Migration and Comparative Advantages in the EU-MENA Region.[1]

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Abstract

The issues we investigate are related to how migration flows between MENA and EU contribute in shaping the comparative advantages of EU and MENA creating a process of international diffusion of information and knowledge between the two areas. We document industry specific shifts in tradable goods looking at how migration figures correlate with home and destination country's extensive margin (EM) and intensive margins (IM) of trade. To look at the EM we use a disaggregated indicator at 4-digit SITC which measures new appearances of product in a country's export basket in order to see if migrants can explain variation in the ability of countries to export those goods. To look at the IM, we use the annual growth rate of a pre-existing export product. We find different effects for immigration and emigration. Positive effects for immigrants while emigration seems not robustly significant. Spillover effects on the IM seems stronger than at the EM. Comparing the results for three technology product categories, we get somewhat an idea about the extensive and intensive margin direction. The impact at the EM is related to low tech products both for immigrants and emigrants. The impact at the IM for immigrants seems strong and balanced across various product categories, while for emigrants the results are less robust. All these results can be relevant for prescriptions in terms of EU and MED countries policies of migration and trade.

Keywords: *Trade-migration link, panel data approach, trade, extensive and intensive margin.*
JEL classification: *F14, F22, L14*

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1. INTRODUCTION

The issues we investigate are related to how migration flows between MENA and EU contribute in shaping the comparative advantages of countries and in creating a process of international diffusion of knowledge between the partners of the two regions associated with the pattern of international migration.

The novelty of the idea is that the knowledge transmissions channels rather than being explored in relation to FDI and to trade, an over investigated issue, are seen in relation to migration flows. Of all international factor flows, migration is indeed the strongest knowledge diffusion driver.

We check whether migrants can explain variation in good-specific productivity, as measured by the ability of countries to export those goods, for products that are intensively exported by the migrants' home/destination countries. In particular, we investigate how an increase in the stock of immigrants (emigrants) from country exporters of a given product is, on average, associated with an increase in the likelihood that the receiving (sending) country will export that same product in the next years. Hence, our methodology exploits changes in countries' export baskets considered as a proxy for cross-country productivity spillovers and knowledge diffusion. The key assumption is that, after controlling for product-specific global demand, firms in a country will be able to export a good only after they have become productive enough to compete in global markets.

We document industry specific productivity shifts in tradable goods as explained by the variation in the international movement of people looking at how migration figures correlate with home and destination country's extensive and intensive margins of trade. We also want to exploit whether the effect of migration on margins of trade varies according to different technology product cathegories. To look at the extensive margin, following Bahar et al. (2014, 2018) we use new appearances of a product in a country's export basket in order to see if migrants can explain variation in good-specific productivity, proxied by the ability of countries to export those goods. To look at the intensive margin, we use the annual growth rate of a

pre-existing export product. For this purpose, we will consider different publicly available data sources that include bilateral data on migration and trade and adopt a gravity framework.

Our dataset is covering years from 1990 to 2015. The total number of bilateral observations amounts to over 7 million of observations (28 European countries*6 periods*781 product categories*225 partners). The models are estimated for each of the five years between 1990 and 2015 for the migration and for trade between EU and all its trade and migration partners (more than 150 countries). Hence our data set covers approximately 50 per cent of the global stock of migrants: the extensive country coverage – 225 countries of origin and 28 EU destinations – attenuates the sample selection bias due to the specific choice of the countries entering the analysis and it allows to exploit differences between countries at different income levels.

We expecially focus on people´s flows within the Mediterranean (MED) region which constitute a quite relevant social and economic process, with net benefits for both the origin and destination countries. In 2015, more than 18 millions of nationals born in the southern basin of the Mediterranean were living in EU countries, this being one of the most important corridors for people´s flows in the world, which are mainly supported by the nearness of African and European continents and their dissimilar level of wealth and employment opportunities. The rapid increase in immigrant population in the EU is one of the most challenging political and sociological issues of today, being also important for its economic consequences (Farges et al., 2011).

We will discuss our findings in the light of the outcomes of previous research on closely related issues also focused on the EU-MENA area. As pointed out by previous studiesa pro-trade effects of immigrants arriving to EU from MENA countries exist[2]. Especially Southern EU-countries (and in particular Italy, Spain, France and Portugal) have shown clear trade creation effects of people´s flows arriving to these countries. In particular, these studies have explored

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[2]FEMISE program FEM34-01-CP2010: The Trade Creation Effect of Immigrants: Characterising Socioeconomic Opportunities Arising From Linkages Between People's And Goods' Flows Inside The Mena Region and FEM34-30-CP2010: Analyzing the Immigration-Induced Changes in Product Diversity and Trade Patterns: The Case of the EU-Mediterranean-Eastern Europe Zone

the trade-migration nexus and the role of migrant networks and proximity. But to our knowledge there is no previous analysis of how and whether migrants do produce a pro-trade effect and a likely knowledge transfer back to their origin countries. Besides, while the standard literature explore the migration-trade link investigating the link between migration and trade volumes, in line with a recent literature (Peri and Requena-Silvente, 2010) we ask whether migration affects the extensive margin of trade or hinges on the intensity of exports of the basket of products already exported. Thridly, we consider how important is the degree of technology embodied in traded goods by considering low, medium and high technology classes.

To preview our main results, we find different effects for immigration and emigration. Positive effects for immigrants (maybe via tacit, embodied knowledge that they can transfer through direct interaction). Emigration seems not robustly significant maybe because of the indirect interactions ongoing in this case of knowledge transfer. It is unclear whether most of the effects should take place at the EM or at the IM. Knowledge diffusion at the IM should be stronger because the fixed costs associated with starting an industry have already been paid for. Knowledge diffusion at the EM might be less strong because of the higher complexity of this growth process (Bahar et al., 2018; Jaeger et al. , 2010). Comparing the results for the three technology product categories, we get somewhat an idea about the extensive and intensive margin direction. Knowledge diffusion at the EM seems to be stronger in low tech products both for immigrants and emigrants. Knowledge diffusion at the IM for immigrants seems strong and balanced across various product cathegories, while for emigrants the results are less robust.

The findings of the analysis provide useful inputs as far as migration processes between countries would be showing positive externalities in the side of trade flows and diffusion of tacit knowledge between the two areas.

The reminder of the paper is as follows. In section 1 we describe the present and recent past of good´s and people´s flows for the MED countries, while in section 2 we review the main contributions of the related literature. In section 3 we describe the data and develop the empirical model and its theoretical anchor that will inform the research. In section 4 we present the results of the estimation strategies: the adoption of an analysis of extensive and intensive

margin both for EU and for MENA trade disaggregated at product level adopting an indicator of comparative advantage shift at product level as measure of extensive margin and a compound growth rate of revealed comparative advantages to measure the intensive margin, and splitting up the trade vector by different technology cathegories of products controlling for the geography and economic development, and institutional distance in driving the trade-migration linkage. This section also includes the discussion of the research findings. Finally, section 5 concludes and suggests policy implications derived from our results.

2. AN OVERVIEW OF GOOD´S AND PEOPLE´S FLOWS BETWEEN MENA AND THE EU REGION VIS-À-VIS OTHER GEOGRAPHICAL AREAS

EU plays a very prominent role representing one of the largest trading partners of countries in the MENA region. If we look at Table 1, we see that the share of EU as destination for MENA exports, in spite of a sizeable decrease after 1995, in 2015 was still almost 22 per cent. In 2015, 30% of the total Mena imports came from Europe (tab. 2). Three of the five main export partners for MENA are in Europe (Italy, France and UK) and also two of top five countries to which Middle East & North Africa imported goods are European (Germany and Italy, before China, USA, United Arab Emirates) (according to World Bank data, 2019).

[Table 1 about here]

[Table 2 about here]

People´s flows to EU are also very important inside the MENA region, with historical linkages between expecially Northern African (NA) and EU countries. Almost one out of four migrants from MENA comes to Europe (6,4 millions equal to 24.1% in 2015, see fig. 1) (UN, 2017).

Fig. 1 – Percentage of migrants from MENA to EU28
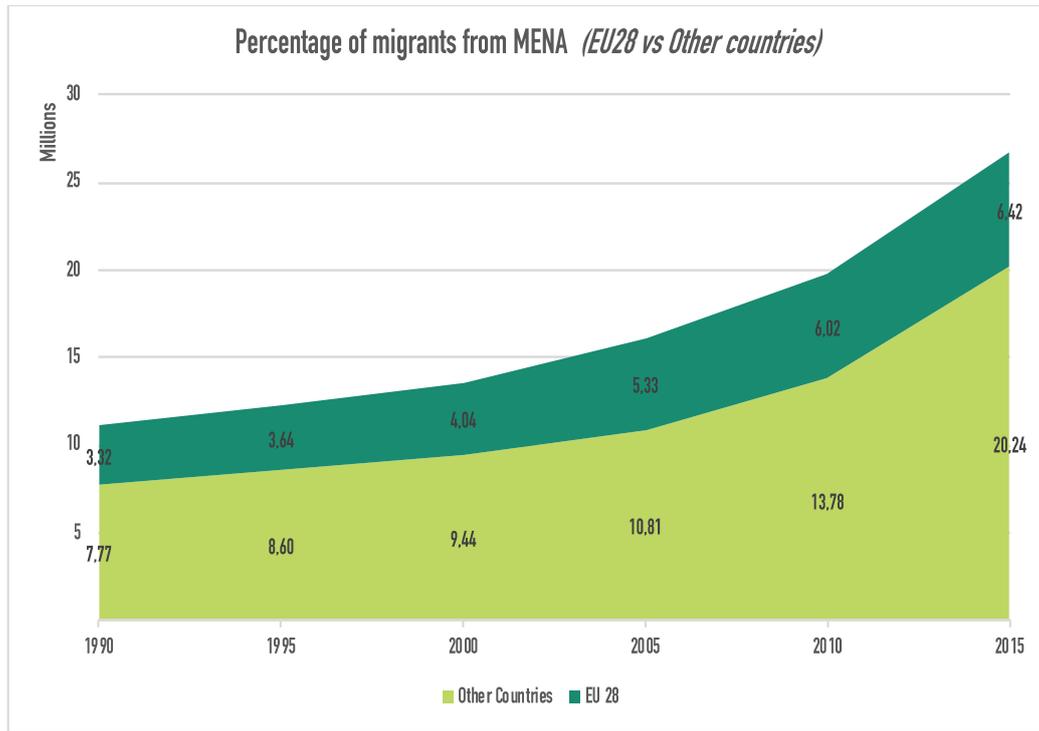
Source: Own Calculation on UN Data *(United Nations, Department of Economic and Social Affairs. Population Division (2017). Trends in International Migrant Stock: The 2017 revision)*

The main people´s flows arriving to the EU region were those from Turkey, Morocco, Algeria and Tunisia, with immigrants mainly establishing in Spain, France, Italy and Germany. There was a remarkable growth in immigrants arriving to these three countries along 2002-2010. The period was characterised by high volumes of (in some cases government-promoted) regular entrances of immigrants, resulting in an annual increase of 23% between 2000 and 2007, and causing a structural change in the foreigners´ presence on the countries. Immigrant population grew by a factor of 2 in Portugal, of 3 in Italy and of 4 in Spain, between 2002 and 2010, recording a rate of immigrants to total national population of 4.3%, 7.0% and 12.2%, respectively at the end of the period (Artal Tur et al., 2011). Total (official and unofficial) migration flows originating in the MENA account for approximately 10-15 million people, which represents some 3%-5% of total MENA population (Eurostat, 2017).

3. REVIEW OF THE LITERATURE

This study belongs to the literature on international knowledge diffusion in that it looks at the role of migrants as a vehicle to increase knowledge diffusion, productivity and changes in specialisation. The appearance of new industries in a country's export basket can be partly explained by the local character of knowledge diffusion. That is, productivity inducing knowledge follows a highly geographically localised diffusion pattern, which is attributed to its 'tacitness' (Jaffe et al., 1993; Keller, 2002, 2004; Bottazzi and Peri, 2003; Kerr, 2008). This vision has been originally suggested by Arrow (1969), who argued that the transmission of this tacit or non-codifiable knowledge relies on human minds rather than on written words. Thus, if tacit knowledge can induce sector-specific productivity shifts as measured by new exports, then migrants, who are naturally carriers of tacit knowledge, would shape the comparative advantage of their sending and/or receiving countries.

Traditionally, one of the main concerns about the international migration was the so called "brain drain"; but the more recent literature has found positive spill-overs and incentive-creating effects of migration by creating business opportunities as well as by favoring the circulation and diffusion of knowledge (Miguelez, 2017). Traditionally, the most common way to measure knowledge diffusion has been to consider patent and inventor data (specifically patent citation) (Thompson and Fox-Kean, 2005; Singh and Marx, 2013). More recently, another way to track knowledge diffusion has been used: the evolution of the export basket of countries has been identified as a useful proxy to measure the knowledge diffusion (Bahar et al., 2014).

This study also hinges on an already large strand of the literature which analyses the relationship between trade and migration, following the pioneering work of Gould (1994) and early contributions of Head and Ries (1998), Rauch (1999), and Rauch and Trindade (2002).

The pro-trade effect of migration flows within this literature builds on two main channels. The first channel is due to the "preference" of immigrants for some type of homeland products, foodstuff, etc., resulting in an increase of imports of host countries, also called the "transplanted home bias" effect by White (2007).

The second channel affects both import and export flows, being defined as the "network" or the "information bridge" channel (Dunlevy, 2006). In this case, networks of immigrants promote new business opportunities by reducing transaction trade costs (i.e. improving information channels, or moderating institutional failures in business relationships, like security and arbitrage issues) (Rauch, 2001; Wagner et al., 2002; Briant et al., 2014). In the "network approach", the basic idea is that information costs are a major component of the fixed costs that firms have to pay to enter a new market. In this way, international networks of people would be of great help in reducing such fixed trade costs and larger stocks of immigrants in a given destination would help firms to overcome such start-up and commercialization fixed costs in foreign markets, improving both export participation and intensity of exports. All these studies concluded that, in aggregate, migration leads to a trade creation effect.

Immigrants' ties to their home country may promote trade for at least three reasons. First, immigrants have a good knowledge of the customs, language, laws as well as business practices in both the host and home countries. Accordingly, their presence helps bridging the information gap between sellers and buyers on both sides, hence promoting bilateral trade opportunities, and establishing lasting ties based on trust and mutually understood culture. Second, immigrant networks may provide contract enforcement through sanctions and exclusions, which substitutes for weak institutional rules and reduces trade costs. As the literature has shown, these two types of trade-enhancing effects are relevant in pushing both imports and exports flows between destination and home countries of immigrants. And third, immigrants bring their taste for homeland products, leading to the correspondent preference effect, which is more likely to promote imports from the home country towards the destination country.

A wide literature has analysed the trade-migration linkages for North Mediterranean countries (Blanes and Martín-Montaner, 2006, for Spain, Tadesse and White, for Italy; Briant et al., 2009 for France; Blanes, 2008 for Spain; Peridy, 2012 for France; Andrés Artal-Tur et al. 2012 for Italy, Spain and Portugal).

Studies focused on the MENA region versus EU are quite recent. Foad (2010) examines the immigration-trade linkage separately for migrants moving from the Middle East and North

Africa (MENA) to both Europe and North America for a sample spanning 1991-2001, in order to test how differences in income and education existing between these two groups affect such pro-trade effect, given that MENA migrants to North America are observed to be less numerous, but more educated. The author expects that the fact that these migrants going to North American used to show more cultural assimilation in that area should weaken both network and preference effects, then affecting the trade-enhancing effect. What he found is that the migration-trade link is shown to be stronger for migrants in Europe, with the strongest output for imports. He also observes that the migration-trade link is stronger for differentiated goods than for homogeneous goods, especially for differentiated goods´ imports into Europe. These results suggest that while network effects matter, immigrant preferences for native country goods are the key factor driving the migration-trade link.

Peridy (2012) for France for the period 2001-2010 shows that the network effects predominate in econometric output, with some 10% additional numbers of immigrants leading to trade creation of about 2%-5%. Although the specific trade creation effect of migrants coming from MENA countries seems to be lower than those of more remote regions, the observed effect is still significant, particularly for the network channel. Results also show that the pro-trade effect of migrants is significant for imports but also for exports, and for differentiated products, while much less for homogenous products. As the paper explains, the lower trade effects of migration encountered for the MENA countries could be a result of the higher share of homogenous trade flows in the France-MENA trade, compared to other trade exchanges of this country, or a consequence of the lower impact of network effects between France and MENA, given the lasting tradition of arrivals from that destination.

Artal-Tur et al. (2012), for Italy, Spain and Portugal in the period 2001-2010, show how all these countries have accumulated stocks of migrants of more than 10 million people, mainly coming from Morocco, Algeria and Tunisia, which makes their results of pivotal relevance for the EU-MENA region. The investigation builds on subnational (province level) data. Estimation output shows clear trade creation effects, in both exports and imports, through the network channel for all three countries, with the preference channel appearing just slightly in imports from some geographical areas historically closer to the receiving countries of

immigrants (Latin America, Western Europe, and Mediterranean countries). The network effect is the predominant one. Second, networks are created inside the provinces, not usually spilling over nearby territories. The more distant the territories (in terms of geography, culture, income per capita, or institutions), the bigger is the trade creation effect. Ghoneim and El-Deken (2012) in the case of Egypt for 2001-2010, have shown that Egyptian migrants are able to create trade with major EU receivers of people´s flows. However, the effect appears just to work for specific type of products and not with all countries. Particularly, migration enhances trade between Egypt and the EU through both preference and network channels, but with a predominant role of the former over the latter channel, as in usual South-North studies. The type of trade enhanced by Egyptian migrants differs on the exports and imports side, where Egyptian emigrants help to enhance Egyptian homogenous and differentiated exports to the EU (clear preference channel), and European homogenous and reference-priced imports to Egypt (closer to network effects and market opportunities in Egypt). Regarding the Gulf countries, results have shown no great trade effects of migrants´ networks of Egyptians arriving to these countries. Similarities between people in this area, in cultural and social terms, appear to be reducing trade gains derived from flows of information through MENA networks. Moreover, migration to Gulf countries is mostly temporary, so networks do not seem to play the same role than they do in the EU and other destination countries of Egyptians´ emigrants (as North America, for example).

Cagatay et al. (2014) empirical analysis is carried out to analyze the impact of migration on bilateral trade between the EU and Mediterranean countries and on product diversity in the EU over the period 1998-2010. Immigrants are grouped with respect to their origin as Mediterranean and Eastern European countries. Trade analyses cover both industry-level bilateral exports and imports and product diversity. Almost in all cases a positive correlation between migration and both exports and imports are found. This outcome also supports the "information bridge hypothesis" which boosts trade via lowering transaction costs.

Giovannetti and Lanati (2016) analysis for the period 1995-2000, not only study the link between emigration and exports from the origin country but also the link between skill level of the migrants and the quality level of the good exported. Building on this paper a more recent contribution by Giovannetti, Lanati and Venturini (2019) focused on Mediterranean

countries and further explored for this region the channel of transmission from migration to trade to understand if the growth in highly skilled migrants has ended up in an increase in exports of higher quality in the Mediterranean countries. According to this study migrants favor international trade by reducing the transaction costs and thus supporting exports. This effect is higher for those goods for which the country of origin has a comparative advantage. Besides, low skilled emigrants trigger exports of low-tech goods, while high skilled migrants are more likely to favor high quality technological exports. They consider both the preference channel where highly skilled migrants by earning a higher wage, prefer and consume higher quality goods, and the distribution channel, highlighting that highly educated migrants can promote more easily than low skilled goods coming from the country of origin with a higher technological content. Given the increase in alphabetization and the improvement of the educational systems in the Mediterranean countries, this issue is quite relevant.

The literature on South Mediterranean countries is still scant and more research is needed for this important North-South corridor, in order to generate more evidence informing the EU Trade and Migration Common Policies, as well as the EU Neighboring Policy. Only few studies on the MENA region are covering the recent important wave of people´s flows of the new century.

In such context, the present paper is directed to keep filling some of these existing gaps of knowledge in the field. The analysis of this paper focuses on the change in comparative advantages in EU and in MENA countries associated with migration try applying the tools provided by the last developments of the literature and building on a long panel dataset up to 2015.

4. DATA AND ESTIMATION METHODOLOGY

One of the main concerns about the international migration literature has been the lack of data. So, traditionally, most of the contribution were theoretical. More recently, however, the availability of new migration data has contributed to a new body of literature. For our purpose

we consider different publicly available data sources that include bilateral data on migration and trade.

For data on migration, we adopt those from the United Nations, Department of Economic and Social Affairs (United Nations, Department of Economic and Social Affairs. Population Division (2017). Trends in International Migrant Stock: The 2017 revision). UN dataset covers a long time period (since 1990), and updates until 2017 providing data on international migrant stocks by age, sex and origin for the mid-point (1 July) of each year: 1990, 1995, 2000, 2005, 2010, 2015 and 2017.

Concerning trade, we use product data from the UN COMTRADE. Data are available from 1962 to 2017, with products classified according to the Standard Industry Trade Classification (SITC) (Rev. 2)[3] with a 4-digit level of detail.

Moreover, we use the CEPII Gravdata dataset for distance and cultural data (the dataset provides information on colony– coloniser relationship, and common language, as well as data on the same religion between pairs of countries). In some of our robustness checks, we also add FDI taken from OECD International Direct Investment Statistics (2013).

After the merging procedure, we end up with a dataset covering from 1990-2015 at five years interval[4] covering more than 200 countries and more than 700 single products.[5]

We want to estimate the effect of migration on changes in both the extensive and intensive margin of trade, thus the LHS changes according to which margin is estimated. By using an instrumental variable approach, we will estimate the following equation through a 2SLS.

$$LHS = \alpha_{c,t} + \beta_{im}IMM_{j,i,t} + \beta_{im}EMI_{i,j,t} + \beta_{trade}trade_{i,j,t} + \varepsilon_{p,t} \qquad [1]$$

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[3] For more historical data (1990-2000), the data are from The Center of International Data of Robert Feenstra. For more recent data (2005-2015) they are from the UN COMTRADE with corrections implemented by Hausmann et al. (2014) for the bilateral trade data.

[4] We are not able to extend our analysis as the CEPII Gravdata is at our disposal up to 2015.

5 One of the future data to be exploited are the database developed by Docquier, Lowell and Marfouk (2007). The data are based on the Censuses of OECD countries and there is information on the migration stocks of foreign born by origin country for the years 1990 and 2000. This dataset may be useful for our purpose (as in Bahar and Rapoport, 2018) as it allows to disentangle the education and gender dimensions. It should be noticed that this dataset has been recently updated to 2010 (see Valette, 2017). To the same purpose we might also take advantage of the IAB brain-drain database (Institut für Arbeitsmarkt- und Berufsforschung) developed by Brücker, Capuano, and Marfouk (2013), which breaks down by country of origin the stocks of migrants (defined as foreign-born individuals) of 20 OECD countries.

We consider the Revealed Comparative Advantage (Balassa, 1965) to construct our variable of interest for the empirical specification when the extensive margin is estimated. In particular, we construct a dummy variable that equals *1* if country *i* achieved an *RCA* of *1* (or more) in product *p* at time *t* conditional on having $RCA_{i,p,t-1}=0$ in the previous period.

$$EM_{i,p,t} = 1 \; if \; RCA_{i,p,t-1} = 0 \; and \; RCA_{i,p,t} \geq 1 \qquad [2]$$

When we estimate the effect of migration on intensive margin, we use the compound average growth rate (CAGR) in the export of product *p*.

$$IM_{i,p,t} = \left(\frac{exports_{i,p,T}}{exports_{i,p,t}}\right)^{1/T-t} - 1 \qquad [3]$$

The independent variables include stocks of immigrants from ($IMM_{j,i,t}$), and of emigrants to ($EMI_{i,j,t}$) other countries. We include also country-by-year fixed effects to control for any country level time-variant characteristics that correlate with both national migration determinants and trade variables: the accumulated exports of product *p* in the previous period and value of imports of product *p*. Moreover, when the intensive margin is estimated, we include also the compound average growth rate (CAGR) of the export value in the previous period (in order to control for previous growth trend). Finally, we include θ_t a set of year dummies (i.e. a time-specific effect which captures business cycles).

Following the work from Frankel and Romer (1999) and a rich literature adopting similar approach (including Felbermayr et al. 2010, Ortega and Peri 2014, Alesina et al. (2016), and Bahar and Rapoport (2018), our methodology relies on instrumenting migration using estimates from a gravity model, and computing predicted bilateral migration stocks based on common cultural and historical characteristics of the sending and receiving countries of the migrants. Thus, in the first stage we estimate a gravity equation (through a Pseudo-Poisson Maximum Likelihood (PPML). Then, we address endogeneity issues using figures from the estimation of the gravity model as instruments to provide an exogenous variation in the number of migrants, both from and to partner countries (Bahar and Rapoport, 2018).

The predicted migration stocks, the trade variables, and in our robustness checks the FDI, are weighted by a dummy variable that is equal to 1 if the RCA in a specific product is greater

than one $RCA_{c,p,t-1} = 1$. This will allow to have on the RHS of our Equation [1] the same (spatial) dyadic (country-product) dimension of the LHS of our equation.

This weighting procedure has also an effect on the migration figures we use in our estimation that can be noticed by looking at some summary statistics presented in Table 3.

[Table 3 about here]

In Table 3, the panel (1) presents the summary statistics when the Extensive Margin is estimated, and the panel (2) when the Intensive Margin is estimated. In our data, the number of emigrants is on average greater than the number of immigrants. When migrants are weighted, instead, for the RCA, the figures of emigrants are on average lower than the mean of weighted immigrants when we consider the MENA countries. This is because in our specification we consider migration flows between EU-MENA, weighting migrants by RCA values of MENA countries: the receiving country in the case of emigrants from EU to MENA, and by RCA values of the sending countries when we consider immigrants to EU from MENA countries. We must, indeed, consider that poorer countries (MENA countries, in our case) tend to have lower RCA values, on average, than richer ones (European countries). Moreover, from our data, the unconditional probability for the average country-product of achieving RCA>1 (starting from having RCA=0 in previous period) is 9.5%, while the average country-product Compound Average Growth Rate (CAGR) is about 27%.

What must be finally emphasized is that our immigration and emigration stocks are symmetric. So, we must limit our instrumental variable estimation to one endogenous regressor only (either immigrants or emigrants). Otherwise, if we included both immigrants and emigrants in the same regression model, we may have less instruments than endogenous variables.

4.1 GRAVITY MODEL

As said, at a preliminary stage we estimate a gravity equation (through a Pseudo-Poisson Maximum Likelihood (PPML). In implementing this approach, the paper relies on a reach literature, that moved from the contribution by Frankel and Romer (1999), and other

adopting similar approach including Felbermayr et al. (2010), Ortega and Peri (2014) and Alesina et al. (2016), Bahar and Rapoport (2018).

For each combination of country c, product p and year t, we compute the total sum of predicted immigrants (emigrants) from (to) all other countries.

As first step, we construct the instruments, following Frankel and Romer (1999), implementing a gravity model to compute predicted bilateral migration (immigrants and emigrants) stocks based on common cultural and historical characteristics of the sending and receiving countries of the migrants.

$$migrants_{i,j,t} = \alpha + \beta_1 X_{i,j} * \theta_t + \theta_i + \theta_j + v_{i,j,t} \qquad [4]$$

The gravity model in Equation [4] is based on cultural and historic bilateral variables between the sending and receiving countries of migrants (Frankel and Romer 1999; Bahar and Rapoport 2018) and we will estimate it through a PPML[6].

Silva and Tenreyro (2006), indeed, suggest that the application of a PPML estimator in gravity settings gives better performance, relative to linear models, in settings where many zeros are present in the dependent variable.

The variables included in the estimation are dummy variables indicating: (former) colony–coloniser relationship, same coloniser, same language relationship, and same religious beliefs. In order to add time dimension in our equation, and to account for differential effects of these dyadic variables across periods, we also interacted our dummies in $X_{i,j}$ with time variables. Therefore, this allows for time-variation in explanatory variables. This means that the predicted stocks of dyadic migrants $M_{i,j,t}$ is variable over time and can be adopted for instrumenting migration variations over time.

One of the conditions for the validity of the instruments is the exclusion restriction: product-speficic exports must not be correlated with historical and cultural characteristics of migrants' countries. In other words, our dependent variables (built on product-level exports to a given set of countries) could partly explained by the same bilateral relationships that explain migration. We use three precautions to avoid this and to make our results more robust. First,

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[6] The results of the estimation of the gravity model are presented in Appendix Table A1.

we control for country-year fixed effect that would account for any effect that could link the cultural or historical background of the country with the comparative advantage for products. An additional precaution we take is to include in our right-hand side, as a control, trade variables (from/to the same set of countries where the migrants on the right-hand side are in/from). This could have a double meaning: we avoid that in our instrumentation methodology there might be a component in aggregate bilateral trade which can also be explained by the same variables that explain aggregate bilateral migration, and we also could capture the effect of export-enhancing agreements based on cultural ties. Thus, if cultural and historical variables that explain aggregate bilateral migration also explains aggregate bilateral trade, then, by controlling for actual aggregate bilateral trade to and from the same set of countries where migrants are in or from, we overcome this problem. Finally, we also implement a robustness check in which we exclude (product-level) exports to all countries where migrants come from, i.e. to all those countries with a propensity to send or receive migrants (with same coloniser, same language, same religion and former colony–coloniser relationship).

5. RESULTS

In Table 4, we present the results for MENA-EU migration flows pro trade effects, disentangling the whole effect also by technology groups. We find evidence of positive effects on the IM for immigrants while there is no significant effect on the EM. Knowledge diffusion at the IM might be easier because the fixed costs associated with starting an industry have already been paid whereas knowledge diffusion at the EM is a part of a more complex productivity growth process. No evidence on EM and IM appears for emigrants. This is in line with our expectations as immigrant can transfer knowledge through direct interaction while in the case of emigration there is a more "indirect nature" of knowledge transfer which could happen through return migration or links and communication between emigrants and their co-nationals back home. In columns 5-16 we also compare the results for the margins for three technology product categories. The coefficients of the estimates show a positive and significant coefficient for immigrants, and in products with a low or medium level of

techonolgy embodied when the intensive margin is estimated, while emigrants show no significant effect on margins in all the technological categories.

[Table 4 about here]

The results from our estimations show that a country with a 10% increase in the stock of immigrants from MENA countries (that export a product p and with an RCA>1) is associated with an increase in the export growth rate of 0.27 percentage points. This percentage increases a little bit for low-tech products (0.32), and for products with medium level of technology (0.18). It must be noticed that an increase of 0.27 percentage points could be approximated to an increase in trade, for the average European country, of almost 1.5 million of US$ in the total trade of a given product p. These results suggest that immigrants coming from MENA countries may be an impactful driver of knowledge for European trade although this effect do not consist of creation of new exported products, but in deepening and reinforcing the specialization already detained.

As for the other variables of the model, we expected a positive coefficient for accumulated exports since there is a considerable literature showing how trade is a driver of knowledge diffusion (Coe et al., 2009) rather than being mere shipping of goods (Frankel and Romer 1999). Yet, stronger export links are also a driver of specialization which might counteract the learning effect of trade while import are a vehicle of knowledge transmission which may spur new export. Hence, we are not surprised to find a very significant and positive coefficient on imports while a not always significant one for accumulated exports. This confirms that knowledge flows are obtained in inflows rather than in outflows of goods.

The lagged CAGR, the growth-related control we use when the intensive margin is estimated, has the expected sign correlating negatively with future growth, consistent with convergence effects.

6. ROBUSTNESS CHECKS

We must consider that the relationship linking "trade with migration" is a sort of black box. There could be several aspects influencing the impact of migration on trade, indeed. Thus, we also tried to refine the analysis in several ways.

6.1 Business networks and knowledge spillovers

First of all, a worry that may arise about our specification is that some of the pro-trade effect of migration we observe in our results could be given to the fact that a country is exporting more to countries where migrants come from. According to the literature, indeed, migrants could create business networks inducing bilateral trade (Aubry 2017; Bahar and Rapoport 2018). In this section, we focused on the effects of immigrants and emigrants on trade (of both EU and MENA) with third countries excluding trade with the partners of origin and destination area of migration to isolate the effects of knowledge spillovers. In this section, we reconstructed our dependent variables excluding exports to countries where emigrants are in, or immigrants come from. This will exclude that our product-level exports dependent variable is explained by the same variable that explain migration.

The results are presented in Table 5, and they confirm the positive effect of immigrants from MENA to EU on the IM of trade, and in particular for low tech products.

[Table 5 about here]

If we exclude exports to MENA countries (already exporters of product p) where migrants are in or from, we can see that countries (that already export product p) can increase their CAGR of 0.24 percentage points, and almost in the same percentage if the product has a low level of technology embodied.

6.2 Business networks and knowledge spillovers

A second refinement is to consider the correlation between international flows of capital, goods and labour. In our specification of Equation [1], we already considered trade variables in order to capture the trade dimension of this trasnfer. In this section, we also consider the FDI on the RHS of our equation.[7] As the data are on OECD countries and cover up to 2013, they shrink a little the country[8] and time coverage of our dataset. The estimation results presented in Table 6 are about the 1995-2010 period.

[Table 6 about here]

Also, in this case, our results are in line with previous results. The positive and significant effect on the IM of European countries is confirmed for immigrants from MENA. When we include FDI in our estimation, while they seem to have no explanatory power when the EM is estimated, the effect of FDI is positive (and significant) on the growth of already exported products. This result seems to confirm that one of the main obstacles in the emergence of new products (and industries) are the fixed costs associated to starting new industries, that in the case of IM have already been paid.[9]

Finally, we also consider a different weighting structure. As we have seen in previous section, in our specification we weighted migrants by a dummy $RCA_{c',p,t} = 1$ if the country where migrants are in or come to has an $RCA_{c',p,t} > 1$ for a specific product. Since if we follow this procedure in previous specification of our weighting procedure migrants from country with $RCA > 1$ in a specific product had the same weight, we now consider the "intensity" of exports. In this section, indeed, we consider the RCA as a continuous weighting variable.

[Table 7 about here]

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[7] In this version of our work, the FDI are from OECD International Direct Investment Statistics (2013). We consider this extension as a robustness check, but we are now extending the country and year coverage of our dataset to include FDI in our main estimation, i.e. Equation 4.

[8] The data by the OECD International Direct Investment Statistics do not proved information about bilateral FDI stocks on following countries: Bulgaria, Croatia, Cyprus, Latvia, Lithuania, Luxembourg, Malta, Romania.

[9] In Appendix (Table A2), we also checked our results excluding exports to countries where migrants are in or from.

When we use this different weighting scheme, the results are consistent with previous estimations.[10]

7. RESULTS ON MENA TRADE MARGINS

The focus of this work is to look at the effect of migration between European and MENA countries. We have considered the effect of migrants to and from MENA countries on the margins of trade of European countries up to this point. However, we are also interested on whether (and to what extent) MENA countries could benefit from knowledge spillovers coming from the migrants to and from European countries.

For this reason, we run the estimation designing our dependent variables on the MENA trade and considering the same framework as before, to analyse the effect of migrants on MENA extensive and intensive margins of trade.

[Table 8 about here]

The results, presented in Table 8, show that emigrants from MENA moving to European countries can induce a 0.77 percentage point increase of CAGR. In this case, the positive effect on trade is more evident for products with a medium level of technology embodied. Immingrant to MENA also induce an increase in the IM but relative to low tech products.

8. CONCLUSIONS

The interdependence of trade and migration frameworks is evident in our analysis and become an important issue to be accounted for the designers of these two relevant EU policies, migration and trade.

In our estimations, we find different effects for immigration and emigration. In particular, we find a positive effect for immigrants, testifying their possess of tacit, embodied knowledge that they can transfer through direct interaction.

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[10] In Appendix (Table A3) we considered this new weighting procedure by excluding exports towards countries where migrants are in or from.

Emigration, instead, from our results could still be a relevant channel, but it seems not robustly significant maybe because of the "indirect nature" of knowledge transfer. The knowledge transfer across outflows of migrants is less immediate as knowledge diffusion could happen through return migration, or through links and communication between emigrants and their co-nationals back home. If we look, instead, to the margins of trade, it is (theoretically, as well) unclear whether most of the effect should take place at the extensive or the intensive margin of trade. In our results, knowledge diffusion seems to have a stronger impact on latter, maybe becase the fixed costs associated with starting an industry have already been paid for, and firms can increase the value of already exported goods more easily. Knowledge diffusion, indeed, is just a part of a more complex productivity growth process (Bahar et al., 2018; Jaeger et al. 2010), so its effect on firm's productivity and on the capability of acquiring comparative advantage, may require more time.

There are some improvements that are part of our future research agenda. First of all, we aim to use a different Extensive Margin indicator for overcoming some shortcomings of Balassa Index. Balassa Index, indeed, is computed on observed trade, so does not take in proper consideration (ex-ante) exporter-sector specific factors that can be the real source of countries' comparative advantage (Leromain & Orefice, 2014). The methodology we want to use, proposed by Costinot et al. (2012), by including exporter-sector-year fixed effects, allows to control for all exporter-sector specific (ex-ante) factors that make the country more productive in a given sector (Giovannetti & Lanati 2017, Orefice et al. 2019).

Another valid argument that could be raised to discuss our results, could be that it is reasonable to suppose that if migrants are working in the sector in which the country has comparative advantage, it is more likely to channel the information to the home country about this comparative advantage. For this reason, in our future research, we want to consider also the labour market status of migrants.

Then, to look deeper at the knowledge transmission associated with people movementes, we want also to look at the composition of exports of receiving and sending countries by looking at the share of high-tech goods. Given the increasing relevance of high-tech products in the composition of international trade in the last two decades, if a competitive position can be achieved in these sectors, it is easier for a country to sustain its export growth.

Furthermore, a change in exports of high-tech products can explain an improve in the ability of countries (thus, of firms) to minise the risks associated to invest and to enter new markets, overcoming high barriers and hush sunk costs, mostly the case for production in more advanced sectors.

Finally, our results may suggest broadening the analysis by comparing the results of migration from and to MENA countries with migration from (and to) other areas (e.g. East Asia Developing Countries).

A possible explanation of the more significant impact of migration on the intensive margin of exports (with respect to the less relevant effect on the extensive one) could be that the enforcement effect of migration on trade, and the overcoming of fixed costs associated with exporting new products (and, thus, starting new industries), could not be relevant because of the cultural and historical proximity between Europe and MENA. As this closeness may reflect also in preferences, through their movement in this area migrants may not induce a significant change in export basket. Looking at if migrants coming from (and moving to) other areas may have an effect also on the extensive margin of European countries is part of our future research agenda.

One major policy implication of our results is that the restriction of the number of migrants due to tighter migrations policies would shorten trade-creation effects, especially if less educated and qualified migrants arrive increasingly to the country as some authors have shown (Briant et al., 2009). This problem must be taken into account when discussing future migration policies, at the EU level, given existing interdependencies between migration and trade policies pointed out by the results of our investigation.

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Tab. 1. Destination areas of MENA Exports[11]

Destination areas of MENA Exports	1990	1995	2000	2005	2010	2015
EU28	42.19	33.90	29.08	24.98	19.78	21.70
Developed Countries	41.51	37.44	43.15	39.39	31.46	12.82
Eastern Asian developing countries	3.16	7.39	9.50	11.23	23.61	18.78
African developing countries	0.01	0.26	0.04	0.59	0.66	0.96
Northern Africa Countries	0.57	0.87	0.78	0.84	1.13	1.48
Eastern Europe	0.00	0.00	0.07	0.15	0.21	0.37
South-Mediterranean Countries	2.64	2.41	1.93	2.09	2.03	3.01
MENA Countries	2.95	5.54	4.83	8.56	9.94	29.18
Other Countries	6.96	12.19	10.62	12.18	11.18	11.69

Source. UN COMTRADE.

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[11] MENA: Algeria, Bahrain, Djibouti, Egypt, Iran, Iraq; Jordan, Kuwait, Yemen, United Arab Emirates, Lebanon, Libya, Morocco, Oman, Palestinian Territory, Qatar, Saudi Arabia, Sudan, Syria, Tunisia. Developed Countries: (Australia, Austria, Belgium, Canada, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Iceland, Ireland, Israel, Italy, Japan, Luxembourg Netherlands, New Zealand, Norway, Portugal, Slovenia, South Korea, Spain, Sweden, Singapore, Switzerland, Turkey United Kingdom, USA.
Eastern Europe: Belarus, Bulgaria, Czech Republic, Hungary, Poland, Republic of Moldova, Romania, Russian Federation, Slovakia, Ukraine.
East Asian developing countries (Bangladesh, Bhutan, Brunei Darussalam, Cambodia, China, Fiji, India,Indonesia, Kiribati, Lao P.D.R., Malaysia, Maldives, Marshall Islands, Micronesia, Mongolia, Myanmar, Nepal, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Sri Lanka.
Africa Developing Countries Ethiopia, Rwanda, Ghana, Côte d'Ivoire, Senegal, Benin, Kenya, Uganda, and Burkina Faso.

Tab. 2. Origin areas of MENA Imports

Origin areas of MENA Imports	1990	1995	2000	2005	2010	2015
EU28	52.02	46.55	43.87	37.38	30.98	28.34
Developed Countries	24.50	22.51	22.97	18.14	17.27	18.69
Eastern Asian developing countries	3.98	7.63	9.56	13.54	17.54	18.77
African developing countries	0.10	0.13	0.17	0.15	0.28	0.33
Northern Africa Countries	4.39	4.54	4.22	2.27	3.77	4.80
Eastern Europe	0.00	1.02	1.90	3.61	3.12	2.08
South-Mediterranean Countries	2.28	2.17	1.64	3.14	3.94	3.03
MENA Countries	3.61	6.01	7.49	13.02	13.73	12.51
Other Countries	9.11	9.44	8.18	8.74	9.37	11.46

Source. UN, COMTRADE.

Table 3 - Summary Descriptive Statistics – when the effect on EU trade margins is estimated

		(1) Extensive Margin						*(2) Intensive Margin*			
Variable	Obs	Mean	Std. Dev.	Min	Max	*Variable*	Obs	Mean	Std. Dev.	Min	Max
New Products	121,090	0.095	0.293	0	1	**CAGR**	92,991	0.274	1.434	-15.39888	14.704
Emigrants	120,871	28,537.42	36,711.92	1	1,627,067	**Emigrants**	92,958	27,958.51	32,119.75	4	1,021,438
Immigrants	121,044	20,167	28,106.81	1	856,493	**Immigrants**	92,989	21,394.9	28,047.83	1	822,671
Predicted Emigrants	116,352	22,651.36	29,120.82	32.23855	1,238,810	**Predicted Emigrants**	89,671	22,771.84	24,831.27	135.74	66,4257.4
Predicted Immigrants	116,530	14,175.81	19,297.91	9.687	538,454.3	**Predicted Immigrants**	89,706	15,159.51	19,781.83	61.498	351,606.6
Predicted Emigrants *(weighted)*	116,352	7,631.458	16,205.02	0	1,238,811	**Predicted Emigrants** *(weighted)*	89,671	7,629.574	12,979.79	0	619,405.3
Predicted Immigrants *(weighted)*	116,530	3590.124	6,321.746	0	183,507.1	**Predicted Immigrants** *(weighted)*	89,706	3,808.276	6,226.485	0	18,3507.1
Predicted Emigrants *(weighted, only MENA)*	116,352	27.474	446.82	0	128,722.7	**Predicted Emigrants** *(weighted, only MENA)*	89,671	30.601	216.766	0	26,177.02
Predicted Immigrants *(weighted, only MENA)*	116,530	115.536	1,051.785	0	151,029	**Predicted Immigrants** *(weighted, only MENA)*	89,706	127.164	992.911	0	11,7351.1
Export value (in mln $)	121,090	148	1,770.00	2	1.98e+11	**Export value (in mln $)**	92,991	357,00	1,990.00	11	1.98e+11

Source: own calculation

Tab. 4 - Effects on Margins of trade of European countries – (Emigrants (Immigrants) to (from) MENA)

	All Products				Low-Tech Products				Med-Tech Products				High-Tech Products			
	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Emigrants		0.010		-0.008		0.021		0.017		-0.048		-0.039		-0.539*		-0.245
		[0.033]		[0.015]		[0.046]		[0.022]		[0.062]		[0.043]		[0.314]		[1.490]
Immigrants	0.027***		-0.003		0.032***		0.001		0.018*		0.000		0.029		-0.015	
	[0.007]		[0.002]		[0.012]		[0.004]		[0.011]		[0.005]		[0.028]		[0.012]	
Previous Growth	-0.350***	-0.352***			-0.329***	-0.339***			-0.410***	-0.394***			-0.225***	-0.162**		
	[0.007]	[0.009]			[0.012]	[0.016]			[0.015]	[0.022]			[0.028]	[0.068]		
Imports	0.474***	0.483***	-0.005	-0.010	0.529***	0.544***	-0.012	-0.015	0.423***	0.387***	-0.013	-0.023	0.657***	0.532***	-0.007	0.052
	[0.012]	[0.016]	[0.004]	[0.007]	[0.022]	[0.028]	[0.008]	[0.012]	[0.029]	[0.039]	[0.012]	[0.020]	[0.046]	[0.093]	[0.024]	[0.069]
Accumulated Exports	-1.260***	-1.363***	0.016***	0.009	-1.276***	-1.302***	0.013	0.011	-1.134***	-1.115***	0.036***	0.031	-1.170***	-1.276***	0.016	0.043
	[0.017]	[0.023]	[0.005]	[0.008]	[0.031]	[0.040]	[0.009]	[0.015]	[0.035]	[0.049]	[0.014]	[0.025]	[0.054]	[0.147]	[0.026]	[0.068]
N	21562	11761	25869	14043	7191	3964	8779	4754	4027	1979	4640	2293	992	316	1147	392
r2	0.443	0.463	0.009	0.008	0.381	0.415	0.014	0.010	0.480	0.461	0.008	0.008	0.582	0.371	0.011	-0.189
F	95.28	68.81	76.17	66.84	91.23	62.12	72.11	56.27	94.62	52.12	66.18	42.22	78.45	64.28	56.21	65.42

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. 5 Effects on Margins of trade of European countries – (Emigrants (Immigrants) to (from) MENA) – Dependent variables computed excluding exports to those countries where migrants are in or from.

All Products		Low-Tech Products		Med-Tech Products		High-Tech Products	
Intensive Margin	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin	Extensive Margin	Intensive Margin	Extensive Margin

	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16
Emigrants		0.000		-0.010		0.036		-0.015		-0.035		0.031		-0.557*		-1.027
		[0.034]		[0.015]		[0.049]		[0.023]		[0.066]		[0.042]		[0.323]		[3.189]
Immigrants	0.024***		0.002		0.029**		0.007		0.014		-0.003		0.028		0.023*	
	[0.007]		[0.002]		[0.013]		[0.004]		[0.012]		[0.005]		[0.029]		[0.013]	
Previous Growth	-0.364***	-0.353***			-0.331***	-0.356***			-0.416***	-0.406***			-0.234***	-0.158**		
	[0.007]	[0.009]			[0.013]	[0.016]			[0.016]	[0.023]			[0.029]	[0.065]		
Imports	0.490***	0.494***	-0.010**	-0.016**	0.532***	0.571***	-0.010	0.005	0.448***	0.374***	-0.011	-0.027	0.691***	0.538***	-0.018	-0.058
	[0.013]	[0.017]	[0.004]	[0.007]	[0.023]	[0.029]	[0.008]	[0.012]	[0.030]	[0.041]	[0.012]	[0.020]	[0.049]	[0.096]	[0.025]	[0.147]
Accumulated Exports	-1.233***	-1.345***	0.014***	0.016**	-1.176***	-1.323***	0.009	0.015	-1.139***	-1.116***	0.005	0.018	-1.199***	-1.359***	-0.017	0.033
	[0.017]	[0.024]	[0.005]	[0.008]	[0.033]	[0.042]	[0.010]	[0.015]	[0.036]	[0.052]	[0.014]	[0.024]	[0.057]	[0.149]	[0.026]	[0.146]
N	21521	11750	25869	14043	7179	3961	8779	4754	4018	1975	4640	2293	992	316	1147	392
r2	0.422	0.440	0.006	0.007	0.335	0.406	0.010	0.008	0.466	0.427	0.208	0.205	0.573	0.367	0.306	0.263

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. 6 - Effects on Margins of trade of European countries including the FDI – (Emigrants (Immigrants) to (from) MENA)

All Products				Low-Tech Products				Med-Tech Products				High-Tech Products			
Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)

	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16
Emigrants		0.007		0.034*		0.023		-0.005		0.019		-0.069		-0.162		-0.187
		[0.033]		[0.019]		[0.048]		[0.032]		[0.069]		[0.064]		[0.192]		[0.332]
Immigrants	0.028***		0.006*		0.036***		-0.010		0.010		0.011		0.039		-0.019	
	[0.007]		[0.004]		[0.012]		[0.006]		[0.013]		[0.009]		[0.034]		[0.017]	
Previous Growth	-0.315***	-0.307***			-0.336***	-0.354***			-0.371***	-0.383***			-0.258***	-0.498***		
	[0.009]	[0.011]			[0.017]	[0.021]			[0.019]	[0.027]			[0.042]	[0.079]		
Imports	0.297***	0.236***	-0.005	-0.006	0.341***	0.345***	-0.027*	-0.026	0.322***	0.231***	-0.003	0.014	0.685***	0.380***	0.036	0.118
	[0.016]	[0.020]	[0.008]	[0.011]	[0.026]	[0.032]	[0.014]	[0.020]	[0.034]	[0.047]	[0.021]	[0.035]	[0.064]	[0.105]	[0.037]	[0.082]
Accumulated Exports	-1.233***	-1.287***	0.021**	0.027*	-1.183***	-1.055***	0.015	0.035	-1.266***	-1.259***	0.021	0.028	-1.206***	-0.841***	0.007	0.242
	[0.026]	[0.034]	[0.011]	[0.015]	[0.045]	[0.051]	[0.022]	[0.031]	[0.053]	[0.067]	[0.029]	[0.046]	[0.094]	[0.180]	[0.047]	[0.148]
FDI	0.016***	0.008	-0.002	-0.004	0.017**	0.006	0.002	0.002	0.021*	0.022	-0.004	-0.009	0.031	0.122	-0.005	0.067
	[0.005]	[0.006]	[0.003]	[0.004]	[0.007]	[0.008]	[0.004]	[0.006]	[0.012]	[0.014]	[0.009]	[0.011]	[0.028]	[0.079]	[0.017]	[0.089]
N	10454	6366	12837	7814	3433	2095	4229	2587	1903	1066	2288	1276	425	174	525	219
r2	0.469	0.475	0.015	0.011	0.440	0.482	0.009	0.004	0.558	0.533	0.013	0.015	0.612	0.535	0.010	0.101

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. 7 - Effects on Margins of trade of European countries including the FDI – (Emigrants (Immigrants) to (from) MENA) – Continuous weighting procedure.

	All Products				**Low-Tech Products**				**Med-Tech Products**				**High-Tech Products**			
	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16
Emigrants		0.003		0.024		-0.023		-0.017		0.008		-0.053		-0.075		-0.075
		[0.019]		[0.021]		[0.030]		[0.021]		[0.044]		[0.039]		[0.090]		[0.092]
Immigrants	0.020***		-0.003		0.032***		-0.002		0.011		0.010		0.016		-0.013	
	[0.007]		[0.003]		[0.011]		[0.006]		[0.013]		[0.009]		[0.028]		[0.014]	

	All Products				Low-Tech Products				Med-Tech Products				High-Tech Products			
Previous Growth	-0.314***	-0.304***			-0.332***	-0.346***			-0.371***	-0.385***			-0.262***	-0.513***		
	[0.009]	[0.011]			[0.017]	[0.021]			[0.019]	[0.027]			[0.042]	[0.077]		
Imports	0.297***	0.235***	-0.019**	-0.018*	0.339***	0.355***	-0.010	-0.002	0.323***	0.233***	-0.020	-0.028	0.698***	0.360***	0.026	-0.003
	[0.015]	[0.020]	[0.008]	[0.011]	[0.026]	[0.032]	[0.015]	[0.020]	[0.034]	[0.046]	[0.022]	[0.034]	[0.063]	[0.105]	[0.035]	[0.076]
Accumulated Exports	-1.221***	-1.279***	0.015	0.013	-1.179***	-1.054***	-0.001	0.013	-1.265***	-1.258***	-0.027	0.003	-1.203***	-0.835***	0.007	-0.010
	[0.026]	[0.034]	[0.011]	[0.015]	[0.045]	[0.051]	[0.023]	[0.032]	[0.053]	[0.066]	[0.030]	[0.047]	[0.094]	[0.176]	[0.045]	[0.102]
FDI	0.016***	0.010	-0.001	-0.002	0.021***	0.009	-0.001	-0.002	0.019	0.017	-0.009	-0.019	0.025	0.165*	0.006	0.011
	[0.005]	[0.006]	[0.003]	[0.004]	[0.007]	[0.008]	[0.005]	[0.006]	[0.012]	[0.013]	[0.009]	[0.012]	[0.031]	[0.097]	[0.018]	[0.066]
N	10420	6351	12806	7802	3407	2081	4206	2575	1899	1066	2285	1276	425	174	525	219
r2	0.473	0.472	0.003	-0.000	0.441	0.482	0.005	0.003	0.557	0.535	0.008	0.004	0.611	0.556	0.014	0.048

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. 8 - Effects on Margins of trade of MENA countries– (Emigrants (Immigrants) to (from) EU28)

	All Products				Low-Tech Products				Med-Tech Products				High-Tech Products			
	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Emigrants		0.077**		-0.000		0.048		-0.006*		0.164**		0.000		0.030		0.002
		[0.032]		[0.001]		[0.058]		[0.003]		[0.068]		[0.002]		[0.077]		[0.002]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Immigrants	0.047		-0.005		0.288*		0.001		0.165		-0.002		-0.185		-0.000	
	[0.085]		[0.004]		[0.151]		[0.010]		[0.174]		[0.006]		[0.195]		[0.005]	
Previous Growth	-0.398***	-0.380***			-0.375***	-0.348***			-0.401***	-0.379***			-0.428***	-0.397***		
	[0.006]	[0.004]			[0.013]	[0.009]			[0.010]	[0.008]			[0.021]	[0.015]		
Imports	0.321***	0.356***	0.002	0.001	0.223***	0.331***	0.005	0.005*	0.220***	0.343***	0.003	0.003	0.597***	0.593***	0.010***	0.004*
	[0.037]	[0.027]	[0.002]	[0.001]	[0.074]	[0.051]	[0.005]	[0.003]	[0.075]	[0.055]	[0.003]	[0.002]	[0.113]	[0.086]	[0.003]	[0.002]
Accumulated Exports	-1.695***	-1.785***	0.005***	0.003***	-1.530***	-1.704***	0.006*	0.005**	-1.776***	-1.873***	0.004**	0.003**	-1.843***	-1.902***	-0.002	-0.000
	[0.032]	[0.024]	[0.001]	[0.001]	[0.062]	[0.046]	[0.004]	[0.002]	[0.057]	[0.045]	[0.002]	[0.001]	[0.116]	[0.085]	[0.003]	[0.002]
N	18618	31711	22266	37762	4016	7584	4929	9173	5838	9621	6963	11404	1777	3125	2233	3842
r2	0.399	0.395	0.001	0.001	0.384	0.387	0.002	0.001	0.411	0.406	0.002	0.003	0.399	0.396	0.010	0.004

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Appendix

Tab. A1. Gravity Models Results- Estimation to predict migration stocks (PPML)

Gravity Models Results- Estimation to predict migration stocks (*PPML*)

	Emigrants Stocks	Immigrants Stocks
Colony	0.195	1.188***
	[0.177]	[0.378]
Common coloniser	2.485***	1.074
	[0.183]	[0.765]
Common religion beliefs	-13.277***	-10.559***
	[2.477]	[1.787]
Common language	2.389***	1.768***
	[0.516]	[0.553]
N	34869	35687

Standard errors in brackets

* p<.10, ** p<.05, *** p<.01

Tab. A2 - Effects on Margins of trade of European countries including FDI – (Emigrants (Immigrants) to (from) MENA) – Dependent variables computed excluding exports to those countries where migrants are in or from.

All Products	Low-Tech Products	Med-Tech Products	High-Tech Products

	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Emigrants		-0.002		0.001		0.033		-0.011		0.005		0.040		-0.158		0.118
		[0.033]		[0.019]		[0.048]		[0.032]		[0.073]		[0.064]		[0.197]		[0.351]
Immigrants	0.029***		0.004		0.035***		0.003		0.016		-0.005		0.037		0.013	
	[0.007]		[0.004]		[0.012]		[0.006]		[0.013]		[0.009]		[0.034]		[0.016]	
Previous Growth	-0.319***	-0.313***			-0.342***	-0.364***			-0.389***	-0.446***			-0.265***	-0.488***		
	[0.009]	[0.011]			[0.017]	[0.021]			[0.019]	[0.028]			[0.042]	[0.078]		
Imports	0.281***	0.252***	-0.011	-0.016	0.347***	0.348***	-0.027*	-0.021	0.336***	0.250***	-0.006	0.005	0.701***	0.389***	0.014	-0.009
	[0.016]	[0.020]	[0.008]	[0.011]	[0.026]	[0.032]	[0.015]	[0.019]	[0.035]	[0.050]	[0.022]	[0.035]	[0.064]	[0.108]	[0.036]	[0.087]
Accumulated Exports	-1.215***	-1.295***	0.014	0.012	-1.177***	-1.043***	-0.005	0.011	-1.289***	-1.333***	0.017	-0.002	-1.199***	-0.892***	0.041	0.083
	[0.026]	[0.034]	[0.011]	[0.015]	[0.045]	[0.051]	[0.023]	[0.031]	[0.054]	[0.070]	[0.029]	[0.046]	[0.095]	[0.183]	[0.046]	[0.156]
FDI	0.014***	0.007	0.004	0.003	0.018***	0.007	0.003	0.001	0.014	0.015	-0.003	-0.001	0.028	0.146*	-0.004	0.004
	[0.005]	[0.006]	[0.003]	[0.004]	[0.007]	[0.008]	[0.004]	[0.006]	[0.012]	[0.014]	[0.009]	[0.011]	[0.028]	[0.081]	[0.016]	[0.094]
N	10453	6366	12837	7814	3433	2095	4229	2587	1903	1066	2288	1276	425	174	525	219
r2	0.460	0.479	0.002	0.003	0.445	0.490	0.006	0.003	0.555	0.540	0.007	-0.003	0.611	0.535	0.012	0.080

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. A3 - Effects on Margins of trade of European countries – (Emigrants (Immigrants) to (from) MENA) – Dependent variables computed excluding exports to those countries where migrants are in or from and continuous weighting procedure

	All Products				**Low-Tech Products**				**Med-Tech Products**				**High-Tech Products**			
	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-11	-12	-13	-14	-15	-16
Emigrants		-0.003		0.011		-0.018		0.008		0.003		-0.010		-0.105		-0.010

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
		[0.019]		[0.011]		[0.031]		[0.022]		[0.046]		[0.040]		[0.094]		[0.116]
Immigrants	0.024***		0.003		0.031***		0.001		0.015		0.001		0.011		0.065***	
	[0.007]		[0.003]		[0.011]		[0.006]		[0.013]		[0.009]		[0.029]		[0.017]	
Previous Growth	-0.318***	-0.311***			-0.338***	-0.355***			-0.389***	-0.447***			-0.268***	-0.501***		
	[0.009]	[0.011]			[0.017]	[0.021]			[0.019]	[0.028]			[0.042]	[0.077]		
Imports	0.280***	0.252***	-0.011	-0.010	0.346***	0.359***	-0.031**	-0.024	0.338***	0.250***	-0.030	-0.050	0.713***	0.369***	0.077*	0.022
	[0.016]	[0.020]	[0.008]	[0.011]	[0.026]	[0.032]	[0.016]	[0.022]	[0.035]	[0.049]	[0.022]	[0.034]	[0.064]	[0.109]	[0.042]	[0.095]
Accumulated Exports	-1.203***	-1.287***	0.009	0.004	-1.172***	-1.042***	0.022	0.026	-1.288***	-1.331***	-0.046	-0.016	-1.196***	-0.882***	0.026	-0.191
	[0.026]	[0.034]	[0.011]	[0.016]	[0.045]	[0.051]	[0.024]	[0.034]	[0.054]	[0.070]	[0.030]	[0.047]	[0.095]	[0.180]	[0.054]	[0.129]
FDI	0.014***	0.008	0.002	-0.001	0.021***	0.009	-0.003	-0.011*	0.013	0.010	0.008	0.011	0.020	0.169*	0.029	0.011
	[0.005]	[0.007]	[0.003]	[0.004]	[0.007]	[0.009]	[0.005]	[0.007]	[0.012]	[0.014]	[0.009]	[0.012]	[0.032]	[0.100]	[0.021]	[0.084]
N	10419	6351	12806	7802	3407	2081	4206	2575	1899	1066	2285	1276	425	174	525	219
r2	0.463	0.475	0.001	0.001	0.446	0.490	0.004	0.004	0.555	0.539	0.009	0.010	0.609	0.550	0.054	0.027

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01

Tab. A4 - Effects on Margins of trade of MENA countries – (Emigrants (Immigrants) to (from) EU) – Dependent variables computed excluding exports to those countries where migrants are in or from.

	All Products				Low-Tech Products				Med-Tech Products				High-Tech Products			
	Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin		Intensive Margin		Extensive Margin	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Emigrants		0.051		-0.000		-0.074		-0.001		0.120		-0.001		0.050		-0.001
		[0.037]		[0.001]		[0.068]		[0.003]		[0.080]		[0.002]		[0.091]		[0.002]

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Immigrants	-0.093		0.006		0.118		0.020**		-0.011		0.005		-0.518**		0.000	
	[0.100]		[0.004]		[0.182]		[0.010]		[0.213]		[0.006]		[0.229]		[0.004]	
Previous Growth	-0.420***	-0.408***			-0.398***	-0.372***			-0.431***	-0.416***			-0.415***	-0.419***		
	[0.006]	[0.005]			[0.013]	[0.010]			[0.012]	[0.009]			[0.022]	[0.016]		
Imports	0.302***	0.332***	0.000	0.001	0.251***	0.397***	0.000	0.004	0.207**	0.317***	0.006**	0.004**	0.388***	0.369***	0.001	0.001
	[0.043]	[0.031]	[0.002]	[0.001]	[0.089]	[0.060]	[0.005]	[0.003]	[0.092]	[0.065]	[0.003]	[0.002]	[0.134]	[0.102]	[0.002]	[0.002]
Accumulated Exports	-1.529***	-1.611***	0.002	0.002**	-1.390***	-1.545***	0.007*	0.006**	-1.610***	-1.660***	0.001	0.001	-1.589***	-1.705***	-0.000	-0.002
	[0.037]	[0.028]	[0.001]	[0.001]	[0.075]	[0.054]	[0.004]	[0.002]	[0.069]	[0.053]	[0.002]	[0.001]	[0.137]	[0.101]	[0.002]	[0.001]
N	18618	31711	22266	37762	4016	7584	4929	9173	5838	9621	6963	11404	1777	3125	2233	3842
r2	0.347	0.351	0.001	0.000	0.347	0.338	0.004	0.002	0.346	0.352	0.001	0.002	0.315	0.338	0.005	0.006

All the specifications include country-by-year and product-by-year FE. Standard errors in brackets. * p<.10, ** p<.05, *** p<.01