

International trade and migrations: A review*

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Abstract

Trade and factor movements are increasing in importance as the world is becoming more and more globalized. In this paper we provide a brief survey of some of the most important studies which, through using the gravity equation and adding additional complexities of interest, have tested the link between trade and labour mobility. Since the seminal paper of Gould (1994), the empirical literature shows that there is a positive linkage between migration and trade and that labour mobility has a pro-trade effect. Concretely, this is enhanced and magnified through two different channels, the transaction cost reduction channel and the preference channel. Also another factors can influence in the bilateral trade between host and home countries of immigrant people, as: networks (co-ethnics and business groups), a common language or colonial tie, and the proximity.

Keywords: migration, international trade, gravity equation, pro-trade effect, labour movement, immigrant-based networks.

JEL classification: F16, F22, O24.

Resumen

El comercio y la movilidad de los factores están incrementando su importancia a medida que el proceso de globalización es cada vez mayor a nivel mundial. En este artículo se presenta una recopilación de algunos de los trabajos más representativos, comenzando con el de Gould (1994), que mediante el uso de ecuaciones de gravedad y añadiendo complejidades adicionales de interés, han contrastado empíricamente la relación entre el comercio y la movilidad del trabajo. En estos estudios se llega a la conclusión de que las migraciones tienen un efecto favorable sobre el comercio. Concretamente, esta relación surge y se ve reforzada a través de dos canales diferenciados: el canal de la reducción de los costes de transacción y el canal de las preferencias de los inmigrantes. Además, otros factores pueden influir en el comercio bilateral entre el país de origen y destino de los inmigrantes, como: la formación de redes (tanto étnicas como de negocios), el uso de una lengua común o la existencia de lazos coloniales y la proximidad geográfica.

Palabras clave: migraciones, comercio internacional, ecuación de gravedad, movilidad del trabajo, efecto pro-comercio, redes de inmigración.

Clasificación JEL: F16, F22, O24.

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1. Introduction

There are many different channels from which an economic activity can acquire an international dimension. The two main approaches through which it can take place are through the international trade and through the capital and labour factors movements.

Focusing on the side of the factors movements, it implies a shift and a reorganization in the productive activity; this is either because of the countries specialization, pointed out by the Ricardian competitive advantage model, or because of the differences among factor endowments, according to the Heckscher-Ohlin model.

Traditionally, the studies analysing the factors movement have just focused on the capital factor movement, leaving behind the international labour movement. Maybe this is because of the fact that labour has not been as volatile as capital, but it is also true that its study might be crucial as it is not just a simple factor movement. It implies the reorientation of the nation's consumption. This is because labour factor movements imply the shift of consumers with preferences not necessarily similar to those from their country of origin. However, it is important to highlight the fact that since the Second World War the labour movement has increased, that is to say, the immigration has experienced a massive boost.

Even though the relationship between immigration and trade has not been so analysed as the relationship between capital movements and trade, since then, and because of the fact that immigration is nowadays one of the most important social and political trends among countries, immigration and trade linkage literature has considerably increased.

The aim of this paper is to present a brief survey of the relationship between migration and trade.

In section 2, we focus on the dilemma over trade and migration, concretely if they are substitutes or complements. It will be explained that international flows of migration and trade can be seen as substitutes or complements depending on whether the trading countries have different relative endowments or if instead, they differ in size or in technology. Therefore, this paper will explain why there is not a clear answer for this question.

In section 3, we explain the free movement of labour phenomena and the migration theories. The trade creation effect of immigrants is examined in section 4 in which is presented the gravity equation as a main tool for assessing trade trends and is reviewed the main empirical evidence. Some concluding remarks are given in the final section.

2. Trade and migration: are they complements or substitutes?

International flows of migration and trade can be seen as either substitutes or complements of each other. Hence, there are no definite theoretical answers for

the question of whether trade and immigration are substitutes or complements as it depends on the model considered. Thus, among countries that differ in relative factor endowments, trade and migration can be seen as substitutes. However, if countries differ regarding production technology or in size, the link between trade and immigration will be complementary.

In the Ricardian model (1817), when there is free trade, the direction of this exchange is guided by differences in each countries' production technology which leads to a competitive advantage and will set the patterns of trade. However, this is one of the simplest models as it does not take into account important factors which actually modify the effect of migration over trade. In other words, this model just shows the gains from specialization and trade.

In the Heckscher-Ohlin model (Ohlin, 1933) is stated the fact that differences in factors endowments are the existential reason for having a comparative advantage. Therefore, it is pointed out the fact that trade and factor movements are substitutes. In this model is assumed that firms act in order to maximize their profits while consumers act to maximize their utilities. Labour and capital are mobile within each country but immobile between countries so there is not international migration and nor mobility in capital flows. The home and the foreign countries have the same production technologies but each country has differences in factor endowments which leads to differences in the relative factor prices of each country: capital-abundant nations will export capital-intensive goods while the labour-abundant nations will export labour-intensive goods to the capital-abundant country.

Stolper-Salmueson (1941) postulated the Factor-Price Equalization in which the price of identical factors of productions and returns will be equalized in across trading partners and as a consequence of international trade. Therefore, trade and immigration are taken as substitutes, as factor good prices convergence will lead to a reduction of the incentives for factor movements; in this case, for labour movement.

Another important contribution, following the Heckscher-Ohlin model, is the Rybczynski theorem, which is actually useful for explaining the controversy among trade and factor returns. This theory states that, at constant prices, an increase in the factor endowment will increase, by a greater proportion, the output of the good which is intensively used in that factor and will reduce the output of the other good. This means that an increase in the supply of labour will expand the possible production of labour-intensive goods while an increase in the supply of capital will increase the production of capital-intensive goods (Rybczynski, 1955).

It is important to highlight that, while the Heckscher-Ohlin model results has a long-run effect, there is a similar short-run model which is known as the Specific-Factor model. This model was originally discussed by Jacob Viner (1953) but it was further developed by Ronald Jones (1971) and Michael Mussa (1974). According to Venables (1999), this theory states that migration and trade can complement each other even though the Specific-Factors model holds and, therefore, each nation have different factor endowments.

Further developments based on the of Hecksher-Ohlin-Samuelson theory have shown that when some assumption from this theory is changed, trade and migration can be seen as complementary. Specifically, Markusen (1983) showed that migration and trade could be seen as complementary if some assumptions from the Heckscher-Ohlin model, like constants returns to scale, identical technologies, perfect competition and no domestic distortion were relaxed. Wong (1986) concluded that factor movements and trade can be seen either complements or substitutes depending on which assumptions are considered or relaxed. This contributions have been done from a theoretical point of view or perspective.

Therefore, this modifications supposed a shift from the standard factor-endowments frameworks to the New Trade Theory framework. In these models, which have been developed during the 1970s-1980s, the gains from trade can emerge independent to any comparative advantage. It is assumed that there is monopolistic competition, or in other terms, there is a type of imperfect competition in which products are differentiated from one another: increasing returns to scale and network, effects can occur. According to Markusen (1995) those increasing returns to scale can occur in an individual firm or at an industry level.

As every firm is small, the hypothesis about competitive markets in which a large number of producers compete with each other, will be embraced. According to the New Trade Theory, there are economies scales and nations have similar factor endowment but different size, each country will specialize their production so each country will have relative higher prices and, consequently, higher factor returns for the one which is intensively used. This will lead to an international reallocation of factors and, as there are increasing returns to scale, output will increase in both nations.

Being one step ahead than the New Trade Theory there are more sophisticated theories which provide explanation for additional factors as well as the specific mechanisms through with immigrants affect trade. In these theories, trade and migration are not only seen as complements; migration fosters bilateral trade and this is done through two different channels: transaction costs effect and immigrant preference effect.

3. The free movement of labour phenomena: the migration theories

As it has been previously mentioned, there are two different paths through which an economy can acquire an international dimension, through international trade and factor's movement. During many years, it has been only analysed the capital movement, however, since the Second World War there has been an emergence in the international labour migration due, mainly, to the internationalization of the economies.

The migrations plays a crucial role not only because of demography, but also because it has an effect on and it's driven by many other areas such as social life, economics, politics and culture.

There is a variety of models which have been proposed in order to explain why international migration occurs. According to the neoclassic economic theory, people migrate in order to maximize their income. Concretely, as a result of the “Push and Pull Factor Theory”, Lee (1966) states that migration occurs because there are factors, such as economic, environmental, demographic, etc. that push migration to go out of their countries.

According to the International Labour Organization (2014), people’s desire to migrate is related to the labour market situation at home. So the crucial decision of migration analyses, compares and balances the income in the country of origin and the income in the destination country. It is seen that migrants seek to raise their standard of living when they move into another country, so economics factors are the most important motivating and pushing factors which drive people to migrate.

The former and simplest economic theory of migration argued that migrants focus their attention when facing the trade-off between migrating or not in actual wages differentials which are concrete to the specific labour market of different countries. However, Harris and Todaro (1970) tested that the migration decision proceeds in response to expected income differentials between rural and urban areas, rather than just wage differentials. Here it appears the concept of uncertainty, because migrants face a security risk when they decide to voluntarily leave their home country.

From another perspective, the “Rule of Law”, set by the United Nations, is also relevant for migrants when they face a trade-off between leaving their country or not¹. It is important for migrants to find this basic fundamental rights covered when they move into another country, so they can achieve their personal goals with easiness from the government’s side. We can state that political attractiveness is a driving factor for the migration decision as citizens pursue to settle in countries which have similar laws to their country.

Similarly, migrants also try to move into countries which have not just similar political laws, but also similar cultural, linguistically and historical links. So, when talking about migration it is important to take into account the implied costs that it give rise to. For example, the fact that migrants leave their families brings a psychological costs because they have to settle into another culture with different social values and this entails some implicit adjustment costs.

Besides the migration theories introduced above, which just focus on specific variables such as economic, social, political and cultural variables or constraints levels, there is also a more integrative theory. Ritchey (1976) formulated three different hypothesis regarding how social networks have an influence on the migration decision: (i) the affinity hypothesis says that the probability of migrating decreases as the number, or density, of social networks in the country of origin

¹ The aim of this law, according to the United Nations is “To keep the principles of governance in which all persons, public and private institutions and entities, including the State itself, are accountable to laws that are publicly promulgated, equally enforced, independently adjudicated, and which are consistent with international human rights, norms and standards”.

increase; (ii) the facilitating hypothesis argues that social networks, settled in the receiving country, can facilitate the process of migration through providing support; (iii) the information hypothesis stances that there is a positive correlation between the people who migrate and the places where their social contacts are located.

Following this former statement, and according to Schiff (1996), it was formulated the so-called “Network Theory”, in which the movement of labour is more than just a factor movement, it is also the international movement of social values, language and culture which create attachments. It has been proved that people feel closer to those societies in which they share social capital. According to Massey et al. (1993), migrant’s networks are sets of interpersonal ties which interconnect migrants, former migrants and non-immigrants in origin and destination and through relations of kinship, friendship and shared community origin. So, this connections are the mechanism through which migrants gain access into foreign labour markets and through which the risk of movement is reduced. Once a social network is established, the migration process can be stimulated, and, therefore, perpetuated. DaVanzo (1981) founded out that family is the reasonable decision-making unit since members of a family usually move together. Therefore, it is more likely that a person migrates if a member of his/her family has previously had an experience in that other country because, in the end, individuals and only individuals are the ones who make the decision of moving abroad.

4. The trade creation effect of immigrants

In the modern theory of trade, it can be seen that there is a real complementarity between trade and immigration. Immigrants can play an important role in creating and enhancing bilateral trade linkages, mainly because of the fact that the conceptual distinction between international migration and the labour factor movement allows another dimension to be enlisted, that the international trade models we have seen so far does not integrate.

Since the early nineties, there have appeared many empirical studies about the impact of migration on international trade, focusing mainly, on the host country perspective. The majority of them have used a log-linear gravity model of trade flows incremented with the logarithm of number of immigrants from specific nations as an additional variable.

Thus, through the next subsections it will be explained the gravity equation as a main tool for assessing trade trends. In the main part of this section, it will be shown some of the most important literature about the positive linkage between immigration and trade linkage.

4.1 The gravity equation as a main tool for assessing trade trends

From the eighties onwards, and with the emergence of the “New Trade Theory”, appeared different technical supports for the gravity model of trade. The gravity equation represents the way in which the bilateral trade flows are determined between different countries during a certain period of time.

This model is similar to, and descends from, the gravity law of physics stated by Newton in 1686 in which, “A particle attracts every other particle in the universe using a force that is directly proportional to the product of their masses and inversely proportional to the square of the distance between their centres”.

It is represented as: $F_{i,g} = G \frac{M_i M_j}{D_{ij}^2}$

Where F is the gravitational force, M is the mass, D is the distance and G is the gravitational constant.

Tinbergen (1962) stated that the gravity equation of Newton could be applied to measure the trade flows among countries. Since that, many other economists have used it in their empirical studies.

It is represented as: $F_{ij} = G \frac{Y_i Y_j}{D_{ij}^2}$

Where F_{ij} is the trade (imports, exports, or gross trade) from i to j (countries or regions), Y the economic size (e.g. GDP) of i and j , D is the distance the between i and j , and G is the gravitational constant.

It is seen that bilateral trade flows has a positive relation with the product (GDP) of two countries and a negative relation with the geographical distance between them. On the one hand, the positive relationship is because of an increase in the product of the two countries, which is the “mass”. It means that both countries are more attractive to each other and consequently, trade increases. On the other hand, the negative relationship is because of the fact that business distance means an increase in the costs of trade, like transportation costs, and, consequently, a decrease in the volume of trade. So, bilateral trade between two differentiated countries is directly proportional to the size of the country and inversely proportional to the distance between both.

In the first papers, in order to analyse the impact of immigration on international trade, this relationship has been estimated through a log-linear gravity model of export and import flows including the logarithm of the stock of immigrants from specific source countries as an additional explanatory variable. Thus, the common gravity equation for testing the impact of migration on trade between countries i and country j is:

$$\ln M_{i,j} = \alpha_0 + \alpha_1 \ln I_{i,j} + \alpha_2 \ln \frac{Y_i Y_j}{Y_w} + \alpha_3 \ln D_{i,j} + \sum_{k=4}^k \alpha_k \ln Z_{i,j}^k + \varepsilon_{i,j}$$

$$\ln X_{i,j} = \beta_0 + \beta_1 \ln I_{i,j} + \beta_2 \ln \frac{Y_i Y_j}{Y_w} + \beta_3 \ln D_{i,j} + \sum_{k=4}^k \beta_k \ln Z_{i,j}^k + \delta_{i,j}$$

Where $M_{i,j}$ is imports into migrant host country j , originating from migrant source country i ; $X_{i,j}$ is exports from migrant host country j into migrant source country i ; $I_{i,j}$ is the number of immigrants of country i living in country j (or their share of population); $D_{i,j}$ is a measure of the distance between countries i and j ; $Z_{i,j}^k$ represent k other explanatory variables (language similarity, colonial ties, access to coastlines, prices or exchange rate, etc.); $\varepsilon_{i,j}$ and $\delta_{i,j}$ are stochastic error terms; and ε_k and δ_k are the parameters to be estimated ($k = 0, 1, \dots, K$).

In its origins, there was not a solid theoretical support for this model. It was just seen as a direct application from the physics field which had generated good results. It was during the seventies when some technical supports were developed to justify the use of this model. Anderson (1979) was the first one who applied the Cobb-Douglas utility function, similar to that of the gravity equation, to obtain a more sophisticated model. This model used the properties of the expenditure system based on a homothetic model among different regions in which all the countries have the same utility function and their products are differentiated because of their origins. This application was similar to the gravity equation as it introduced some elements like the distance between countries, among others, that were not directly deduced from the empirical framework. This brought up a model that formulates bilateral flows and, therefore, is similar to that of the gravity equation.

Bergstrand (1985) followed the model of Anderson (1979) but added the assumption of monopolistic competition and the difference in factor endowments (HO model) in order to explain specialization. However, this amplification and explanation did not find a contradiction between the equation and the model of HO. Moreover, Bergstrand attempted to justify the gravity equation through the trade theory of HO.

From the eighties onwards and with the emergence of the “New Trade Theory” appeared a variety of technical supports for the gravitational model. However, Tinbergen (1962) and Pöyhönen (1963) were the former economists who introduced the gravity model of bilateral trade. Since that, the gravity equation of trade has become the most popular model to explain international trade patterns. Moreover, the models used for empirical analysis have improved as well as the different tools which value the validity of those models.

4.2. *Some empirical evidence*

The empirical studies on the relationship between migration and international trade are numerous. The first studies arise in the nineties decade with the seminal paper of Gould (1994) and the later studies of Head and Ries (1998) and Dunlevy and Hutchinson (1999).

Gould (1994) was the pioneer studying that international trade and migration are positively linked and complement each other. In an empirical analysis for the U.S and Canada bilateral trade flows, during the seventies, and using a modifying version of gravity equation, the results obtained were according with the idea that immigration and trade flows tended to move in the same direction. It is shown that immigrant's links to the home country enhance bilateral trade. That is to say, exports and imports flows, between the home and the host country, are boosted because of the presence of immigrants. Following this line, if there is a positive correlation between immigrations and bilateral trade flows in a country, that would mean that there are immigrant-link effects to the home country. Here raises an important question: is there a positive relationship between immigration and trade because of immigrant links or because of any other factors?².

Also, Gould (1994) shows that immigrants decrease the cost of trading because of the fact that they introduce information about the foreign market while developing contracts which link the host and the home country.

Gould pointed out that immigrants enhance bilateral trade throughout two different channels: transaction costs effect and immigrant preference. On the one hand, immigrants can reduce the transaction costs for trade because of their higher information of home customs, laws, political practice, country markets and business practices. The impact of this direct trade-stimulating impact could be bigger when the host and the home countries have very different cultures, languages, and institutions, and when alternative sources of information are poor. This result will have an effect on imports and exports. On the other hand, it is seen that immigrants have a preference for demand of homeland products (demand effect). This will have an effect only on imports of the host country.

Following the former work of Gould (1994), Head and Ries (1998) tested the pro-trade effect of immigrants by using data about bilateral trade between Canada and 136 different partners from 1980 to 1992. The fundamental hypothesis of this paper was that immigrants may increase trade with their origin countries as they have knowledge about their countries of origin market opportunities. Using an augmented gravity equation it was found that a 10 per cent in immigrants results in a 1 per cent in Canadian exports and in a 3 per cent increase in imports. The result is higher for import flows as being familiar with the home market will increase both imports and exports, however, from the preference channel side, only imports will increase.

Also Head and Ries (1998) observed that each immigrant, regarding his or her particular situation, has a different effect on trade focusing on immigrant heterogeneity or diversity: each immigrant has a different situation which is likely to result in a different effect over transaction costs. So it was studied whether different immigrants, with particular situations, have a different effect on trade as each of

² Gould mentioned that there are many other approaches like the ones of LEAMER (1990), JOVANOVIĆ and ROB (1989), LUCAS (1988) and RAUCH (1989) which have included other factors to this correlation, like human capital externalities or industry-specific economies of scale.

them will have different effects on transaction costs (because each type will have a different level of knowledge and contacts). The authors found favourable evidence of this issue: different classes of immigrants have different effects on trade; and also the longer the immigrants reside in Canada, the less they contribute to the trade.

Following the study of Gould (1994) and Head and Ries (1998), Dunlevy and Hutchinson (1999) extended the literature about the pro-trade effect of immigrants focusing on the contemporary period for the United States and Canada in which it was seen that the presence of immigrants population was associated with an increase in the trade between the host and the origin country. According to Dunlevy and Hutchinson (1999), between 1870 and 1910, the trade in the United States increased from \$853.8 million to \$3,614.0 million annually. At the same time, there was seen an expansion in both, capital and labour factors. The study was conducted by using a gravity model to account for the U.S. imports, which were mainly commodities (67.7 per cent) from 17 different countries in five years. The main finding was a pro-trade effect, mostly among differentiated goods. But also the authors found evidence in favour of the pro-trade effect of the variables: English language, the relative income (Linder³ effect), the relative prices and the migrants stock (the most important variable). The effect of pro-trade was negative with the distance variable.

Dunlevy and Hutchinson (1999), in order to test whether the presence of immigrants increased imports from the home country, estimated the model by regional groups of trading partners. It was found that the immigrant-trade link effect was not the same for the different cultural and geographic groups.

Since the 2000s, the empirical literature, following the line of the previous papers, has been growing considerably and, taking into account that most of them, have adopted the same specification based on a log-linear gravity model of export and import flows augmented with the logarithm of the stock of immigrants from specific countries as an additional explanatory variable, so the resulting elasticities are comparable. From a meta-analyses point of view, Genc et al. (2011) and Lin (2011) come to the general conclusion in their papers that an increase in the number of immigrants increases the volume of exports and imports.

Lin (2011), in a meta-analysis of 24 works on developed countries, examine whether there are any systematic relationships between the characteristics of each study about immigrants' pro-trade impacts and its results. The paper finds that, first, immigrant's trade-creating effects are higher for English-speaking countries; second, immigrant's trade-creating effects are higher for disaggregated data; third, the trade-creating effects seem declining over time.

Genc et al. (2011) remarked the fact that immigration complements, rather than substitutes, bilateral trade-flows in a two-way direction (through reducing information costs and through linkages with their home countries). The conclusion was made through a meta-analysis and after observing and analysing a general impact: the distribution of immigration elasticities of imports and exports among 48 different

³ See LINDER (1961).

studies, which used an estimation of a gravity model and included immigration as an explanatory variable and resulted in 600 regressions. In result, and because some studies did not focus on both, exports and imports (among other facts), in the end, the data resulted to be 233 elasticities for exports and 178 for imports.

So, focusing mainly on merchandising trade, it was proved that an increase in the number of immigrants by 10 per cent resulted in an increase in trade of 1.5 per cent. This paper proved something that was previously stated by several authors: the fact that the impact of immigration over trade is lower when the goods are homogeneous than when the goods are differentiated, as there are no incentive for trading. So, this meta-analysis corroborated that migrant elasticities of trade were lower when the goods have the same characteristics.

Moreover, it was seen that elasticities variations among countries could not be explained through studying their characteristics. This is because each host country has different trade and immigration policies, even though this difference, it was commonly observed that immigrants in the host country boosted trade. It was also suggested that the impact of immigration over trade was greater for the host country than that for the home-country and therefore, the imports. That is to say, the distribution of immigration elasticity for exports was found to be larger than the distribution of immigration elasticity for imports.

Many authors investigated three factors that can influence in the bilateral trade between host and home countries of immigrant people. Some of the most important are: networks (co-ethnics and business groups), a common language or colonial tie, and the proximity.

The creation of formal or informal networks of ethnic minorities living outside their home countries can promote trade between home and host countries. This network effect is a mechanism to overcome informal international barriers (Rauch, 1999, 2001). Rauch and Trindade (2002) find strong evidence of a larger impact for trade of the network between countries with ethnic Chinese population. In general, the authors show that the presence of Chinese immigrant populations worldwide is associated with greater volumes of bilateral trade between host countries and China. Bandyopadhyay et al. (2008) find evidence of ethnic-network effects are important only for some countries (Brazil, Colombia, Spain, Turkey and Thailand) and larger than were been estimated previously.

The importance of a common language or colonial tie was investigated by Girma and Yu (2002) using data from the UK and testing 48 trade partners during 1981-1991, through an augmented gravity model approach. The authors distinguished and divided the data in two different categories: Commonwealth countries and non-Commonwealth countries. The basic result was that bilateral trade impact of immigration is different depending on the immigrants come from a Commonwealth country or from a non-Commonwealth country. This is due to the fact that the knowledge about social institutions given by a Commonwealth country will be less valuable than the knowledge brought by a no-Commonwealth country.

On the one hand, this models showed that although UK had higher propensity to trade with Commonwealth countries because of their language and cultural similarities, immigration from Commonwealth countries had no an impact on exports. This might have happened because they had similar history and social, political and institutional characteristics as the UK, these immigrants did not put in nor contribute with new information to the country in which they are hosted that could have help to reduce the information costs faced by the host and the home country.

On the other hand, it was proved that immigrant from the non-Commonwealth countries increases trade while immigration from the Commonwealth countries decreases imports. This is because of the fact that, as it has been previously said, immigration increases bilateral trade through bringing new knowledge and information about foreign market and different institutions rather than bringing business connections or individual-specific facts connect with their home country, which, in fact do not add an additional informational value.

So non-Commonwealth had a pro-trade effect while Commonwealth countries had a trade-substitution effect the importing activities were seen as substitutes for those in the host country. Moreover, if the Commonwealth countries were larger to the non-Commonwealth countries, because of the economies of scales, manufacturing some specific goods could be a good option instead of importing. So it was reinforced that trade-immigrants links were guided by new information about homeland markets and social institution given by immigrants. Therefore, this was not because of personal contacts nor business interconnections.

The proximity or the geographical closeness is key for the diffusion of the social capital and, therefore, for the increase of trade relationships with a foreign country.

Herander and Saavedra (2005) investigate the basic idea that the geographical proximity of members increase the network's efficacy in promoting exports. Moreover, it was observed that immigrants tend to locate in places where there are people from their nation. More precisely, *"if proximity matters, we expect local networks of immigrants groups within the host country to be more effective in communicating trade-related information among members than networks where members are separated by greater distance"* (p. 2). In other words, proximity means efficacy in promoting exports.

In their work, and in order to analyse the impact of both the in-state and out-state stocks of immigrants of 36 countries on the US state exports between 1993 and 1996, they used a version of the gravity model of trade and arrived to the following conclusions (Herander and Saavedra, 2005, p. 2):

- *greater state population of immigrants groups results in larger volumes of state exports to each group's home country.*
- *local (in-state) populations of group members have a greater effect influence on state exports then do nonlocal (out-of-state) population.*
- *network effects are greatest for newer immigrant group.*

In the same line, Bahar and Rapoport (2014) found that migration is a strong and robust driver of productive knowledge diffusion. Concretely is effective in promote exports: an increase of 65,000 people in the stock of migrants is associated with about 15 per cent increase in the likelihood of adding a new product to a country's export basket; and a migrant is worth about US \$30,000 of foreign direct investment (but for skilled migrants the same become 15,000 people and US \$160,000).

Also, in this context, Artal-Tur et al. (2015) obtained evidence in favour of the role of historical ties and proximity between countries in fostering the pro-trade effect of migrants focussing on the case of France and Egypt.

The number of papers studying the pro-trade effect of migrations at a sub-national level is reduced. Some relevant references are the following: Wagner et al. (2002) for Canadian provinces; Bandyopadhyay et al. (2008) and Tadesse and White (2010) for US states; Briant et al. (2009) for French departments; Peri and Requena-Silvente (2010) for Spanish provinces; Bratti et al. (2014) for Italian provinces; Artal-Tur et al. (2012) for Italian, Portuguese and Spanish provinces.

In this last case, Artal-Tur et al. (2012) study the importance of geographic proximity in the effectiveness of ethnic networks on bilateral trade by using the gravity model and migration and trade data from Italian, Portuguese and Spanish provinces. The authors obtain evidence in favour of the migration-trade link in-province: *"exports from a province to a country do not receive any stimuli from immigrants from this country living outside of the province, once we control for country-province time-invariant fixed effects. Thus, the trade promoting effect of immigrant networks are greatest locally and, therefore, the positive impact of immigrants on country-level exports depends critically on where networks are formed within a country"* (p. 556-557).

When analysing the shape of the trade-migration relationship the number of papers are reduced (Gould, 1994; Egger et al., 2012; Serrano-Domingo and Requena-Silvente, 2013) and in none of them the expected non-linear relationship between migration and trade is predicted. Basically, after searching for nonlinearities in the data from US, Gould (1994) found that, when the immigrants arrive to certain level, the pro-trade effect of migration tend to disappear. With OECD, data Egger et al. (2012) confirmed the existence of a saturation point, or a threshold, in the migration-trade link. Serrano-Domingo and Requena-Silvente (2013), with sub-national data for Spain and Italy, obtained that the trade migration relationship have small effect when the number of migrants is too small or big (U-inverted shape). Nevertheless, in a recent paper Barra et al. (2016), using Spanish provinces data for migration and trade over the period 1998-2012, and by using statistical mechanics tools, obtained evidence in favour of a positive and non-linear relationship between the extensive margin of trade (the number of exporting firms and the number of exported products) and the proportion of migrants in the total population.

5. Concluding remarks

Even though migration and trade have been seen as substitutes for a long time, labour movement is nowadays an important social and political trend among countries. This is the reason why labour migration and linkages phenomena is increasing in importance and has brought many different studies and papers, which through using the gravity equation have analysed and tested different samples and periods. The main finding is clear: there is a strong, clear and stable effect of immigrants on trade. That is to say, there is a strong correlation between the stock of immigrants in the host country and the amount of trade with their home country.

The main argument is that migration enhances trade through two different channels: the preference channel and the cost reduction channel. Starting from the former paper of Gould (1994) many economists have added additional complexities of interest in order to deeply study how these mechanisms are enhanced.

On the one hand, this is because of the fact that immigrants bring with them a preference for home-country products. On the other hand, immigrants can reduce the cost of trade between their home and host counties because of their higher information of home customs, laws, political practice, country markets and business practices

The existing literature suggests that these channels are different regarding the product's features as well as the immigrant characteristics.

By the reduction of transaction trade cost channel, imports and exports are affected in a similar way (Gould 1994). Concretely, the information brought by immigrants is more relevant the more differentiated the goods are as well as greater for manufactured products than for producer goods (Gould, 1994; Dunlevy and Hutchinson, 1999).

Where immigrants come from as well as their personal situation and characteristics is also important. The more skilled immigrants are, the greater information they will provide (Gould 1994). It is also proved that independents and family-class immigrants have a greater pro-trade effect than entrepreneurs and business-class immigrants (Head and Ries, 1998).

The empirical evidence has investigated the effect positive effect of three main factors in the bilateral trade between host and home countries of immigrant people: networks (co-ethnics and business groups), a common language or colonial tie, and the proximity.

The creation of formal or informal networks of ethnic minorities living outside their home countries can promote trade between home and host countries. This network effect is a mechanism to overcome informal international barriers (Rauch, 1999, 2001; Rauch and Trindade, 2002, and Bandyopadhyay et al., 2008).

Girma and Yu (2002) brought interesting evidence about the effects of colonial tie. In their study non-Commonwealth immigrants provide more information than Commonwealth immigrants so the effect will be greater for immigrants with different social and political institutions than that of immigrants who come from countries with similar social and political institutions (Girma and Yu, 2002).

The Linder-hypothesis is also seen as relevant as the transaction cost reduction effect is greater among countries with similar per-capita income (Dunlevy and Hutchinson, 1999).

Other elements like the geographical proximity, as well as having a common language has been found to be relevant (Dunlevy and Hutchinson, 1999, or Herander and Saavedra, 2005; Artal-Tur et al., 2015). The effect is found to be greater for in-state population than for out-of-state population (Herander and Saavedra, 2005). Moreover, it is bigger for those states with a high concentration of immigrants (Herander and Saavedra, 2005).

While from the reduction of transaction cost channel the effect is similar for both imports and exports, from the preference channel, it only affects the flow of imports from the home country to the host country (Gould, 1994).

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