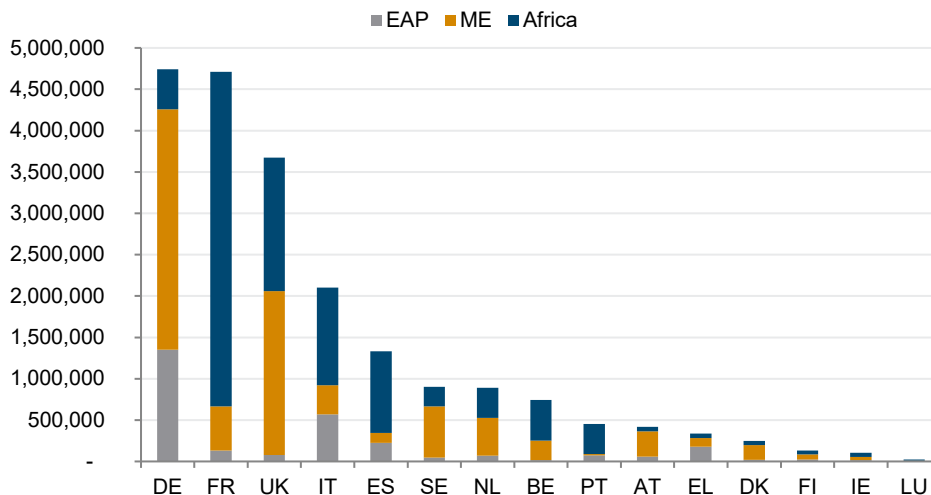- Senegal
- Ghana
- Belarus
- other

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 2 / Top 20 sending countries of migrants from Africa, ME and EaP to EU28-EFTA, net migration: 2010-2019

Legend:
- Syria
- Turkey
- India
- Afghanistan
- Algeria
- Morocco
- Pakistan
- Iraq
- Russia
- Moldova
- Eritrea
- Somalia
- Ukraine
- Iran
- Nigeria
- Tunisia
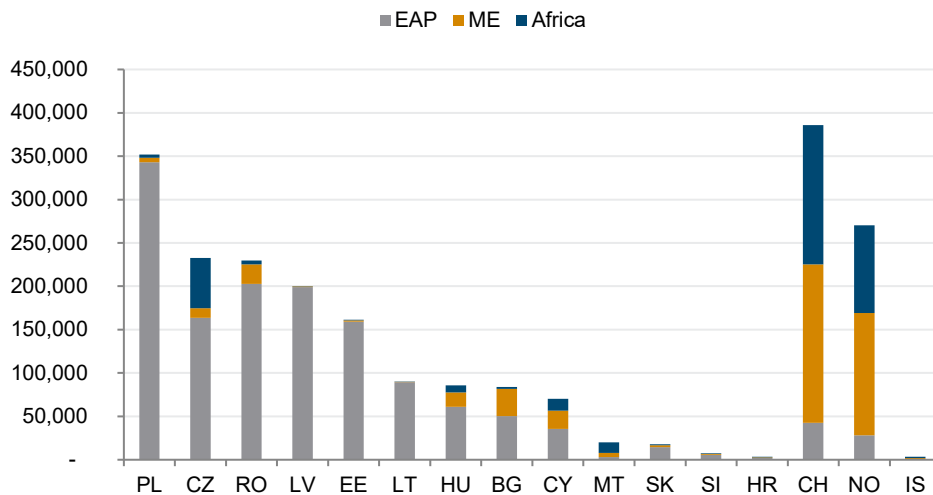- Zimbabwe
- Ghana
- Egypt
- Zambia
- other

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 3 / Main receiving countries in EU15 of migrants from Africa, ME and EaP, stock 2019
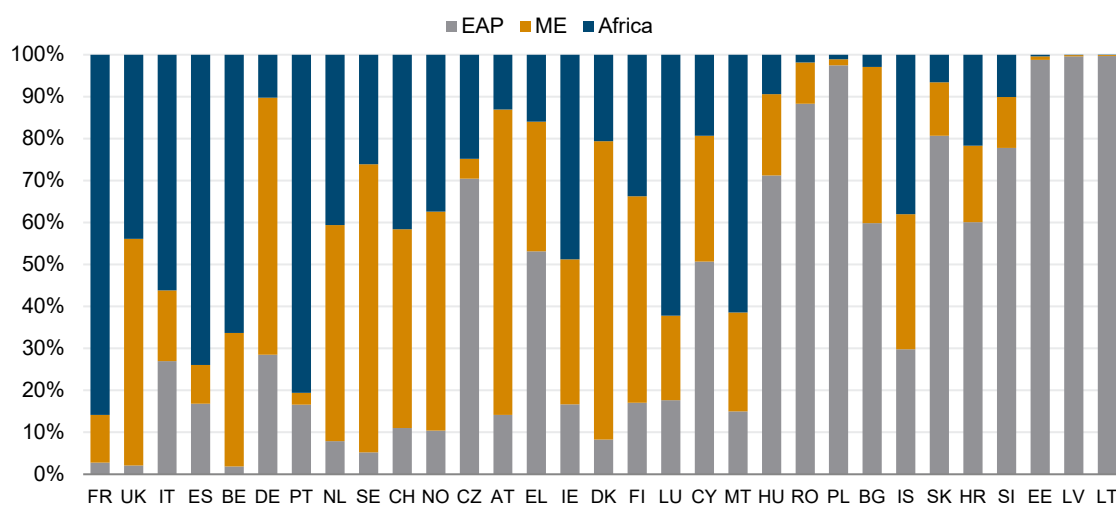

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 4 / Main receiving countries in EU-CEE and EFTA of migrants from Africa, ME and EaP, stock 2019
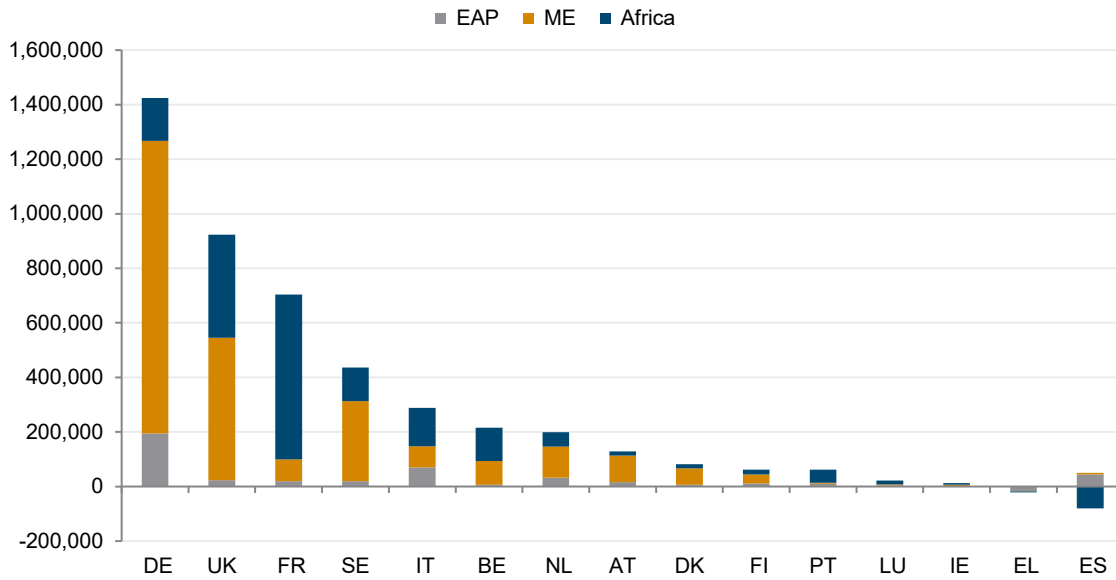

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 5 / Share of migrants from Africa, ME and EaP to EU28 and EFTA, 2019.

Source: own calculations, UN statistics. Note: country of birth definition.
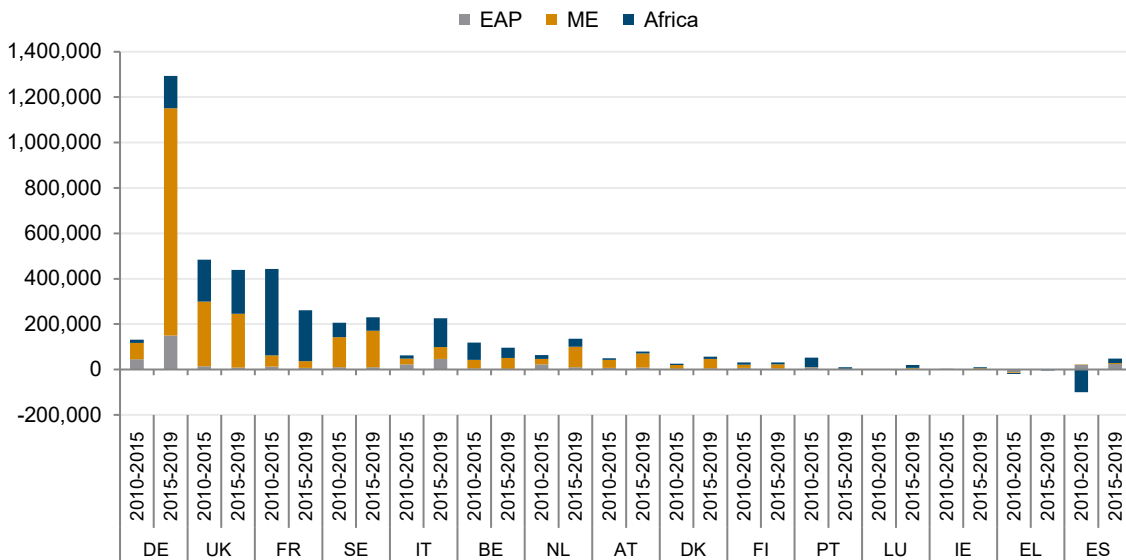
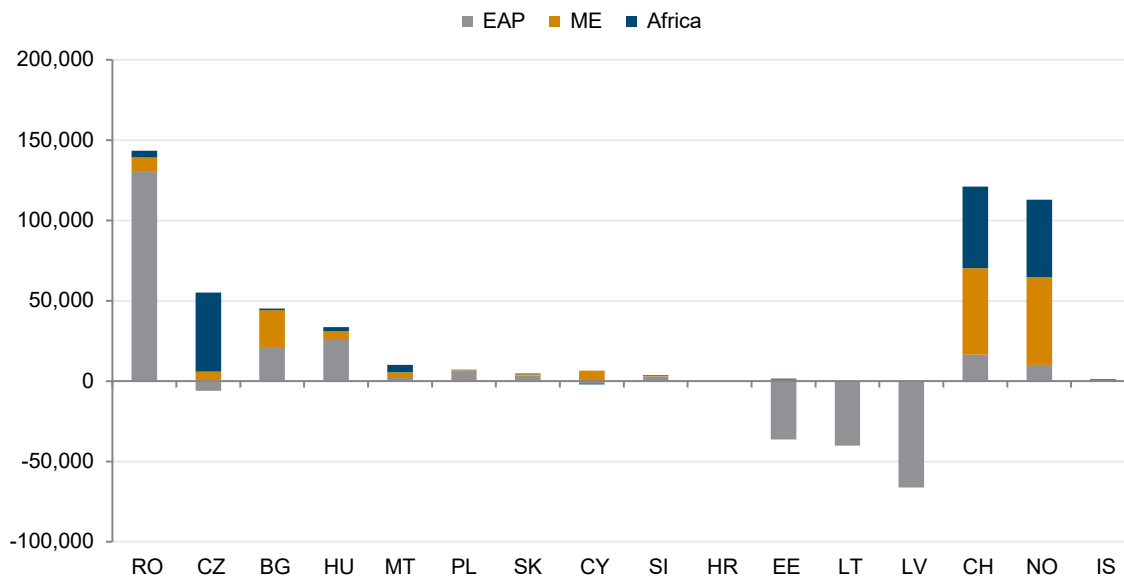**Figure A 6 / Net migration 2010-2019, EU15**

■ EAP ■ ME ■ Africa

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 7 / Net migration 2010-2015 and 2015-2019, EU15
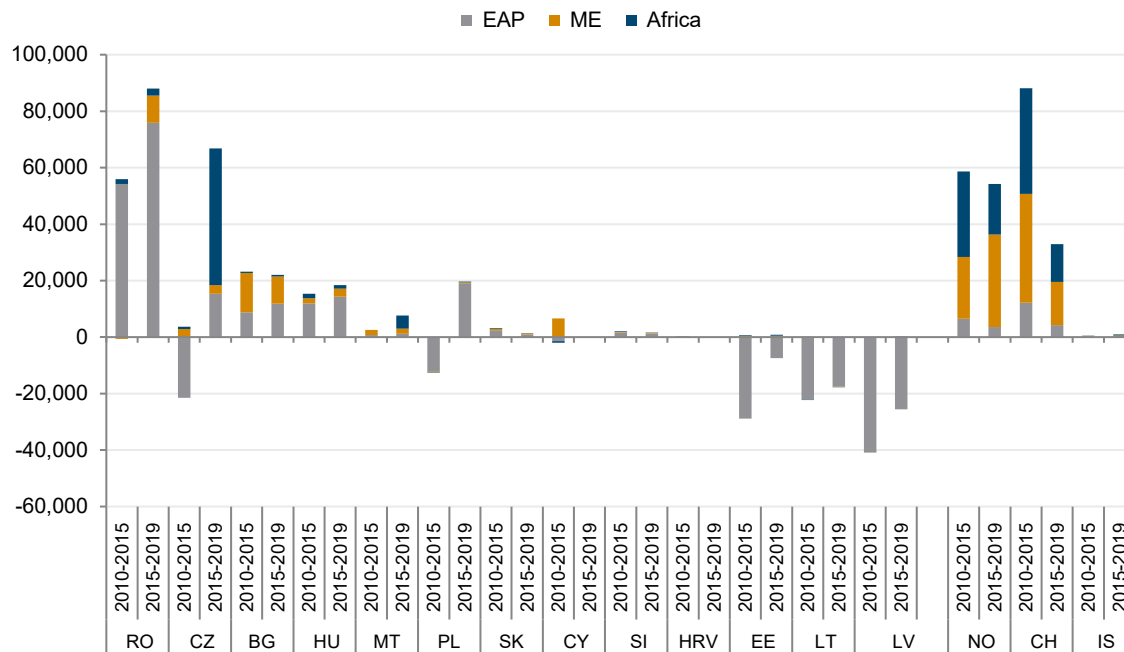
■ EAP ■ ME ■ Africa

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 8 / Net migration 2010-2019, EU-CEE and EFTA

Source: own calculations, UN statistics. Note: country of birth definition.

Figure A 9 / Net migration 2010-2015-2019, EU-CEE and EFTA

Source: own calculations, UN statistics. Note: country of birth definition.

**Figure A 10 / Net migration to EU28-EFTA, 2010-2019, origin country population share, in %**

ME countries

EaP countries
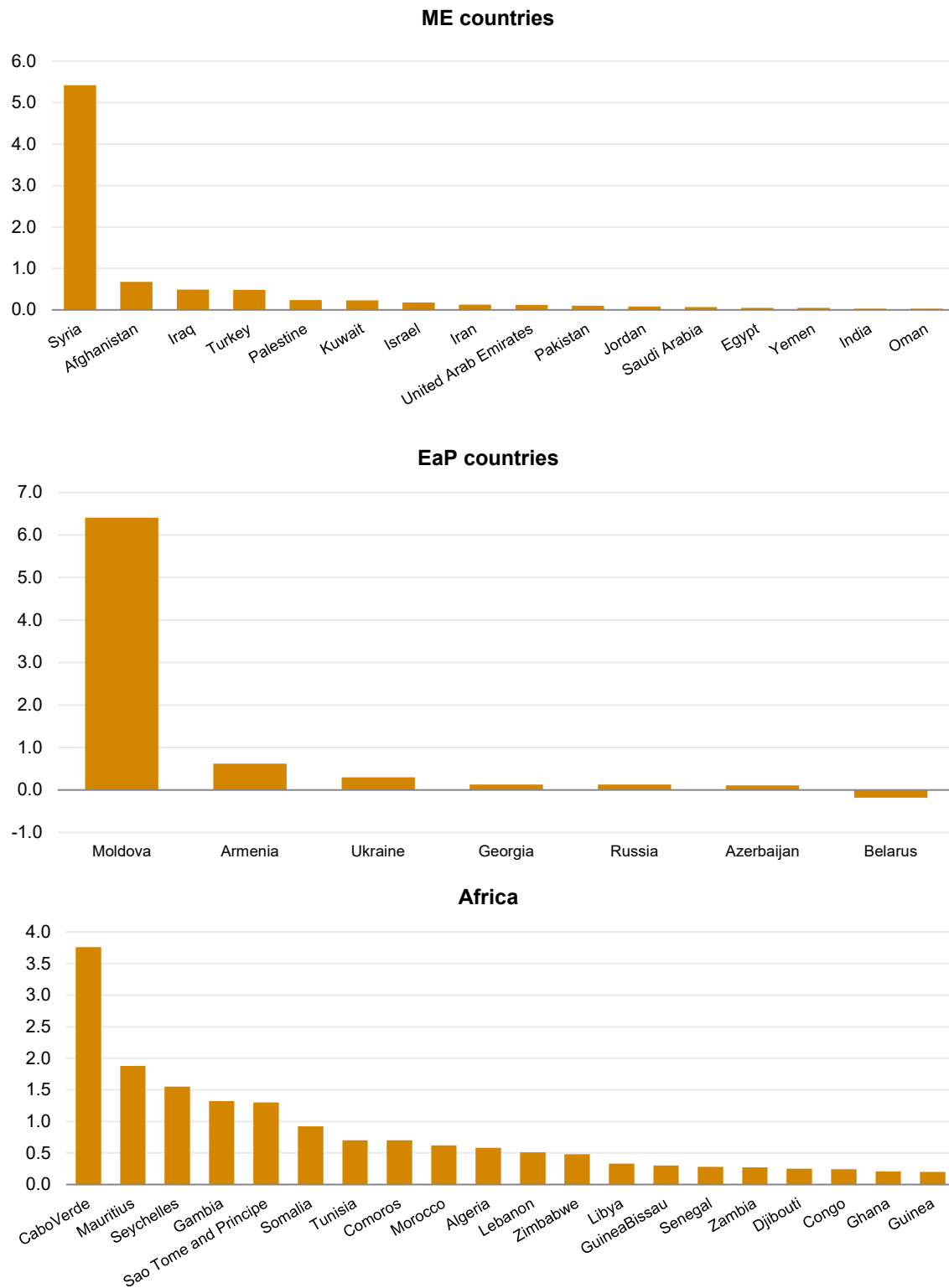
Africa

Source: own calculations, UN statistics. Note: country of birth definition. In case of African countries the top 20 main sending countries by population share have been selected.

Figure A 11 / GDP per capita in PPP, current prices, US dollar.
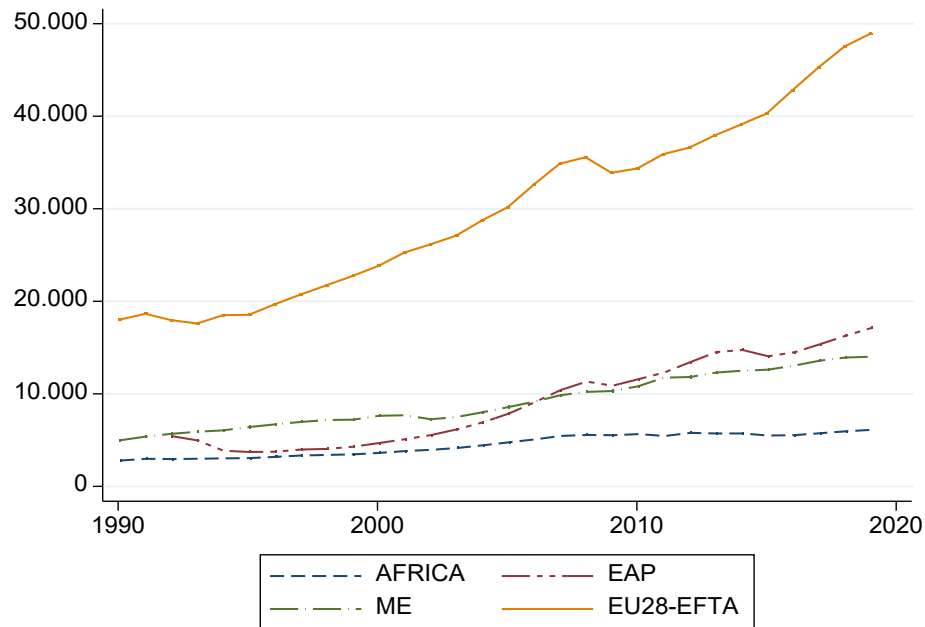
Source: own calculations, IMF-WEO statistics. The group of ME excludes Gulf countries.

Figure A 12 / Political conflicts/origin countries
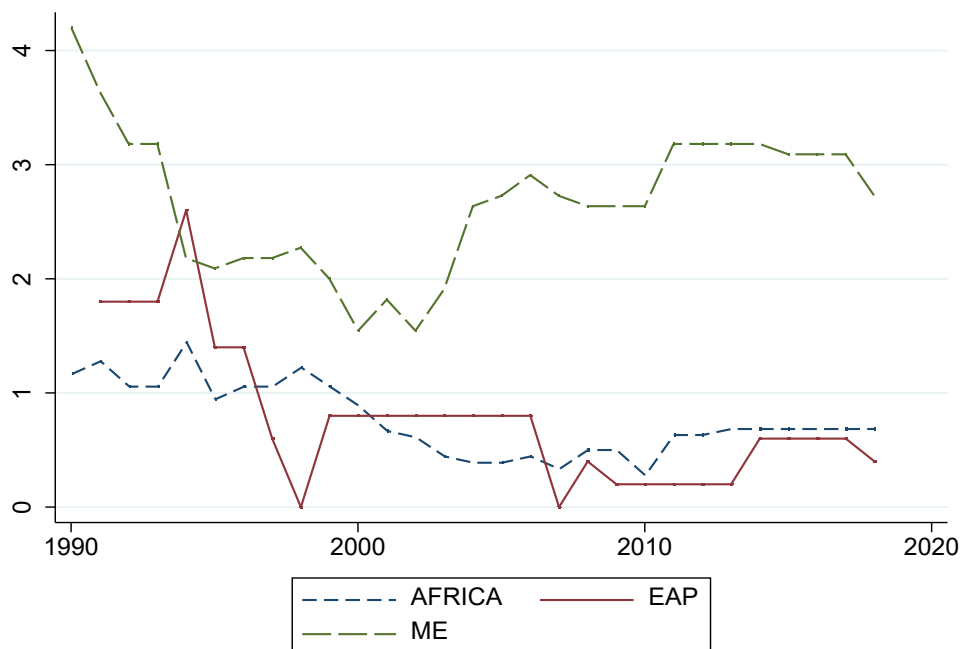
Source: own calculations, MEPV (Major Episodes of Political violence). [19]

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[19] Source: Centre for Systemic Peace, http://www.systemicpeace.org/inscrdata.html. MEPV (Major Episodes of Political violence) provide time-series data on interstate, societal, and communal warfare episodes assuming a magnitude score ranging between 1 (lowest) to 10 (highest) for each MEPV. Magnitude scores for multiple MEPV are summed while 0 denotes no episodes.

Figure A 13 / Stock of refugees to EU28-EFTA originating from Africa, ME and EaP
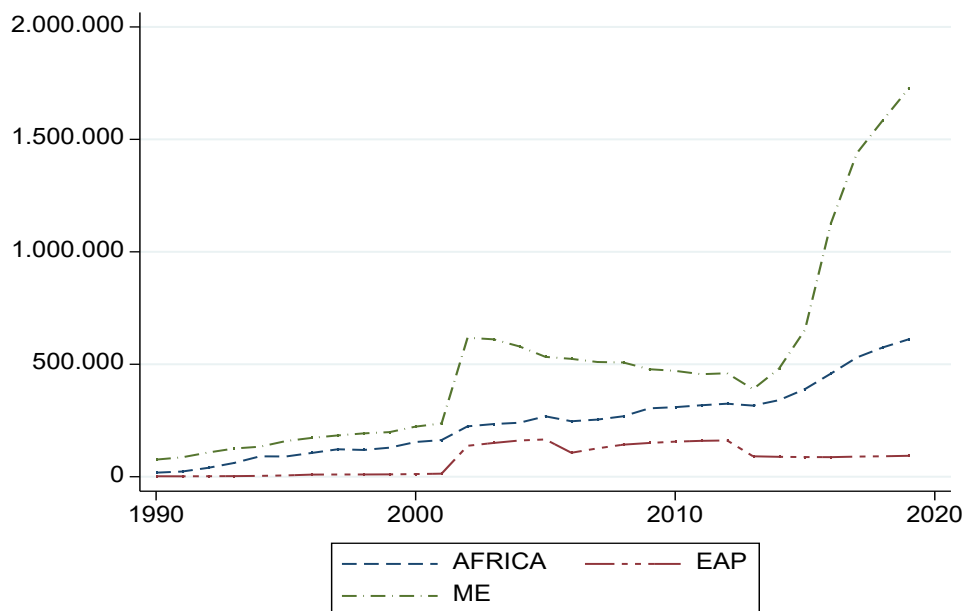
Source: own calculations using UNHCR data. [20]

Figure A 14 / Total number of IDPs internally displaced due to conflict and violence
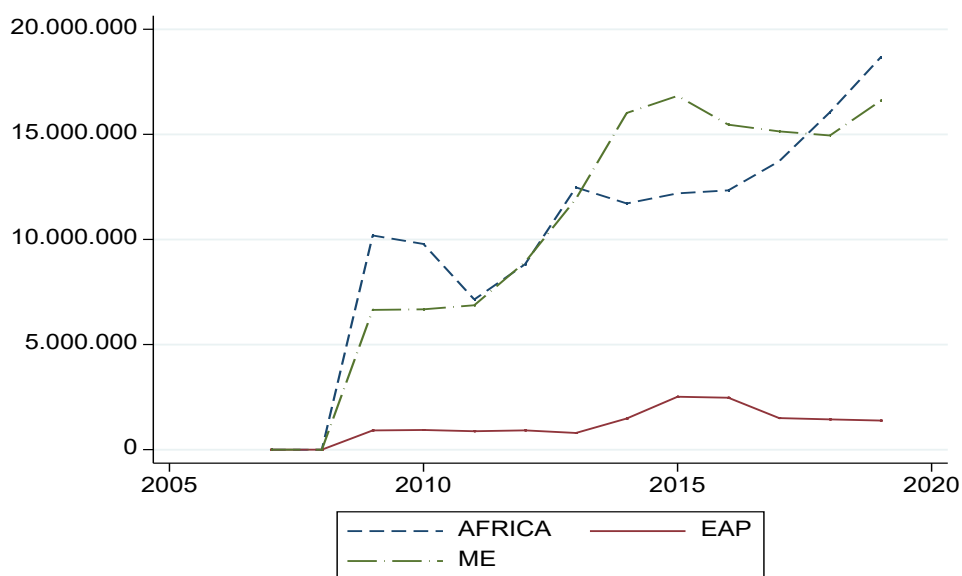
Source: own calculations using IDMC database. [21]

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[20] Source: UNHCR, https://www.unhcr.org/refugee-statistics/download/?url=XpVi0k

[21] Source: Internal Displacement Monitoring Centre (IDMC) database. https://www.internal-displacement.org/database/displacement-data.

Figure A 15 / New displacements due to conflict and violence
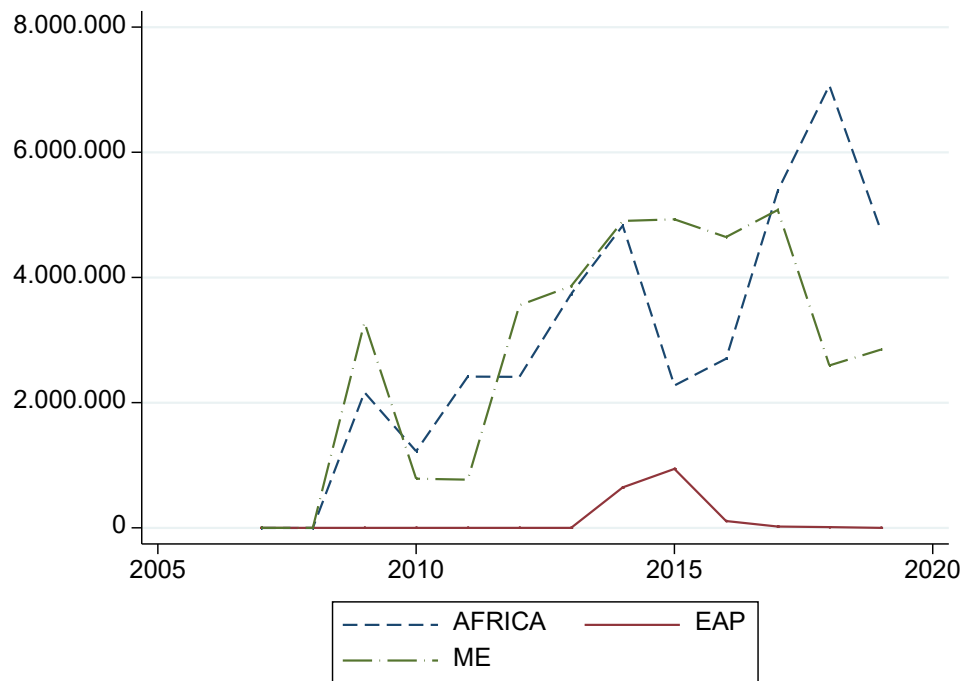
Source: own calculations using IDMC database.

Figure A 16 / New displacements due to disasters
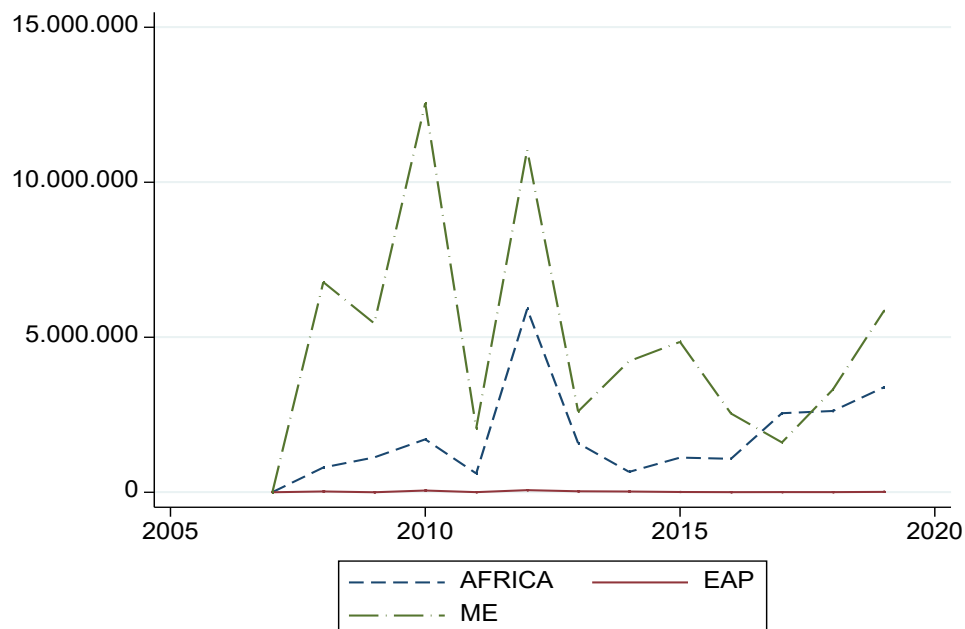
Source: own calculations using IDMC database.

Table A 1 / List of countries included in the study

Africa	ME	EaP
Algeria	Iran Islamic Republic	Armenia
Angola	Iraq	Azerbaijan
Benin	Israel	Belarus
Botswana	Jordan	Georgia
Burkina Faso	Kuwait	Republic of Moldova
Burundi	Lebanon	Russian Federation
CaboVerde	Oman	Ukraine
Central African Republic	Pakistan	
Chad	Saudi Arabia	
Comoros	State of Palestine	
Congo	Syrian Arab Republic	
Côte d´Ivoire	Turkey	
Democratic Republic of the Congo	United Arab Emirates	
Djibouti	Yemen	
Egypt	Afghanistan	
Equatorial Guinea	India	
Eritrea		
Eswatini/Swasiland		
Ethiopia		
Gabon		
Gambia		
Ghana		
Guinea		
Guinea Bissau		
Kenya		
Lesotho		
Liberia		
Libya		
Madagascar		
Malawi		
Mali		
Mauritania		
Mauritius		
Morocco		
Mozambique		
Namibia		
Niger		
Nigeria		
Rwanda		
Sao Tome and Principe		
Senegal		
Seychelles		
SierraLeone		
Somalia		
SouthAfrica		
SouthSudan		
Sudan		
Togo		
Tunisia		
Uganda		
United Republic of Tanzania		
WesternSahara		
Zambia		
Zimbabwe		

Table A 2 / Sensitivity analysis, estimation results

Dependent variable Ln(stock of migrant)	(1) Total to EU28-EFTA M1	(2) Total to EU28-EFTA M2	(3) Total to EU15 M1	(4) Total to EU15 M2	(5) AFRICA to EU28-EFTA M1	(6) AFRICA to EU28-EFTA M2	(7) EaP to EU28-EFTA M1	(8) EaP to EU28-EFTA M2	(9) ME to EU28-EFTA M1	(10) ME to EU28-EFTA M2
Stock of migrant ln(stock) (t-1)	0.99***	0.99***	0.99***	0.99***	0.99***	1.00***	0.98***	0.98***	0.98***	0.98***
	(0.00044)	(0.00039)	(0.00061)	(0.00057)	(0.00052)	(0.00046)	(0.0016)	(0.0014)	(0.0013)	(0.0012)
Ln(GDP, cap, PPP)origin	-0.37***	-0.29***	-0.56***	-0.46***	0.18	0.20*	-0.036	-0.077	-0.36	-0.36
	(0.048)	(0.043)	(0.053)	(0.049)	(0.11)	(0.100)	(0.47)	(0.42)	(0.50)	(0.44)
Ln(GDP, cap, PPP), squared, or**igin**	0.0077***	0.0058***	0.015***	0.012***	-0.0051*	-0.0043*	-0.018	-0.011	0.0068	0.0055
	(0.0018)	(0.0015)	(0.0019)	(0.0017)	(0.0025)	(0.0022)	(0.030)	(0.026)	(0.013)	(0.011)
Ln(GDP, cap, PPP)destination	0.043***	0.033***	0.071***	0.053***	0.021***	0.013***	0.091***	0.076***	0.063***	0.048***
	(0.0036)	(0.0032)	(0.0060)	(0.0055)	(0.0044)	(0.0039)	(0.013)	(0.012)	(0.0092)	(0.0082)
Ln(employment rate), origin	-0.092*	-0.088**	-0.050	-0.049	-0.063	-0.076*	-0.075	-0.061	-0.12	-0.11
	(0.037)	(0.032)	(0.040)	(0.037)	(0.043)	(0.038)	(0.16)	(0.14)	(0.17)	(0.16)
Ln(employment rate), destination	-0.031	0.014	0.0017	0.044	-0.027	0.019	-0.042	-0.032	-0.071	-0.012
	(0.022)	(0.019)	(0.030)	(0.028)	(0.026)	(0.023)	(0.080)	(0.072)	(0.056)	(0.050)
Ln(population), origin	0.055***	0.046***	0.023*	0.020+	0.071***	0.065***	0.037	0.021	0.0019	-0.0052
	(0.0100)	(0.0088)	(0.011)	(0.010)	(0.021)	(0.018)	(0.082)	(0.074)	(0.042)	(0.038)
Ln(population), destination	0.0042***	0.0040***	0.0064***	0.0055***	0.0013	0.0013	0.015***	0.013***	0.013***	0.010***
	(0.00078)	(0.00070)	(0.0011)	(0.0011)	(0.00094)	(0.00085)	(0.0027)	(0.0024)	(0.0023)	(0.0020)
Ln(population share 0-24), origin	-0.25***	-0.20***	-0.38***	-0.33***	-0.096	-0.059	0.020	0.0064	-0.16	-0.18
	(0.045)	(0.040)	(0.048)	(0.045)	(0.067)	(0.059)	(0.24)	(0.22)	(0.33)	(0.29)
Ln(population share 0-24), destination	-0.096***	-0.077***	-0.32***	-0.28***	-0.080***	-0.064***	-0.16***	-0.13***	-0.064*	-0.052*
	(0.0098)	(0.0086)	(0.015)	(0.014)	(0.012)	(0.010)	(0.034)	(0.030)	(0.027)	(0.025)
(Ln(population share 0-24), origin) **X** (Ln(GDP, cap, PPP)origin)	0.080***	0.064***	0.12***	0.098***	-0.041	-0.046*	0.039	0.041	0.075	0.075
	(0.011)	(0.010)	(0.013)	(0.011)	(0.026)	(0.023)	(0.096)	(0.086)	(0.12)	(0.10)
Colonial relationships	0.023***	0.020***	0.024***	0.020***	0.012*	0.010+	.	.	0.012	0.0094
	(0.0051)	(0.0048)	(0.0047)	(0.0045)	(0.0056)	(0.0053)	.	.	(0.014)	(0.013)
Ln(distance)	0.045***	0.048***	0.066***	0.061***	-0.010	-0.0024	-0.030	-0.015	-0.027*	-0.023+
	(0.0097)	(0.0083)	(0.016)	(0.014)	(0.014)	(0.011)	(0.027)	(0.023)	(0.014)	(0.012)
Ln(distance) X Africa	-0.034***	-0.034***	-0.014	-0.0100						
	(0.0078)	(0.0071)	(0.012)	(0.011)						
Ln(distance) X ME	-0.020***	-0.020***	-0.0083*	-0.0076+						
	(0.0025)	(0.0023)	(0.0041)	(0.0039)						

cont.

Table A 2 / Contd.

Dependent variable Ln(stock of migrant)	(1) Total to EU28-EFTA M1	(2) Total to EU28-EFTA M2	(3) Total to EU15 M1	(4) Total to EU15 M2	(5) AFRICA to EU28-EFTA M1	(6) AFRICA to EU28-EFTA M2	(7) EaP to EU28-EFTA M1	(8) EaP to EU28-EFTA M2	(9) ME to EU28-EFTA M1	(10) ME to EU28-EFTA M2
Common official language	0.016**	0.0088+	0.030***	0.020***	0.022***	0.012*	.	.	0.014	0.0098
	(0.0051)	(0.0046)	(0.0050)	(0.0047)	(0.0061)	(0.0055)	.	.	(0.012)	(0.011)
Common ethnic language	-0.0046	-0.00041	-0.010*	-0.0048	-0.016*	-0.0089	-0.044	-0.037	0.00038	0.0022
	(0.0050)	(0.0045)	(0.0051)	(0.0048)	(0.0063)	(0.0057)	(0.035)	(0.033)	(0.0094)	(0.0086)
Common religion	-0.015*	-0.015*	-0.031***	-0.031***	-0.017*	-0.017*	-0.18	-0.18+	-0.023	-0.020
	(0.0077)	(0.0068)	(0.0080)	(0.0074)	(0.0076)	(0.0068)	(0.11)	(0.095)	(0.038)	(0.035)
Stage fragility, origin	-0.012+	-0.010+	-0.0068	-0.0076	-0.0024	0.0015	0.016	0.017	-0.019	-0.014
	(0.0066)	(0.0059)	(0.0072)	(0.0068)	(0.0091)	(0.0081)	(0.020)	(0.019)	(0.022)	(0.019)
POLITY, origin	-0.0021	0.0037	-0.0055	-0.00033	0.0014	0.0046	0.0036	0.010	0.025	0.021
	(0.0060)	(0.0053)	(0.0065)	(0.0060)	(0.0065)	(0.0058)	(0.029)	(0.026)	(0.021)	(0.019)
POLITY, destination	0.017***	0.015***	0.034***	0.021**	0.0032	0.00070	0.053***	0.050***	0.055***	0.050***
	(0.0044)	(0.0039)	(0.0086)	(0.0079)	(0.0054)	(0.0048)	(0.015)	(0.014)	(0.011)	(0.0098)
Climate hazard, origin	0.20***	0.14**	0.19**	0.13*	0.078	0.080	0.57*	0.37	-0.083	-0.14
	(0.056)	(0.050)	(0.060)	(0.056)	(0.065)	(0.058)	(0.27)	(0.24)	(0.22)	(0.20)
Climate hazard, destination	-0.018	-0.029**	0.043**	0.031*	-0.057***	-0.063***	0.087*	0.053	-0.032	-0.047+
	(0.011)	(0.010)	(0.014)	(0.013)	(0.013)	(0.012)	(0.043)	(0.038)	(0.029)	(0.026)
Migration policies: Less restrictive	-0.0025	-0.0013	0.0053+	0.0052+	-0.0033	-0.0019	0.0075	0.0059	-0.013*	-0.0081
	(0.0025)	(0.0023)	(0.0028)	(0.0027)	(0.0030)	(0.0027)	(0.0092)	(0.0084)	(0.0065)	(0.0059)
Migration policies: More restrictive	-0.0066*	-0.0041+	-0.0076**	-0.0065*	-0.0039	-0.0016	-0.0032	-0.0014	-0.015*	-0.012+
	(0.0027)	(0.0024)	(0.0028)	(0.0026)	(0.0031)	(0.0028)	(0.010)	(0.0092)	(0.0071)	(0.0065)
_cons	-3.16	-4.65*	-10.3***	-8.39***	4.05	1.32	4.00	2.62	-0.20	0.36
	(1.92)	(1.81)	(3.09)	(2.08)	(3.73)	(2.80)	(5.57)	(4.71)	(5.08)	(4.16)
Fixed effects										
Year	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Sending country	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
MRT	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
N	23722	27687	12697	14462	15119	17858	2784	3165	3966	4462
R^2	0.998	0.998	0.999	0.999	0.999	0.999	0.996	0.997	0.998	0.998

Standard errors in parentheses + $p < 0.10$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

All the specifications include time and sending countries dummies and MRTs. The M1 specification leaves out sending countries with a stock of migrants below a threshold of 1000 migrants; the second specification M2 leaves out countries with a stock of migrants as share of population below 1%. Column 1 and 2 present the results which have EU28 and EFTA as countries of destination. Column 3 and 4 present the results which have EU15 as countries of destination. Column 5 and 6 present the results which have African countries as sending countries and EU28 and EFTA as countries of destination. Column 7 and 8 present the results which have EaP countries as sending countries and EU28 and EFTA as countries of destination. Column 9 and 10 present the results which have ME countries as sending countries and EU28 and EFTA as countries of destination.