

**THE IMMIGRATION AND TRADE LINK
IN THE EUROPEAN UNION
INTEGRATION PROCESS**

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The Immigration and Trade Link in the European Union Integration Process

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***Abstract:** The aim of this paper is to analyse the link between immigration and trade among EU countries, particularly, in the context of the 2004 enlargement. The study tests whether the increase in immigrant stock from New Member States has any impact on the exports from the EU-15 to those markets or not. To that end the study applies an extended gravity model of international trade to panel data for three countries – Germany, Denmark and Portugal. The results show that increasing immigration from both New Member States and EU15 countries has a positive impact on the exports of both Portugal and Denmark. The results also suggest that less restrictive immigration policies have a positive impact on exports, and contribute to the normalization of exports of these countries to New Member States. Finally, these results do not hold in the case of Germany.*

Keywords: International trade, immigration, European Union, economic integration, gravity model.

JEL: C33; F14; F15; F22; O24.

1. Introduction

International migration has been studied in the scope of geographical economics, and one of the areas of research is the examination of the relationship between international migration and international trade. Several studies conducted in this field, such as Gould (1994), Wagner *et al.* (2002), Lewer (2004), Mundra (2005) and White (2008) generally show that immigration has a positive effect on trade relations between the host country and country of origin, with impacts on both imports and exports. On the one hand there is a trend towards the importation of products from the country of origin due to the preferences of immigrants for these products, while on the other hand there is a reduction in transaction costs, which promotes bilateral trade between countries. These studies have mostly concerned the analysis of that relationship in the context of a specific country and its world trade partners, and they do not specify the free trade area context. In particular, as far as we have found, studies on inter-regional migration and its importance for inter-regional trade are scarce, and practically nonexistent in the context of the European Union (EU) integration process.

The EU, through undergoing economic and monetary union, has established a degree of economic integration between its member states that simultaneously ensures both free trade and free movement of factors (labour and capital). In the context of accession of a new member state, which was formerly more "distanced" by natural costs of trade and whose population faced tight restrictions on mobility through its borders, once admitted as a member this "distance" will be shortened and the population (labour factor) will be free to move within the space of the Union. This movement of the labour factor, when verified, will have implications (among others) in relation to the EU's inter-regional trade and will also have the potential to reduce the "distance" between member states.

In the literature review on migration and international trade, inasmuch as it was possible to verify, no empirical evidence was found of this relationship in the context of EU enlargement. Therefore, this paper attempts to contribute to the empirical literature by examining the relationship between immigration and trade normalization between old and new EU member countries. In particular, it attempts to observe to what extent, in the context of EU enlargement of borders in 2004, the accumulation of the stock of immigrants from the New Member States (NMS)¹ has an impact on EU-15 exports to those markets. For this purpose, and in order to identify a possible relation between the immigration policies

¹ New Member States in 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia

followed by the EU-15 countries addressed to the NMS, and their impact on trade, Denmark, Germany and Portugal will be used as samples.

Following EurActiv.com (2009), the policies relating to the free movement of workers from 8 NMS within the EU-15 states could be divided into three categories: (i) those maintaining the restrictions in place after May 2009 - Austria and Germany; (ii) those who lifted the restrictions gradually, between 2006 and 2009 - Belgium, Denmark, France, Luxembourg, The Netherlands; (iii) those maintaining labour markets open / removing restrictions - Finland, Greece, Ireland, Italy, Portugal, Spain, Sweden, the United Kingdom.

Taking this classification into consideration, the sample used in this study was chosen in order to identify the effects mentioned above in an EU-15 country with (a) restrictive immigration policies (Denmark), (b) highly restrictive immigration policies (Germany), and (c) less restrictive immigration policies (Portugal) in relation to those NMS.

Thus, the aim of this paper, in the context of the accession of new countries to the EU, is to check whether immigration promotes and strengthens economic integration through trade. This paper also aims to answer the question: What is the impact of intra-EU migration for the normalization of trade between the EU15 and NMS?

For this purpose the paper proceeds as follows: Section 2 presents an introduction to international migration, with the theoretical framework for the relationship between international migration and international trade and summarizes a review of existing studies in this field; Section 3 frames the topic in the EU context; Section 4 presents both the theoretical intuition and the empirical model for estimation, along with the econometric results; and finally Section 5 presents the conclusions.

2. International Migration of the Labour Factor

2.1. Causes

There are several reasons why people cross borders. According to the International Labor Organization (ILO), we can group immigrants in five categories: settlers or permanent immigrants, contract labourers, professionals, refugees and asylum seekers, and illegal immigrants. Berg (2004) adds an extra group – forced migrants.

Despite the growing literature on the subject, knowledge about the causes of migration and its consequences is still quite limited. For an overview of the topic, the work of Coppel *et*

al. (2001) is a good reference in the context of the Organization for Economic Co-operation and Development (OECD).

The main factors influencing migration are commonly referred to as Push - Pull factors² [Berg (2004) also presents Stay - Stay-Away factors³]. The Push factors affect the supply side of migration, namely the desire/need to emigrate. Several adverse factors are crucial in the country of origin, such as hunger, poverty, low wages, unemployment, ethnic or religious persecution, civil wars and obligatory military service. The Pull factors affect the demand side of immigration in the destination country, and usually such factors as high wages, employment, property rights, personal, economic and religious freedom and educational opportunities are important determinants.

Regarding the theoretical framework of the causes of international migration, although the theory does not provide a very satisfactory model for analysis, there are many interdisciplinary approaches which essentially assign the causes of migration to Push - Pull factors. In the study by Massey *et al.* (1993), an analysis is undertaken of the various approaches regarding this subject.

2.2. Consequences

The existence of migration entails consequences at various levels both in the country of origin and the country of destination⁴. The core of this paper is the relationship between international migration and international trade.

The literature reveals a number of studies that assess the impact of immigration on trade between the host country and the country of origin. However, there is uncertainty regarding the magnitude of this impact.

For the United States (U.S.): Gould (1994), in order to study whether the link of immigrants to their motherland improves bilateral trade between the host country and country of origin, using data for the U.S. and 47 trade partners, concludes that immigration has a greater impact on trade in consumer goods rather than in intermediate goods, and that in general, exports are more influenced by immigration than imports. Mundra (2005) observes the effects of immigration on U.S. trade flows, and using data for that country and 47 trade

² See Zimmerman (1994) in the European context, and Vogler and Rotte (2000) for developing countries

³ Stay factors are those that firmly root people in the home country (e.g. family ties and friendships, employment and culture), while Stay-Away factors are those that deter people from an eventual country of destination (e.g. cultural and language barriers, discrimination and uncertainty). Berg notes that when the weight of the Stay - Stay-Away factors is stronger than the Push-Pull factors, international migration will not be significant, but the opposite is also the case.

⁴ See Borjas (1994)

partners, concludes that immigrants from different countries imply different magnitudes of the effects of immigration on trade, stressing a positive effect on all imports and on exports of finished goods. He demonstrates that immigrants influence U.S. bilateral trade in finished goods by bringing market information and contacts from their countries of origin. White (2008), in order to study the determinants of intra-industry trade and the effects of immigration on trade flows, using data for the U.S. and 62 trade partners, concludes that a 10% increase in the stock of immigrants implies an increase in *intra*-industry trade relative to *inter*-industry trade of between 0.43% and 2.1%. He also estimates that a 10% increase in the stock of immigrants will increase the percentage of vertical intra-industry trade by 2.3% and the percentage of horizontal intra-industry trade by 3.5%.

In the OECD context, Lewer (2004), in order to study the link between migration flows and international bilateral trade, uses data for 16 OECD countries and concludes that a 10% increase in the percentage of the immigrant population means an increase in bilateral trade between the country of origin and the country of destination in the order of 0.04%.

For Canada, Wagner *et al.* (2002) study the link between immigration and trade, and using data for 5 regions of Canada and 160 trade partners they have found that the positive association between migration and international trade is robust for different samples and econometric methods, and the magnitude of the effects of immigration varies depending on the sample group of immigrants and products.

In their study for the United Kingdom (U.K.), Girma and Yu (2002) aim to test the robustness of the effects of immigration on U.K. international trade and to identify the mechanism underlying such a link. They use data for the U.K. and 48 trade partners. Their findings indicate that U.K. exports are strongly related to the stock of immigrants from countries outside the Commonwealth and the migration-trade link is established primarily by information brought by immigrants from their home countries.

For Portugal, Faustino and Leitão (2008) test the impact of immigration on Portuguese intra-industry trade, using data for Portugal and its 14 trading partners of the EU-15. They conclude that immigration leads to the reduction of trade transaction costs and increases intra-industry trade (imports and exports).

Regarding the immigration-international trade relationship, as Gould (1994) states, the immigrants' ties to their home countries influence the bilateral trade flows in two ways:

- i. Immigrants bring with them a preference for products from their home country, suggesting that when such products or substitutes are not available, the desire for

consumption of these products leads to an increase in imports to the host country (preferences approach).

- ii. Immigrants bring with them knowledge, information and contacts from foreign markets which may lead to a reduction in transaction costs in those markets (such as language barriers, costs of information about consumer preferences and the establishment of reliable contacts for the development of trade agreements), which suggests an increased flow of imports and/or exports between the host country and immigrants' country of origin (reduction of transaction costs approach).

Gould (1994) also refers to the reduction of transaction costs approach stating that the information and knowledge brought by immigrants may be more relevant for final goods than for intermediate goods, because the former tend to be differentiated more by country. When products are homogeneous there is little reason to prefer products from a specific country. However, when products are differentiated, they may not exist in the host country, thus leading to imports. Therefore, both preferences approach and reduction of transaction costs approach, act as a stimulus to intra-industry trade. The importance of the effects of a reduction in the transaction costs approach will depend on the initial amount of information about the country of origin available in the host country and the ability of immigrants to broadcast information and to integrate their communities in the host country, which in time may come to depend on the level of education of immigrants, the duration of their stay and the size of their community.

There is also discussion in the literature as to whether the migration of labour and trade are substitutes or complementary. The Heckscher-Ohlin model predicts that trade is purely inter-industry and the migrations of labour and international trade are substitutes. By introducing migration flows into the model, the origin and destination countries become more similar in factor endowments, so there is no longer room for trade based on comparative advantages. Consequently, from this analysis comes the theoretical hypothesis that migration and trade have a negative relationship - meaning that the increase in the stock of immigrants results in a reduction of trade between the host country and immigrants' country of origin.

On the other hand, if we consider that bilateral trade is mostly intra-industry, based on economies of scale and product differentiation, we find a complementarity between migration and international trade. Thus, the relationship between migration and international trade is largely explained by models of increasing returns to scale of the New Trade Theory, as Evenett and Keller (2002) show in their study. Consequently, in this context the theoretical

hypothesis is that migration and trade have a complementary relationship - meaning that an increase in the stock of immigrants results in an increase in trade between the host country and immigrants' country of origin.

3. Migration and Trade in the European Union

In the context of economic integration, at an international level the EU is the most successful case, characterized by the deepening of the economic dimension and the enlargement of the geographic dimension. European integration began after the Second World War with the European Coal and Steel Community (ECSC), established in 1951 by the Treaty of Paris, and has evolved from a free trade area to economic and monetary union and from 6 to 27 member states. Throughout the entire EU economic area, freedom of movement of persons, goods, services and capital prevails, and since 2002, 12 member states have shared a single currency, the euro⁵.

As mentioned by Marques (2008), since 1992 the implementation of the single market has constituted the pillar of European economic integration, making the mobility of factors an important issue both for the already existing member states and for the successive new member states. In this context, and reflecting the idea introduced in Section 2, it is necessary to analyze the relationship between trade and mobility of factors because the nature of this relationship may have different consequences for the process of integration of the economies involved. In a world of economies of scale, transport costs and product differentiation, the capital and migration flows that have been taking place within the EU have had a strong impact on the goods and services market and on the market of factors.

Although the EU is one of the richest zones in the world, with its policy of integration of countries with lower standards of living it creates large disparities between regions in terms of income and opportunities. Through its regional policy, the EU transfers resources from richer to poorer regions in order to modernize the latter so that they can catch up with the standards of the rest of the EU. However, such differences generate migration pressures to countries with higher standards of living (Push - Pull factors). The integration of the NMS into the EU Economic Area generates, through the freedom of movement of persons, goods, services and capital, an impact both on migration and trade flows in the Union.

⁵ Today, from 1st January 2009 the euro zone has 16 member states: Austria, Belgium, Cyprus, Finland, France, Greece, Ireland, Italy, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain.

In 2004, the EU underwent the biggest enlargement in its history, incorporating 10 NMS. This event may provide new evidence for the study of the link between migration and international trade. However, we must take into account the fact that trade in goods and services between the EU-15 and the NMS began to be liberalized in the early '90s, before their accession to the EU, and in an asymmetric way – with greater openness, more speedily delivered, on the part of the EU. However, labour mobility followed a lengthier opening process and transitional measures, such as the transitional restrictions on access to the labour market of the countries of the EU-15, are still in place for some NMS, as shown in Table 1.

As reported on EurActiv.com (2009), having observed the three countries considered in this study's sample, we note: (i) Denmark decided to open its labour market to citizens of the 10 NMS countries from 1 May 2009. Denmark was the 12th country among the “old” EU-15 to abolish such restrictions; (ii) On 25 April 2008 Germany's government said it aimed to maintain barriers for Central and Eastern European workers until 2011, though it had to prove "severe distortions of its labour market, beyond mere unemployment"; (iii) Portugal dropped all restrictions on workers from the 2004 entrants on 1 May 2006. Between 2004 and 2006, Portugal imposed a 6,500 annual limit on immigrant workers of all NMS nationalities.

Table 1: Labour Market Restrictions for NMS-8 Citizens in EU-15 Countries

	Access for NMS-8 workers ¹		Access for Bulgarian and Romanian workers ²	
	May 2004 to April 2006	May 2006 to April 2009	2007 and 2008	
Austria	Limited	Limited	Limited	
Belgium	Limited	Limited	Limited	
Denmark	Limited	Limited	Limited	
Finland	Limited	Open	Open	
France	Limited	Limited ³	Limited ³	
Germany	Limited	Limited	Limited	
Greece	Limited	Open	Limited	
Ireland	Open	Open	Limited	
Italy	Limited	Open ⁵	Limited ⁶	
Luxembourg	Limited	Limited	Limited	
Netherlands	Limited	Open ⁴	Limited	
Portugal	Limited	Open	Limited	
Spain	Limited	Open	Limited	
Sweden	Open	Open	Open	
United Kingdom	Open	Open	Limited	

Source: European Commission and www.EurActiv.com (table extracted from Breitenfellner *et al.* (2008), pp. 109)

¹ The Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia and Slovenia

² Access of workers from these countries is also limited in the Malta and Hungary labour markets

³ Excluding health care, transport, construction, and hotels and restaurants

⁴ Unlimited access in most industries from April 2006; Unlimited access in general since May 2007

⁵ Since July 2006

⁶ Simplified access procedures in individual industries

There are several studies that analyze the impact of EU enlargement on several variables, for example: Papazoglou *et al.* (2006) attempt to quantify the potential gains from trade as a result of EU expansion, Breitenfellner *et al.* (2008) analyze the impact of EU enlargement on foreign direct investment and on migration flows, Chen (2004) estimates the border effects among EU countries, and a framework of the effects of integration on the neoclassical and new geographical economics theories is constructed by Marques (2008). The work of Marques (2008) contains a summary of several studies on modelling techniques to measure the impact of the effects of trade within the EU.

However, to the extent that it has been possible to verify, no empirical evidence exists concerning the relationship between migration and trade caused by the enlargement of the EU. Therefore, this paper contributes to the empirical literature examining the relationship between immigration and trade between EU countries. In particular, this paper attempts to observe to what extent, in the context of EU border enlargements in 2004, the accumulation of the stock of immigrants from the NMS⁶ has had an impact on EU-15 exports to those markets. Therefore, in order to identify a possible relation between the immigration policies followed by the EU-15 countries addressed to the NMS, and their impact on trade, Denmark, Germany and Portugal will be used as representative samples of the EU-15. These samples were chosen in order to identify the effects mentioned above in an EU-15 country with restrictive immigration policies (Denmark), highly restrictive immigration policies (Germany), and less restrictive immigration policies (Portugal) towards those NMS, as was explained in the introduction.

When we undertake a first analysis of the immigrant stock growth rate from the states of the EU-25 between 2004 and 2007, in Table 2 we can observe that generally for Denmark, Germany and Portugal the stock of immigrants from the NMS grew more than the EU-25 average, and among these three countries, despite on the western edge of Europe, Portugal recorded a higher growth rate of the immigrant stock from the NMS.

⁶ New Member States in 2004: Cyprus, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia

Table 2: Growth of the immigrant stock from the EU-25, 2004-2007

Origin	Denmark	Germany	Portugal
Austria	0.54%	0.26%	3.71%
Belux*	2.99%	3.06%	3.93%
Cyprus	-0.37%	2.62%	0.00%
Czech Republic	12.26%	3.07%	27.88%
Denmark	-	0.95%	2.48%
Estonia	6.00%	1.85%	28.96%
Finland	-0.31%	0.54%	3.16%
France	3.87%	1.47%	3.31%
Germany	1.63%	-	4.21%
Greece	2.32%	-1.73%	5.40%
Hungary	3.22%	4.03%	15.97%
Ireland	1.45%	0.17%	7.81%
Italy	3.24%	-0.92%	6.75%
Latvia	7.71%	2.58%	39.59%
Lithuania	13.41%	7.47%	50.90%
Malta	9.66%	5.28%	13.99%
Netherlands	2.48%	2.91%	5.22%
Poland	7.35%	6.89%	21.47%
Portugal	4.49%	-0.47%	-
Slovakia	14.29%	4.73%	44.00%
Slovenia	12.28%	-0.07%	21.34%
Spain	3.97%	-0.46%	3.18%
Sweden	0.89%	1.43%	3.11%
United Kingdom	1.18%	0.30%	6.81%
UE-25	2.81%	1.16%	5.16%

Source: Danmarks Statistik (DNK), Central Register of Foreigners (DEU), INE (PT) and authors' calculations

* Belgium and Luxembourg

4. Modelling the Problem

4.1. The gravity model

Since its first application by Tinbergen (1962), Pöyhönen (1963) and Linnemann (1966), the gravity model has been successfully applied to mainly analyzing the aggregate trade flows between two countries, but also to explaining factors such as migration, tourism, goods remittances, direct investment, etc.

Although initially theoretically poor, since the second half of the 1970s the gravity model has been developed, and due to the contribution of Anderson (1979), it can now be derived from different structural models such as the Ricardian, the Hecksher-Ohlin and the New Trade Theory. Its theoretical framework is discussed by Anderson (1979), Bergstrand (1985, 1989), Helpman (1987), Deardorff (1995) and Anderson and Wincoop (2001).

Following Gould (1994), Girma and Yu (2002) and Lewer (2004), a gravity model will be developed augmented by variables related to the phenomenon of immigration in order to examine the issues under consideration.

According to the general gravity model of trade, the volume of exports between two countries, T_{ij} , is a positive function of the product of the economic "mass" of both countries, measured by Gross Domestic Product (GDP), GDP_i (GDP_j) being the GDP of the exporter (importer); and a negative function of the costs of trade between the countries, represented by the distance between them, $Dist_{ij}$,

$$T_{ij} = f[(GDP_i \cdot GDP_j) / Dist_{ij}] \quad (1)$$

$$T_{ij} = \beta_0 \cdot (GDP_i \cdot GDP_j)^{\beta_1} \cdot Dist_{ij}^{\beta_2} \cdot e^{u_{ij}} \quad (2)$$

where u_{ij} is the iid disturbance term. Using the gravity equation, several authors add to equation (2) variables for control of the demographic, geographic, linguistic and economic conditions, among others,

$$T_{ij} = \beta_0 \cdot (GDP_i \cdot GDP_j)^{\beta_1} \cdot Dist_{ij}^{\beta_2} \cdot (GDPPC_i \cdot GDPPC_j)^{\beta_3} \cdot e^{u_{ij}} \quad (3)$$

$GDPPC_i$ ($GDPPC_j$) being the GDP per capita of the exporter (importer) that is used as an indicator of the level of wealth, assuming that the wealthier the country is, the more likely it is to display greater openness to international trade. Since we are considering unidirectional (not bilateral) trade for each country in the study (Germany, Denmark and Portugal), the variables GDP and GDPPC do not vary between trading partners and will be excluded from the equation.

For estimation purposes, equation (3) is linearized by a double-logarithmic transformation, and augmented with the dummy variables $Lang_{ij}$, $Curr_{ij}$ e NMS_j , which identify whether the pairs of countries share a common official language and currency, and whether country j is a New Member State. If so, variables assume value 1. If not, they assume the value 0. Thus we have,

$$\ln T_{ij} = \beta_0^* + \beta_1 \ln GDP_j + \beta_2 \ln Dist_{ij} + \beta_3 \ln GDPPC_j + \beta_4 Lang_{ij} + \beta_5 Curr_{ij} + \beta_6 NMS_j + u_{ij} \quad (4)$$

where \ln indicates the natural logarithm of variables.

Each of the variables of equation (4) has effects on trade flows between countries. The coefficients β_1 and β_3 are associated with variables of income and are expected to be positive, while β_2 , associated with the variable distance, is expected to be negative, as noted by the general gravity model. The coefficients associated with dummy variables (β_4 , β_5 e β_6) are expected to be positive, indicating that these variables promote trade. The specific case of β_6 is expected to be positive, signifying that countries i and j aren't yet economically integrated. Hence the difference in structure between economies is expected to lead to an above average trade flow.

4.2. Empirical application

In order to estimate the impact of the immigrant stock from EU countries on intra-union trade, in equation (4) we include the variable M_{ij} , which will be divided into $M_{ij} \cdot EU15_j$ and $M_{ij} \cdot NMS_j$, $EU15_j$ and NMS_j being dummy variables for the countries of the EU-15 and the 10 NMS respectively, to allow the observation of the elasticity of immigration in the two groups of countries.

In the model presented in this paper, the underlying “gravity” relationship is given by:

$$T_{ij} = f(M_{ij} \cdot X_{ij}) \quad (5)$$

where T_{ij} are the exports from country i to country j , M_{ij} concerns the immigrant stock from country j in country i , and X_{ij} identifies the vector of variables that influence trade between country i and country j , variables that are identified in equation (4).

Therefore, the gravity equation specific to this work is:

$$\ln T_{ijt} = \beta_0^* + \gamma_0 \ln M_{ijt} \cdot EU15_j + \gamma_1 \ln M_{ijt} \cdot NMS_j + \beta_1 \ln GDP_{jt} + \beta_2 \ln Dist_{ij} + \beta_3 \ln GDP_{jt} + \beta_4 Lang_{ij} + \beta_5 Curr_{ij} + \beta_6 NMS_j + \delta_t + u_{ijt} \quad (6)$$

where:

T_{ijt} are the exports from country i to country j in period t ;

M_{ijt} is the immigrant stock in country i originally from country j , in period t ;

$EU15_j$ and NMS_j are dummy variables that identify whether country j belongs to the European Union of 15 member states or to the 10 New Member States group;

GDP_{jt} represents the GDP of country j in period t ;

$GDPPC_{jt}$ represents the GDP per capita of country j in period t ;

$Dist_{ij}$ represents the distance between the capitals of country i and j ;

$Lang_{ij}$ ⁷ and $Curr_{ij}$ are dummy variables that identify whether countries i and j have a common official language and have the same official currency respectively;

δ_t is the sum of the time fixed effects.

As mentioned above, for Denmark, Germany and Portugal we will test the effects that the accumulation of the immigrant stock proceeding from EU countries as a result of border enlargement has on trade between EU countries - in short, whether accumulation of the immigrant stock from the NMS has an impact or not on exports from the countries concerned to those markets.

Following Egger (2000), panel data for each of the three countries concerned for the period from 1995 to 2007 will be used. Each set of panel data has 299 observations (1 x 23 x 13). In the data treatment, Belgium and Luxembourg have been aggregated into one, due to the latter's small size⁸.

Following Girma and Yu (2002), country-specific fixed effects were not used in the model, in order to identify the impact of regressors that do not vary with time, such as distance ($Dist_{ij}$) and common official language ($Lang_{ij}$), and also in order not to penalize the results of variation in trade and immigration between the countries. Time-fixed effects were used in order to capture other factors influencing exports from country i to country j .

4.3. Results

The results of the estimation of equation (6) are presented in Table 3. The variables "GDP" and "GDP per capita" have the expected signs for the three countries under study, indicating that these variables positively affect their exports. The variable "Distance" also achieved the expected sign in all three countries, distance negatively influencing exports.

For the dummy variables: the variable "common official language", calculated only for Germany, presents the expected sign and indicates that a country that has the same language is a factor which stimulates exports from Germany, while the variable "Common currency"

⁷ This dummy variable is applied only in the equation for Germany, because Portugal and Denmark do not share the same official language with any other European country.

⁸ Data sources available in Data Appendix

does not have the expected sign and is not statistically significant. This can be explained by the fact that the period of implementation of the single currency is too short (only 6 years old), not yet exerting any significant influence on exports. The variable "New Member State" has the expected sign and is statistically significant both for Denmark and Portugal, indicating that the process of trade integration with the NMS is still ongoing. This means that exports are relatively higher for these countries. Ceteris paribus, the exports of Denmark and Portugal to the NMS are respectively higher-193% [$(e^{1.07}-1)*100=193\%$] and 63% [$(e^{0.49}-1)*100=63\%$] than for the other EU15 countries.

This study primarily concentrates on the immigration issue, so the analysis of the "Immigrant stock" variables are of most importance. The "Immigrant stock . EU15" revealed a positive signal for the three countries, although this was not statistically significant for Germany. In Denmark and Portugal the coefficients of 0.65 and 0.43 mean that a 10% increase in the immigrant stock from the EU15 increases their exports by about 6.5% and 4.3% respectively. The "Immigrant stock . NMS" is positively signed and is statistically significant for the three countries. It presents the coefficients 0.38, 0.049 and 0.41, meaning that a 10% increase in the immigrant stock from the NMS increases exports from Denmark, Germany and Portugal by around 3.8%, 0.49% and 4.1% respectively. It is also noticed that the amplification effect on exports due to the immigrants is more relevant in Denmark and Portugal and merely residual in the case of Germany. Moreover, comparing the impact that immigrants from NMS or EU15 have on exports of the host countries we find a very small difference in Portugal (0.41 versus 0.43), and a bigger difference in Denmark (0.38 versus 0.65). Given that Portugal has a more liberal immigration policy towards NMS than Denmark these results suggest that this policy contributed to the normalization of exports from Portugal to NMS whereas in Denmark there is scope for such normalization.

Table 3: Estimation results of immigrant stock impact in the exports from Denmark, Germany and Portugal

Variable	Denmark	Germany	Portugal	Expected Sign
Constant	12.72 ^{***} (11.05)	-3.90 ^{***} (-5.04)	-7.53 ^{***} (-2.68)	
Immigrant stock . EU15	0.65 ^{***} (21.25)	0.015 (0.75)	0.43 ^{***} (9.14)	+
Immigrant stock . NMS	0.38 ^{***} (17.26)	0.049 ^{**} (2.43)	0.41 ^{***} (7.69)	+
GDP	0.22 ^{***} (12.42)	0.91 ^{***} (43.75)	0.48 ^{***} (8.15)	+
GDP per capita	0.054 (12.42)	0.66 [*] (10.50)	1.32 ^{***} (7.71)	+
Distance	-0.41 ^{***} (-8.28)	-0.49 ^{***} (-13.72)	-0.27 ^{***} (-2.65)	-
Common official language	-	0.74 ^{***} (20.07)	-	+
Common currency	-	0.011 (0.23)	0.01 (0.11)	+
New Member State	1.07 ^{***} (4.74)	-0.042 (-0.18)	0.49 ^{**} (2.69)	+
Adjusted R ²	0.97	0.98	0.95	

***, ** and * indicate that the estimated coefficients are statistically significant at 1, 5 and 10% respectively; t statistics are presented in parentheses; temporal dummy variables were used in all regressions.

5. Conclusion

The intention in this study has been to test to what extent, in the context of accession of new countries to the EU, the accumulation of immigrant stock from the NMS has an impact on exports from the EU-15 to those markets, by analysing the German, Danish and Portuguese cases. For this purpose a gravity equation was used, augmented by an immigrant stock variable that has been disaggregated into EU15 and NMS, in order to facilitate the observation of the elasticity of immigration to the two groups of trade partners.

From the three cases studied, those of Portugal and Denmark have confirmed the hypothesis that the presence of immigrants has a positive impact on exports from the host country to the country of origin. A 10% increase in the immigrant stock from the EU-15 increased exports from Denmark and Portugal by around 6.5% and 4.3% respectively, and a 10% increase in the immigrant stock from the NMS increased exports from Denmark and Portugal by approximately 3.8% and 4.1% respectively. These results confirm the theory outlined in section 2 - that through the reduction of transaction costs, an increase in the immigrant stock increases the volume of exports from the host country to the country of origin. The results also suggest that immigration promotes and strengthens economic

integration through trade, showing a complementary relationship between immigration and trade.

The German case is different because the results do not allow us to conclude beyond a doubt that there is a relationship between the immigrant stock and exports. On the one hand the presence of immigrants from the EU15 has no impact on exports to that destination, while on the other hand the presence of migrants from the NMS has a positive, albeit very small, effect on German exports to that destination.

Additionally, the authors have analyzed to what extent the different immigration policies followed by Portugal and Denmark exerts an impact on their exports to the NMS. The results suggest that there may be some cause-effect relationship, depending on the kind of policy adopted. Portugal and Denmark, two countries economically integrated with their partners in the EU15, have a coefficient of the impact of immigrant stock from the EU15 on exports of 0.43 and 0.65 respectively. Since their economic integration with the other EU15 states is well established, the reciprocal exchange of labour and capital with these countries has long been stabilized. Thus, these coefficients can be interpreted as the “normal” impact of immigration on the exports of Portugal and Denmark to the EU.

The same is not true for the NMS. The EU15 and the NMS are not in an advanced stage of economic integration yet, so an observation of unrepresentative labour and trade flows between these countries is to be expected. Having confirmed that the immigrant stock influences a country's exports, it is acceptable to say that, depending on the extent of the openness of the immigration policies adopted by that country, these could also influence its exports to a greater or lesser degree. Therefore, assuming the estimated impact of immigrant stock from the EU15 on exports as a benchmark, we find that:

- For Portugal – a country which has adopted a policy of greater openness to immigration from the NMS⁹ - immigration from these countries has an impact on exports that is identical with or very close to the impact associated with immigration from the countries of the EU15. Thus Portugal has managed to maximize the immigrant stock-exports relationship with these countries.
- For Denmark – which adopted a more restrictive policy on immigration from the NMS – the immigration from these countries has an impact on Danish exports that is considerably lower than the impact associated with immigration from the EU15.

⁹ See Table 1

Consequently, it has to be admitted that with more open immigration policies to the NMS, Denmark could increase its exports to this group of countries, thereby speeding up its normalisation of trade integration with them.

The implications of immigration policy for trade issues will be the subject of further research, within a broader framework, whereby the authors also intend to extend the study (though still keeping within the EU context) to the impact of immigrant stock on imports, but encompassing a larger number of countries.

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Data Appendix

Variable	Data Sources
T_{ijt} – exports f.o.b. (in dollars)	IMF – Direction of Trade Statistics
M_{ijt} – immigrant stock (in persons)	Denmark – Danmarks Statistik Germany – Central Register of Foreigners Portugal – Instituto Nacional de Estatística
PIB_{jt} – GDP (PPP, in 2005 international dollars)	Chelem INT Database
$PIBPC_{jt}$ – GDP per capita (PPP, in 2005 international dollars)	
$Dist_{ij}$ – distance between capital cities (in kilometres)	www.indo.com/distance
$Lang_{ij}$ – common official language	CIA World Factbook 2008
$Curr_{ij}$ – common official currency	

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