



**LUND UNIVERSITY**  
School of Economics and Management

# Trade Effects of Immigration

## The Case of the European Union, 2008-2015

2<sup>nd</sup> YEAR MASTER THESIS

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**Abstract:** This paper investigates whether immigration promotes bilateral trade within the European Union between 2008 and 2015. Results from an augmented gravity model indicate a positive linkage between bilateral migration and trade, results which are in line with prior findings in the field research. Notably, the pro-trade effect is slightly larger for the import sector and immigrants seem to facilitate trade in services at a larger extent than for trade in goods.

**Keywords:** Bilateral Trade, Migration, Gravity Model, European Union

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## I. Introduction

A growing globalization has increased the trading flows of goods and services but also the movements of people over the world. An enhanced worldwide interconnection between countries leads to faster transportations and make it easier for people to travel to another country than the country they are born in. The last decades the number of international migrants<sup>1</sup> rose significantly worldwide and there is no tendency that the migration flow will decrease in the nearest future. Between 1990 and 2015, the amount of international migrants increased with roughly 90 million over the world where Europe recorded a substantial gain during this span of time with almost 27 million migrants (United Nations, 2016). According to United Nations (2016), poverty and conflict are the chief reasons why people are leaving their initial home and find their luck in another country and the path of migrants is often from less developed regions to relatively more developed. However, international migrants are also tracked between developed countries, but then the reason is most likely that people are in search of a new job.

There is a wide range of empirical literature establishing a positive linkage between bilateral migration and trade (see e.g. Gould, 1994; Head and Ries, 1998; Hatzigeorgiou, 2011). The majority of the literature have concluded that international migrants can contribute to increased economic growth in terms of remittances to their home country from the destination country where for example a new job have been found. Also, countries hosting international migrants can also benefit from the increased inflow of migrants in terms of filling a shortage on the labour market. Migrants may bring new technology and enrich the hosting communities in terms of promoting cultural diversity (United Nations, 2016). However, in this paper, I consider a potential trade effect from immigration. I focus on the contribution from immigrants in terms of valuable foreign market information (information mechanism) and increased demand for foreign products (preference mechanism), which in turn will lead to increased bilateral trade and thereby establishing a migration-trade linkage between host and country of origin.

The link between migration and trade will be analysed from a European Union (EU) point of view. By being a member of a union where trading obstacles are reduced and where free movement of people prevails, there are relatively larger trade effects and economic benefits to collect. As mentioned, a large proportion of international migrants end up in Europe and lately, how to handle this flow of migrants has become the top priority amongst policymakers,

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<sup>1</sup> International migrants are defined as the number of people born in a country other than that in which they currently live (United Nations, 2016).

especially within the European Union (EU) where limiting migration has become a top priority for member states' policymakers. This has led to a widespread discussion regarding the purpose and intuition behind the Single Market Program's (SMP) free movement of people within the union. I consider the case of EU to be highly relevant due to the occurring tendency of opposition against the EU as a whole amongst some of the member states, and in Europe it has become a top priority for many countries to beware about their borders in order to control the inflow of international migrants. This has led to tendency of a reduced economic and political integration within the union with potential hard hits on migration and trade. This leads to this paper's main purpose: to study the linkage between migration and trade within the EU27 between 2008 and 2015, (Croatia did not join until 2013 and is therefore not included in the analysis). Thus, immigrants impact on the bilateral trade between their country of birth and their country of destination. The research aim of this paper is formulated as follows:

- *Identify the causal link between bilateral migration and bilateral trade within the European Union-27 between 2008 and 2015?*

I also intend to identify the linkage between EU27 and immigrants originated outside the EU, in order to shed light on the relevance of being a member of the EU. Also, I will investigate if there exist any differences between effects of bilateral migration on imports and exports. Pioneer studies such as Gould (1994) and Girma and Zu (2002) find that migration has a greater effect on exports while Head and Ries (1998) and Wagner et al. (2002) contradicts their findings and find a larger impact on imports. Hence, I consider it to be interesting if it is possible to draw the same conclusion for bilateral migration and trade within EU. Especially since migrants contribute through both an information mechanism and a preference mechanism, both which theoretically will affect imports and exports differently (Tai, 2009; Mundra, 2014).

Piperakis (2011) studied the economic impact of immigration on the EU-15 in terms of trade in goods and have inspired this paper in some sense. Nonetheless, with the more recent data and a relatively large time span, but also with the ability of making a distinction between effects on exports and imports, I am able to add further dimensions to the literature. Furthermore, I am able to study the effect of migration on both trade in service and trade in goods, which to my understanding has not been examined for EU27 before, why this paper contributes to the field of research. In a gradually globalised world economy, services such as finance, insurance, communications bring crucial inputs and thereby provide a fundamental support to the rest of the economy, why it is of interest to include this in the analysis. As the

vast majority of the prior literature, I am using an augmented gravity model with a migration-variable as well as commonly used gravity-variables from the CEPII<sup>2</sup> database.

The paper is constructed such that this introduction is followed by a brief background focused on the migration and trade trends in EU. Subsequently, I present the theoretical and empirical literature on the linkage between migration and trade. Afterwards, the methodology and data behind the paper are introduced. The empirical results and the sensitivity analysis of the same are followed by a discussion. Some concluding remarks end the paper.

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<sup>2</sup> Centre D'Etudes Prospectives et D'Informations Internationales

## II. Background

Studying migration from an EU angle, is highly topical due to the current refugee crisis which leads to a high external inflows of migrants into the EU. Further, there is an increasing number of internal migrants, thus people who migrate from a member state to another. Rising concerns regarding these increased numbers have led to the fact that member states limit the free movement of people by restricting their migration policies. Moving freely as a person is a fundamental right as a EU citizen, and along with free movement goods, services and capital it is deeply implemented as one of the cornerstones within the Single Market Program (SMP). Thus, intuitively being a member of the EU should have a significant impact on countries' movement of people, goods and services within the European compared to the movement from a non-member state.

### a. Trends in trade and migration in Europe and the EU

Apparently, Europe plays an important part in hosting international migrants and attracting people from all over the world, where the numbers is naturally concentrated to appear within the EU, exception of Russia. In 2015 almost 40 million international migrants born in Europe living in another European country, suggesting that Europe-to-Europe was the second largest regional migration corridor in the world. Naturally, EU host the majority of the migrants in Europe as a considerable large part of the migration in Europe takes place within the union. In 2014, 3.8 million people immigrated into one of EU27 member states and of them were almost 34 per cent people born in another EU country. (Eurostat, 2017c)

There is an increasing trend in inflow of immigrants into EU the last decade with no particular tendency to slow down. Further, similar pattern for the share of EU-population which is foreign-born (stock of migrants) is found and displayed in table 1 below.

*Table 1 – Total EU population, by region of birth*

	2014	2015	2016
<b>Born in EU27</b>	3.54%	3.64%	3.78%
<b>Born in Non-EU27</b>	6.62%	6.75%	6.88%
<b>Native-born</b>	89.84%	89.61%	89.33%

*Source: Eurostat, 2017c*

As can be seen, the last three years, the share of the EU-population is increasing for both those born outside EU and but also for those born in another EU27 country. This indicates that international migrants are taking shares of the total population in EU and, hence the stock of migrants is increasing in EU. The stock of migrants is often used as a measurement when

studying trade effects of migration due to the fact that the stock of migrants often has a great influence on the current economic outcome in the destination country since it takes time to establish social networks, businesses etc. (Tai, 2009).

Additionally, Europe plays a decisive role for the global trade as well. Europe accounts for approximately 20 per cent of total import and exports of goods and services worldwide which makes the EU the world's biggest trader (Piperakis, 2011). There is an increasing trend in intra-EU trade in goods over the last decade. Naturally, member states choose to trade with other member states. The majority of the EU-countries have one or two partners within EU that accounts for more than 50 per cent of their intra EU-exports (Eurostat, 2017a). These countries are often large countries, in close geographical proximity. The development of the trade in services within EU follows a similar pattern as the one in trade in goods. Between 2010 and 2015, the EU-28's export and import of services rose with almost 47 per cent, where the increase is recorded for both trade with member states as non-member states. For example, of all international trade in service that took place within EU in 2015, trade from member state to member state accounts for 56 per cent (Eurostat, 2017b).

Clearly, trade takes place relatively more often between member states and recent increasing trends in intra-EU trade in goods and services shed light on the importance of the Single Market Program (SMP) and its' possible trade facilitation. The impact of joining EU may be reflected in those countries which joined in or after 2004. These countries<sup>3</sup> all recorded over 200 per cent growth rates in value of exports to partners in the EU-28, between 2004 and 2015.

#### b. The European Union Single Market Program

The free mobility of people, goods, services and capital assembles the "four freedoms" which are the cornerstones of the SMP. These freedoms are derived from the Treaty of Rome in 1957, where the initial objective was to tie the people of Europe closer to each other, hence avoid potential conflicts and war (National Board of Trade, 2015). Besides the ability for people to move freely across countries, SMP aims to increase trade between EU member states by eliminating tariff costs (Piperakis, 2011). It was established as an extensive political and legal project with the main purpose to improve the general economic performance of Europe as a whole.

The first steps towards a common market was to be completed in 1970 where main focus lied on the free movement of goods and abolishing barriers at-the-borders. This was done by

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<sup>3</sup> Bulgaria, Cyprus, Czech Republic, Latvia, Lithuania, Poland, Romania and Slovakia.

reducing internal tariffs on industrial and agricultural goods at the same time as a common external tariff against countries outside the union was introduced. (National Board of Trade, 2015)

At this time, heavy regulations and legal restrictions surrounded trade in services which made it difficult to implement the same procedure as for trade in goods. Barrier to trade in service are often found “behind” borders why the Commission suggested an implementation of the General Programme for the abolition of hindrances to establishment and provision of services. However, the political support in Europe was insufficient to introduce this programme at the time but still became the starting point towards liberalising measures. (National Board of Trade, 2015)

Due to the initial idea of bringing people closer to each other, the possibility for persons to move freely was mainly concentrated to workers since it should boost and pursue the economic activity within industries. The ability for non-workers to move freely was in some sense introduced with the the Schengen agreement in 1985 where border controls is abolished by Germany, France and the Benelux countries. In 1990, the principle of free movement for non-working persons is recognised, but not fully introduced until EU was established and the concept of EU citizenship was introduced in 1992. (National Board of Trade, 2015)

As for trade in service, the liberalised development of free movement of capital was primarily to be done in areas where a facilitation for trade in goods was feasible (National Board of Trade, 2015). Free movement of capital was the last of the four freedoms to be realised.

Conclusively, the free movements of the four freedoms took some time to become a reality since the European integration process was chiefly focused on trade liberalisation for goods. It was until in the wake of the signing of the Maastricht Treaty in 1992<sup>4</sup>, when the European Union (EU) and the SMP were established. The economic activity within EU has rose since the inception of the SMP in terms of increased trade in goods. The intra-EU exports have risen from 9 per cent to almost 21 per cent of EU GDP between 1992 and 2015 (The National Board of Trade, 2015). Further, the intensification of trade within EU has not come at the expense of countries outside the union (CER, 2014). Thus, the SMP has generated new trade inside the EU without any significant evidence of trade diversion from third countries. Even if it is recorded that trade in service has increased since the implementation of the SMP, it is not clear how much

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<sup>4</sup> In 1992 the member states were as follows: Belgium, Denmark, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain and United Kingdom.

explanatory power the SMP has (The National Board of Trade, 2015). According to the European Commission (2017) the SMP is “one of Europe’s major achievements and its best asset in times of increasing globalisation”, leading to higher competition, spurring innovation at the same time as consumers in Europe are able to enjoy a larger variety of products and services. However, there still exist several barriers to overcome in order for SMP to achieve its full capacity (National Board of Trade, 2015).

### III. Migration and Trade Linkage

Naturally, there are several obstacles trading partners are facing when engaging international trade, often associated with a cost. According Anderson and Wincoop (2004), differences in cultural contexts between trading partners are, as well as disparities in market structures, examples where improvements are necessary in order to reduce the information costs linked to bilateral trade. Additionally, Kneller and Pisu (2011) highlight that hinder to trade may arise of trading partners not sharing official spoken language. Information that is obligated in order to participate in international trade is harder to obtain if there are linguistic differences, but also if the trade activity takes place at a geographical distance between partners (Dunlevy 2006). Thus, lack of relevant information about foreign consumer behaviour and foreign markets may create a threshold that may hurt international trade, where a significant inflow of immigrants may play a significant part in information cost reduction (Hatzigeorgiou, 2010).

Even if immigrants are creating a new life in a host country, yet there are ties to the country they are born in. Migration is expected to overcome trading obstacles between the destination country and the country of origin. Here, a common language, knowledge about home markets, preferences and business contacts play a key part in reducing transaction costs (Melitz, 2008; Melitz and Toubal 2014). By obtaining information about foreign markets structures and by establishing new networks, cost associated with searching, institutions and transportation may be reduced and thereby foster bilateral trade (Gould, 1994). Gould (1994) divides immigrants' impact on trade into two mechanisms; the *information mechanism* where immigrants bring valuable information connected to the market in their home country, and the *preference mechanism* where immigrants create a demand for products and services from their country of birth.

#### a. The Information Mechanism

Lack of information worsen the potential for companies to succeed in global trade and making it expensive to participate in the same. Obtain knowledge about foreign markets is considered to be a cornerstone for companies in their internalisation processes. International migrants can foster bilateral trade by helping overcome informational barriers related to language, culture and institutions. Immigrants bring valuable information about culture, pricing and preferences from their home countries which will be treasured to a company in its' way to participate in international trade. Immigrants can act as an intermediary for networks, creating business relationships, and hence making the foreign market relatively more accessible. There is a potential pro-trade effect from established ethnic networks who are solving issues related to inefficient institutions in the home country of immigrants (Gould, 1994; Rauch and Casella,

1998; Bandyopadhyay et al., 2008). Migrants possess an advantage of creating a network through ethnic ties to their home country and hence make it easier for producers find right customers and partners on the domestic market (Rauch 1999; Felbermayr and Toubal 2011; Hatzigeorgiou and Lodefalk, 2014). Further, social networks with a majority of immigrants can serve as mitigation force to costs associated with information failures. By providing valuable information and knowledge to local firms and agents their cost associated with partner-searching can be reduced (Herander and Saavedra, 2005).

Relative to trade in goods, the potential cost reduction is specifically crucial for trade in services, due to the provision of a service outside the host country often requires an understanding of cultural contexts in a larger extent than for what is needed for a produced good (Ottaviano et al., 2016). Moreover, uncertainty is a well known problem when it comes to making investments in foreign countries. Here, social relations help overcome the uncertainty by bringing access of valuable information about foreign markets and this uncertainty issue plays a specific role when it comes to decision making in trade in services (Handley 2012).

#### b. The Preference Mechanism

As mentioned, immigrants still have ties to home countries. For example, they tend to prefer and favour a certain good or service in their country of birth, a so called *home-bias*, which often is hard to purchase in their new host country. These consumption behaviours and preferences can lead to a direct increase in import of these goods and services. Thus international migrants may promote trade if they derive higher utility from goods produced in their destination countries (Gould 1994; Head and Ries 1998; Girma and Zu 2000). Additionally, in the presence of immigrants, natives in the country of destination may acquire a taste for these types of products and services which in turn will lead to pro-trade effect on imports from immigrants' countries.

Theoretically, the information mechanism enhances both imports and exports while the impact of migrants' preferences solely is identified on imports due to increased demand of products and services from immigrants' consumption behaviour. Therefore, it is implied that bilateral migration may have a relatively larger trade effect on imports overall (Tai, 2009).

#### IV. Literature Review

There is a wide range of literature establishing a positive trade-migration linkage. A vast majority of research are using a gravity model in estimating the impact that immigration potentially has on trade creation between immigrants' home country and their host country. Gould's pioneer study from 1994 reveals an important aspect from immigration which is the foreign market knowledge that immigrants naturally possess. His results suggest that the foreign market information has a significant role in explaining U.S. bilateral trade flows. The positive influence from immigration is found for both exports and imports but appear to be stronger for exports and consumer manufactured goods. Gould mean that the pro-trade effect in the import sector is explained greatly by the preference channel but it also depends on the size of migration stock, more specific on how large the community of immigrants is.

Another study that has contributed greatly to the field of research is Head and Ries' (1998) study over Canadian trade data. Their findings suggest that a ten per cent increase in the immigrant stock is associated with a one per cent increase in Canadian exports and three per cent increase for the imports, thus evidently the effect is larger in the import sector.

Dunlevy and Hutchinson (1999) succeed to find a positive correlation between a raising immigrant population in USA and an increase in trade between USA and the immigrant's home countries. They find evidence for an enhancing import-effect for USA from 17 countries, and the particularly for products that are more differentiated. Specifically, an increase in the migration stock with ten per cent leads to a pro-import effect with approximately four per cent and the effect tend to be larger for countries sharing a common language with USA. On the other hand, when investigating same connection but for the states in USA, Dunlevy (2006) find that the he positive effect on export is mostly concentrated to trading partners not sharing the same language with US, even if it is established that language similarities otherwise promoting trade.

Girma and Zu (2002) identify a causal link between migration and trade by analysing bilateral migration flows and trade between UK and 48 trading partners. Their findings imply that UK's propensity of trading increase as the migration stock becomes larger. Their result is mainly applied to trading partners sharing same language and where there exist historical colonial ties to UK. A ten per cent increase in the immigrant stock in the country significantly increases the export of UK to trading partners with at least 1.6 per cent. Girma and Zu mean that the results are chiefly explained by the inflow of knowledge about immigrants' home countries rather than the creation of new business networks.

Piperakis, Milner and Wright (2003) achieve to establish a positive connection between immigration and trade in Greece between 1981 and 1991. Their results are mainly driven from the hypothesis about new information is brought by immigrants. It further explains that the effect of migration is larger for exports than for imports in Greece during this time span. Immigrants preferences for home products is apparently not strong enough to have any significant impact on Greek imports.

Using data over USA and 73 trading partners, White (2007) finds an immigrant-trade link with the result chiefly driven by immigration from relatively low income countries. His results indicate that a ten per cent increase in US immigration stock leads to an increase in exports to immigrants' home countries of 4.7 per cent. Corresponding numbers for US imports are 1.5 per cent. White suggest that pro-trade effect comes from network creations and preferences for goods unavailable in the home market.

In contrast to other studies where the focus mainly lies on the impact of migration that is permanent, Jansen and Piermartini (2009) investigate the effect of a temporary migration inflow on bilateral trade flows. Even if the temporary immigrants may be relatively less integrated in the societal context, their knowledge and working skills are relatively more up-to-date. Jansen and Piermartini state that the temporary migration work as a complement to the permanent migration and affect both import and exports positively.

Tai (2009) reports a greater effect of migration on imports than on exports. However, he stresses that the structure of the market and the differentiated composition of goods affect the size and the direction of the outcome. Regarding the preference channel, he suggests that migration affects import relatively more than exports due to imported goods are more substitutable and thereby easily affected by preferences.

Covering 16 OECD countries Lewer and Van den Berg (2009) finds a positive link between migration and bilateral trade. They confirm the importance of networks as a driving force behind increased international trade between countries. By sharing language and cultures, valuable information flows smoothly between trading partners and he find that immigrants' networks account for a significant part of the variation in bilateral trade.

Hatzigeorgiou (2010) postulates a relationship between migration and foreign trade while investigating inflow of immigrants to Sweden. He argues that the expensive required information for foreign trade is obtained from migrants moving into Sweden. Hatzigeorgiou discovers that Sweden's import and export increase with nine respectively six per cent as the total migrant stock increase with ten per cent. Evidently, the linkage to differentiated goods is

strongest, simply explained by the fact that these are relatively more dependent on foreign market information.

Peri and Requena-Silvente (2010) investigate the causal effect on Spanish exports from a large inflow of immigrants. They are able to make a distinction between a migration-trade linkage with developed countries (Europe and OECD) and least developed regions, such as Africa. Their result indicates that the network effects of immigrants have a larger impact on differentiated goods when trading with relatively more developed countries. They find that immigrants significantly increase exports and that the results are mostly concentrated to increase in the extensive margin of trade. Trading partners which are not in the nearest geographical proximity and not sharing cultural contexts with Spain experience a larger pro-trade effect from migration.

Piperakis (2011) finds a significant impact of migration on bilateral trade, mainly on exports. His results also indicate that migrants have a slightly enhancing impact on imports, which stems from strong home-products preferences. People migrating into EU from Eastern Europe and countries sharing a common border to the EU member states positively affect the bilateral trade flows, both for exports and imports.

Bettin and Lo Turco (2012) point out that goods with a low elasticity of substitution are the one that are most affected by trade barriers associated with information costs. Import of both primary and final goods increase as the stock of foreign-born people increases. They suggest that rising difficulties of finding substitutes to a certain good in the host country are solved by an enhanced import of foreign products in order to satisfy the increasing demand.

Bratti, Benedictis and Santoni (2014) postulate a casual effect of immigration on Italian bilateral trade flows. A positive effect from immigrants is shown on both Italian imports and exports, slight larger for imports though. They state that migrant networks works as an intermediary and explain the variation in Italian trade flows quite significantly. The pro-trade effect is larger for immigrants coming from relatively low-income countries, indicating that immigrants bring valuable information which is harder to obtain in less developed countries compared to more developed countries.

Mundra (2014) examines the impact of migration of U.S. bilateral trade flows. In accordance with prior research, he finds that immigrants play significant role in determining U.S. trade, and mainly via ethnic networks in the USA. The greatest impact comes from relatively professional immigrants (highly educated) who are stimulating trade with their home countries via the information channel. According to Mundra, they possess greater skills of

communication and are in a better position for stronger network effects on trade creation. His results show a positive and approximately equal impact on U.S. import and export.

The majority of the literature connect migration to trade with produced goods. As the economic activity in the world is becoming more and more service-intensive, the field of research starts investigate migration's effect on trade in service as well. By investigating companies' willingness of employing immigrants, Hatzigeorgiou and Lodefalk (2014) find that by employing one more immigrant (preferably highly educated), exports of service tend to increase with 2.5 percentage units on average the following year. Ottaviano et al. (2016) also examining the impact of migration on trade in services and find that a ten percentage increase in the immigrant stock (in the labour market) in UK is associated with a six to ten per cent increase in exports. They suggest that their results are mainly driven by an export growth from firms that are already established in the foreign market, rather than by firms just entering the market. Further, the pro-trade effect is larger for services which are language-intensive and dependent of legal competence.

Clearly, there is a consensus among researchers that increased migration from one country to another has a positive significant impact on the bilateral trade. Mundra (2014) states that the literature on the impact of immigrant networks on trade has identified a larger effect for immigration on imports than on exports. This is mainly explained by the home-country information impacts both exports and imports, whereas demand affects only the import sector.

## V. Methodology

To assess the trade effects of immigration, I use a gravity estimation approach. Studying international trade flows has a long history and the initial gravity model stems from the early work from Tinbergen (1962). Inspired by Newton's gravitational law, he found that the variation in bilateral trade flows can be explained by several economic variables. This popular and useful tool to assess trade effects has later been developed and supplemented. Simply, a gravity model provides a framework to understand the determinants of flows, such as trade, migration or capital, between two countries (Anderson, 1979; Bergstrand 1985). In other words, bilateral trade flows depend on the volume of trade between two countries in proportion to of their economic size as well as on measures of trade resistance (Helpman, et al., 2008). The trade flows can be explained, by economic forces at both the flow's origin and its destination. Forces which either contribute or reduce the flow movement is therefore included in the model. Following Gould (1994), Head and Ries (1998) and Girma and Zu (2002), I use a gravity model of trade supplemented with a migration variable to assess the empirical trade effects of bilateral migration within and into the EU.

### a. Model Specification

The gravity equation is constructed such that the left hand side of equation 1 are the dependent variables of interest which in this case are the natural logarithm of imports/exports between countries within EU27 (importers) and their trading partners<sup>5</sup> (exporters), thus measuring the value of bilateral trade between countries. This creates four benchmark equations, estimating the impact of bilateral migration on export of goods, exports of services, import of goods and import of services, respectively. Further, the main independent variable of interest in all estimations is the migration variable. It is measured as the stock of people living in a EU27-country but born in another country. Why it is used (and not inflow of immigrant for instance) is that the stock of immigrants often has a great influence on the current economic outcome in the destination country. Also, the usage of an immigrant stock avoids potential problems of endogeneity raised by reverse causality (Tai, 2009). Furthermore, in order to capture the effect of immigrants' networks it is better to include both current and past immigration into a country (Mundra, 2014).

Other included independent variables are countries' GDP which intend to work as a size measure of the economy of each concerned country. The model consists of so called "gravity" variables which are time-invariant variables indicating if the country pairs either share a

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<sup>5</sup> In this analysis are 176 trading partners included (except EU27)

border (Contiguity), share a common official language or/and have colonial ties to each other. As established in the prior literature, these gravity variables are considered to have a positive effect on trade through a reduction in cost associated to transportation and lack of information. Next, the distance between the countries largest cities is added. Larger distance between countries is expected to have a negative effect on the trade. Lastly, a time dummy (year fixed effect) is included as well as an error term. A time dummy captures the occurrence of sudden economic shocks and crisis, which will affect the aggregated global trade (Shepherd, 2013).  $I$ ,  $i$ ,  $j$  and  $t$  denote importer, exporter and time, respectively. The equations for export (1) and import (2) are displayed below.

$$(1) \ln Import_{ijt}^6 = \beta_0 + \beta_1 \ln Migration_{ijt} + \beta_2 \ln GDP_{it} + \beta_3 \ln GDP_{jt} + \beta_4 Contig_{ij} + \beta_5 Lang_{ij} + \beta_6 \ln Dist_{ij} + \beta_7 Colony_{ij} + year_t + \varepsilon_{ijt}$$

$$(2) \ln Export_{ijt}^7 = \beta_0 + \beta_1 \ln Migration_{ijt} + \beta_2 \ln GDP_{it} + \beta_3 \ln GDP_{jt} + \beta_4 Contig_{ij} + \beta_5 Lang_{ij} + \beta_6 \ln Dist_{ij} + \beta_7 Colony_{ij} + year_t + \varepsilon_{ijt}$$

These equations are first estimated using bilateral migration and trade within EU27, thus only including EU27-countries as trading partners (see table 7 in appendix). Due to a large inflow of international migrants coming from outside the EU, it is of interest to estimate trade effects of bilateral migration from the rest of the world as well. Later on, in order to evaluate the relevance of being a member of EU and belonging to the single market, EU27 global trading partners outside the EU is included as exporters.

## b. Data

My data refers to a panel of all members of EU during the time span of 2008 and 2015. Bilateral trade data (both for trade in service and for trade in goods) from destination country  $i$  (importer) and country of origin  $j$  (exporter), are obtained from UN COMTRADE database and measured in nominal US dollars. Data over bilateral migration is collected from Eurobase (Eurostat's online database) provided by the European Commission (2017). It is estimated by the amount of migrants living in one country but have a different country of birth than their destination country. I am using country of birth as a measurement since there is a possibility that citizenship

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<sup>6</sup> Import value of goods and service is estimated separately

<sup>7</sup> Export value of goods and service is estimated separately

may change during a life-time for a person why it is more useful to analyse information linked to a migrants' country of birth.

The included “gravity” variables are collected from the CEPII database (Head and Mayer, 2013), while countries' GDP are obtained from the World Bank database (World Development Indicators).

### c. Estimation Methods

Clearly, there are several ways of estimating a gravity equation and naturally there are advantages and disadvantages with different approaches. One common practice is to take its natural logarithms and using an Ordinary Least Squares (OLS) estimation. A frequently mentioned concept in gravity theory is *multilateral trade resistance*, a concept introduced by Anderson and Wincoop (2003). It is meant to capture multilateral barriers to trade, thus barriers that appear between one country and all its trading partners, thus not solely bilateral barriers to trade. A country may remove barriers of trade to a certain country and as a consequence the global resistance of trading with this country decreases. A multilateral resistance term is crucial in order to estimate effects of bilateral trade in the presence of a regional trade agreements for instance, or a union in this case. However, by using fixed effects for both importers and exporters this is partly controlled for (WTO and UNCTAD, 2012). Conclusively, as a baseline model, I am using a OLS with importer-, exporter- and year fixed effects. In addition to control for the dilemma of multilateral resistance to trade, the fixed effects aim to capture the unobserved heterogeneity for importers and exporters over the period of time (Gómez-Herrera, 2013).

### d. Robustness Checks

A common problem that arises in the practice of gravity models as estimation techniques for trade policy-impacts, is the problem of endogeneity (WTO and UNCTAD, 2012). It is defined as undesired correlation between an independent variable and the error term and in this case; an issue may appear since an inclusion in a Free Trade Agreement (FTA), or in EU, is not clearly exogenous. Trade and migration between countries may not solely occur due to an inclusion in a FTA why other unobserved characteristics may have an impact on why countries initially trade with each other. For example, a specific agreement between two trading partners may affect their trade between each other but would necessarily not affect the trade with a third country. According to WTO and UNCTAD (2012), the use of a county-pair fixed effect partly solves this dilemma in some sense since it controls for unobserved heterogeneity between trading partners. Here, time-invariant country-pair factors as common language, colonial history, common border, and distance will be confounded.

Another potential estimation and measurement issue is one concerning *zero* trade and *zero* migration in a given year between two given countries. The standard approach of estimating the gravity model is estimate its log-linear version but since the log of zero is not defined the observations with zero trade and migration flows will automatically be dropped and the estimation will loose efficiency. An alternative approach to handle zero trade is to estimating the model in levels (WTO and UNCTAD, 2012), why I am using a fixed effect Poisson Pseudo Maximum Likelihood (PPML) estimator. This approach was originally suggested by Santos and Tenreyro (2006) and further developed, using a panel dataset, by Westerlund and Wilhelmsson (2009). The PPML-estimator may outperform the OLS method since it can be used directly on the model in its original multiplicative shape. Hence, the observations with zero trade and zero migration flows do not have to be dropped. This is considered to be reasonable due to the fact that a lot of trade value observations in my panel dataset are just zero. Also, even in the presence of heteroskedasticity (which is common analysing trade data) the use of a fixed effects PPML estimator is consistent.

## VI. Empirical Results

### a. Baseline Estimation – Trade Impact on EU27 from Immigrants within EU

The results from the baseline estimation is displayed in table 2 below. The variable of prime interest, *Migration*, is statistically significant for all four columns, indicating that increasing the bilateral migration stock by ten per cent the bilateral export of goods and services as well as the bilateral import of goods and services enhance. The trade effect is quite similar for all four types, with a positive trade-impact between four and five percent, given a ten per cent increase in the migration stock. However, for exports in goods the effect is slightly smaller and the influence on import is overall somewhat bigger. The *GDP*-variables shows a positive statistically significance for all types of trade, indicating that larger economies tend to trade relatively more, which is in accordance with theory. Furthermore, the variable *Distance* is statistically significant in all columns and its coefficient has the expected sign indicating that a larger distance between two trading partners decrease their trade with each other. *Contiguity* shows a positive effect, also in line with theoretical expectations, for all types of trade but is not statistically significant for trade in goods, meaning that sharing a border does not have a significant impact on the bilateral trade within EU. The coefficient for *Common Language* is significant for export-oriented trade, but, surprisingly, for exports of services a common official language will lead to lower bilateral trade, which contradicts theory. Lastly, *Colonial Ties*, is negative significant for trade in services, suggesting that sharing a colonial history with your trading partner may not be trade-enhancing after all.

Table 2. Baseline Estimation - OLS with Importer, Exporter and Year Fixed Effects

VARIABLES	(1) Goods (Import)	(2) Services (Import)	(3) Goods (Export)	(4) Services (export)
Migration	0.413*** (0.0308)	0.472*** (0.0234)	0.285*** (0.0364)	0.474*** (0.0213)
GDP Exporter	0.757*** (0.139)	0.603*** (0.0777)	0.761*** (0.189)	0.547*** (0.0644)
GDP Importer	0.470*** (0.161)	0.543*** (0.165)	1.023*** (0.220)	1.238*** (0.227)
Distance	-0.677*** (0.104)	-0.551*** (0.0818)	-0.852*** (0.112)	-0.544*** (0.0766)
Contiguity	0.0639 (0.222)	0.276** (0.133)	0.374 (0.272)	0.369*** (0.111)
Common Language	-0.103 (0.188)	-0.221 (0.143)	0.568** (0.273)	-0.214** (0.109)
Colonial ties	-0.175 (0.221)	-0.135 (0.157)	-0.0606 (0.270)	-0.303** (0.121)
Constant	10.02*** (2.324)	9.139*** (2.038)	6.644** (3.273)	2.423 (2.544)

Observations	4,043	3,841	4,033	3,848
Year FE	YES	YES	YES	YES
Importer FE	YES	YES	YES	YES
Exporter FE	YES	YES	YES	YES
Country-Pair FE	NO	NO	NO	NO

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

#### b. Baseline Estimation – Trade Impact on EU27 from Immigrants outside EU

Same baseline estimation is carried out for trading partners located outside the EU (see table 3). Here, the effect is slightly larger for trade in services than for trade in goods. Increasing the stock of migrants from a country outside EU27 into a EU27 country, with ten per cent leads to an increase in trade in service with 5.4-5.5 per cent on average. The effect of migration on trade in goods is also significant where the same increase in migrant stock leads to increased import of goods from countries outside EU27 of 4.5 per cent while the effect on export is relatively smaller, 3.6 per cent. However, the trade effect of immigration is significant positive for all type of trades. Sharing the same official language promotes trade for trade in goods while it has no power in explaining variation in trade in services. Here, the distance variable is the only gravity-variable which is negatively significant in all columns. Apparently, sharing a border or colonial history between trading partners have no significant effect on bilateral trade analysing exporters outside EU27.

Table 3. Baseline Estimation - OLS with Importer, Exporter and Year Fixed Effects

VARIABLES	(1) Goods (Import)	(2) Services (Import)	(3) Goods (Export)	(4) Services (Export)
Migration	0.449*** (0.0455)	0.549*** (0.0314)	0.359*** (0.0255)	0.540*** (0.0366)
GDP Exporter	0.175 (0.193)	0.696*** (0.123)	1.356*** (0.124)	1.013*** (0.0991)
GDP Importer	0.782*** (0.147)	0.237* (0.143)	0.474*** (0.0770)	0.227 (0.161)
Distance	-1.058*** (0.275)	-0.795*** (0.205)	-0.878*** (0.179)	-0.609*** (0.190)
Contiguity	-0.585 (0.430)	-0.464 (0.314)	-0.390 (0.261)	-0.0213 (0.347)
Common Language	1.419*** (0.272)	0.321 (0.208)	1.552*** (0.179)	0.0264 (0.181)
Colonial Ties	-0.187 (0.281)	0.0822 (0.209)	-0.177 (0.186)	0.319 (0.205)
Constant	14.49*** (3.310)	9.798*** (2.460)	3.017 (2.197)	7.206*** (2.221)

Observations	4,597	2,178	4,654	2,179
Year FE	YES	YES	YES	YES
Importer FE	YES	YES	YES	YES
Exporter FE	YES	YES	YES	YES
Country-Pair FE	NO	NO	NO	NO

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

### c. Robustness Check 1 – OLS Estimation with Country-Pair Fixed Effect

In order to deal with a potential endogeneity issue, but also to check the robustness of the baseline results, I am performing an OLS estimation with country-pair fixed effect. As for previous estimations, one is made for bilateral trade in immigrants within EU27 and one is done for immigrants originated from countries outside the union. The result is carried out in table 4.

Table 4 - Trade Impact from Immigrants from EU

VARIABLES	(1) Goods (Import)	(2) Services (Import)	(3) Goods (Export)	(4) Services (Export)
Migration	0.149*** (0.0467)	0.206*** (0.0320)	0.0213 (0.0403)	0.201*** (0.0314)
GDP Exporter	1.001*** (0.335)	0.249 (0.199)	0.288 (0.328)	0.0935 (0.212)
GDP Importer	0.603*** (0.133)	0.593*** (0.151)	1.160*** (0.181)	1.284*** (0.222)
Distance				
Contiguity				
Common Language				
Colonial Ties				
Constant	14.68*** (3.633)	19.67*** (2.910)	19.49*** (4.076)	14.11*** (3.535)
Observations	2,346	1,982	2,306	1,897
Year FE	YES	YES	YES	YES
Importer FE	NO	NO	NO	NO
Exporter FE	NO	NO	NO	NO
Country-Pair FE	YES	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Even here, migration influence trade in service positively, for both import and export, while for trade in goods migration only explains the variation in import of goods. Yet, the coefficients are smaller than in the baseline estimation. The sign of the coefficient for export of goods is still positive. Notably, the trade-effect is not as large using country-pair fixed effect. For

instance, now a ten percent increase in the stock of migrants from one EU27-country into another enhances the bilateral import of goods with almost 1.5 per cent. As mentioned earlier the variables that are invariant in time are naturally confounded.

Table 5 - Trade Impact of Immigrants from outside the EU

VARIABLES	(1) Goods (Import)	(2) Services (Import)	(3) Goods (Export)	(4) Services (Export)
Migration	0.199*** (0.0511)	0.152*** (0.0359)	0.167*** (0.0257)	0.193*** (0.0524)
GDP Exporter	-0.257 (0.659)	0.0502 (0.407)	-1.114*** (0.334)	-0.595* (0.313)
GDP Importer	0.874*** (0.146)	0.227* (0.133)	0.541*** (0.0716)	0.227 (0.151)
Distance				
Contiguity				
Common Language				
Colonial Ties				
Constant	32.06*** (7.546)	27.07*** (5.070)	38.78*** (4.007)	34.13*** (3.825)
Observations	4,597	2,178	4,654	2,179
Year FE	YES	YES	YES	YES
Importer FE	NO	NO	NO	NO
Exporter FE	NO	NO	NO	NO
Country-Pair FE	YES	YES	YES	YES

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Same country-fixed effect approach is performed for trading partners outside EU. In table 5 it is shown that immigrants from a country outside the union intensifies the bilateral overall trade between with that country and a EU27-country. The largest effect is founded for import of goods and export of services. In contrast to the result in table 4, migration seems to have a positive and statistically impact on export of goods. Again, the gravity-variables are out-ruled. Nonetheless, the effect is no longer larger for all types of grade for immigrants originated outside EU. Now, it is solely the effect for import of goods that is larger in comparison to immigrants which are born in EU27.

#### d. Robustness Check 2 – Poisson Fixed Effect – The Case of EU

In order to rule out estimation problems related to zero trade, I have included a *Poisson Fixed Effect* approach, see table 6. Now the base line equation can be estimated in its original

multiplicative form. This time, I am only considering the potential migration-impact within the EU. The results provided by the PPML-estimator indicate a significant pro-trade effect from increased migration stock, and hence confirming the results from the baseline estimation. Even in this estimation, the effect is relatively larger for trade in services than for trade in goods. Also, migration has a greater effect on import than on export even if it is not a clear discrepancy between the two types. Lastly, worth mentioning is that if trading partners have colonial ties to each other the overall bilateral trade tend to be lower on average. Further, regarding trade in services, it seems that sharing the same official spoken language decreases bilateral trade, which contradicts the theory of linguistic differences as a potential hinder to trade.

*Table 6 - PPML-Estimation, Trade Impact of Immigrants within EU*

VARIABLES	(1) Goods (Import)	(2) Services (Import)	(3) Goods (Export)	(4) Services (export)
Migration	0.497*** (0.0194)	0.561*** (0.0107)	0.452*** (0.0164)	0.541*** (0.0102)
GDP Exporter	-0.0262 (0.112)	0.640*** (0.0484)	-0.0507 (0.0945)	0.424*** (0.0487)
GDP Importer	0.247 (0.251)	0.308 (0.436)	0.682*** (0.234)	0.417 (0.434)
Distance	-0.635*** (0.0640)	-0.328*** (0.0339)	-0.847*** (0.0563)	-0.371*** (0.0399)
Contiguity	-0.161** (0.0664)	0.0747 (0.0587)	-0.00189 (0.0750)	0.110** (0.0495)
Common Language	0.0524 (0.0581)	-0.271*** (0.0567)	0.341*** (0.0637)	-0.205*** (0.0603)
Colonial Ties	-1.028*** (0.154)	-0.534*** (0.120)	-0.712*** (0.104)	-0.842*** (0.122)
Constant	19.96*** (3.014)	9.135* (4.701)	17.73*** (2.931)	10.92** (4.666)
Observations	4,243	3,920	4,339	3,991
Year FE	YES	YES	YES	YES
Importer FE	YES	YES	YES	YES
Exporter FE	YES	YES	YES	YES
Country-Pair FE	NO	NO	NO	NO

Robust standard errors in parentheses

\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

## VII. Discussion

The estimates obtained from the gravity equations indicate a pro-trade-effect of migration in EU. The coefficient of migration across the estimations varies slightly, but it can be concluded that immigrants positively influence both trade in goods as well trade in service. The results hold for both the import and the export sector (except for exported goods in the case of EU including country-fixed effects), with a marginally larger effect for imports. This paper contradicts the findings of Gould (1994) and Girma and Zu (2002) since they find migration to has a greater effect on exports. Instead the results are in line with the findings in Head and Ries (1998) and Wagner et al. (2002).

Comparing migrants' impact on trade in goods and trade in services, immigrants seems to increase the trade in services with their country of birth at a larger extent. Across the majority of the estimations, trade in service are relatively more affected by migration than trade in goods. There may exist larger hinders to trade in this area where the presence immigrants may it possible to overcome these. For example, according to theory, legal and financial services often suffer from linguistic differences where the room for facilitation is quite large. On the other hand, the results provided by this paper suggest that sharing the same official language actually decrease the bilateral trade in services. Instead, immigrants seem to have larger preference for home-country services than for home-country products and also, through ethnic networks and valuable foreign market information immigrants facilitate trade in service to a larger extent. Ottoviano et al. (2016) argues that the provision of a service outside the host country often requires an understanding of cultural contexts in a larger extent than for what is needed for a produced good which can explain the outcome of the estimations. The gravity model in this paper provides a results suggesting that a ten per cent increase in the migration stock increase the trade in service with 5-6 %, which are in accordance with Ottaviano et al. (2016) who experienced a pro-trade effect of six to ten per cent.

The effect on all four types of trade seems to be slightly larger for immigrants which are born outside the EU27, which confirm findings of Peri and Requena-Silvente (2010). However, the result is only robust for import of goods. This may be explained by the fact that immigrants coming from a country farer away from one in EU27, for instance China, have a relatively stronger preference for home-country products than if the immigrants coming from another country in EU27, like Germany. Therefore, it is hard to draw any conclusion of the effects of belonging to SMP. Even if barriers to trade are abolished inside the SMP, the effect of being a member state in EU does not have significant greater impact when analysing the linkage between trade and migration. Also, countries within EU27 are relatively more homogenous

when it comes institutions and cultures, leaving not as much room for trade improvements as with countries sharing similarities in linguistic- and culture contexts. Nonetheless, there is a clear positive trade-migration linkage within EU which should not be forgotten.

## VIII. Concluding Remarks

The discussion regarding migration policies will remain among policymakers in EU. The positive economic effects of increased migration, in terms of higher trade flows bilateral, may outshine the often negative terms associated with an increase inflow of migrants into the EU. The empirical results outlined in this paper imply that by increasing the stock of migrants from one into another country, a bilateral trade-enhancing effect can be expected. The large inflow of immigrants into the EU27 has clearly an impact on the bilateral trade within the union. Both the export and import sectors are experiencing a pro-trade affect from migration, but with a somewhat greater effect for imports. Here immigrants facilitate trade by working as intermediary for networks and by raising demands for home-country products and services. It is however, harder to draw a conclusion of the fact of being a member in the EU.

For future research, it could be of interest to include more detailed trade data, for example divide trade into goods and services into smaller categories, essentially since immigrants possess difference characteristics which attract different types of trading partners and naturally they are preferring different types of goods depending where they are born. Also, there may be heterogeneous effects in the sample of immigrants why it may be of interest to separate the them into age and level of education. It can be assumed that relatively more educated immigrants can facilitate trade in areas demanding higher skill and knowledge while a subgroup of low-skilled immigrants may only affect trade through the preference mechanism.

## Appendix

Table 7 - Included Countries in EU27

Austria	Germany	Netherlands
Belgium	Greece	Poland
Bulgaria	Hungary	Portugal
Cyprus	Ireland	Romania
Czech Republic	Italy	Slovakia
Denmark	Latvia	Slovenia
Estonia	Lithuania	Spain
Finland	Luxembourg	Sweden
France	Malta	UK

Table 8 - Used Variables and Their Source of Data

Variable	Data Source
Bilateral Imports/Exports	UN Comtrade Database (2017).
Bilateral Migration	Eurostat (2017)
GDP	World Bank (2017)
Distance	CEPII (2016)
Contiguity	CEPII (2016)
Common Language	CEPII (2016)
Colonial Ties	CEPII (2016)

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