CHARACTERISTICS OF IMMIGRANTS AND BILATERAL TRADE[*]

JOSÉ VICENTE BLANES-CRISTÓBAL
Universidad Pablo de Olavide

This paper tests the impact of immigration on bilateral trade using Spanish data from 1995 to 2003. It also explores some possible mechanisms behind this link. It uses a gravity equation for trade augmented with an immigrant's stock variable and a set of control variables. The immigrants variable enters the estimated equation in different ways depending on immigrant relevant characteristics both individual and non individual-specific. Results show that there is a positive link between immigration and both exports and imports. We find evidence for the trade transaction cost channel but not for the preference one. The mechanisms behind this link are the information effect –immigrant's additional information about products and about social and political institutions– and the social or ethnic network effect –immigrants with a medium level of education and those related to business activities are the ones who have a positive effect on bilateral trade.

Key words: International Trade, migration.

JEL Classification: F10, F22.

The increase in immigrant flows and immigrant populations is one of the most challenging political and sociological issues for EU countries and one that has important economic consequences. Although most economic studies have focused on the effects of immigration on host country labour markets and welfare programs, the literature has recently begun to focus on another relevant aspect of immigration: the link between immigrant population and host country trade. This study is an attempt to increase the empirical evidence on this subject by analysing the Spanish case.

Immigration is a recent phenomenon in Spain but has increased at a very fast pace in recent years. The immigrant population in Spain made up about 2.5% of the total population in 2000 whereas it had been less than 1% only ten years before. It has continued increasing quickly since then and by 2006 the immigrant population had become 8.7% of the total population in Spain[1]. Its particular geo-

(1) *Padrón Municipal* (Municipal Census), *Instituto Nacional de Estadística* (*INE*) (Nacional Office of Statistics).

graphical distribution of source countries is useful in distinguishing the different role of each of the types of links between immigration and trade mentioned above. Moreover, since 1995 the EPA[2] has been addressing immigrants' individual characteristics in more detail. This allows us to better study the mechanisms that explain the positive relationship between immigration and trade. Thus, we think that the case of Spain may be useful in helping us to understand the relationship between immigration and trade.

Immigration can influence trade flows through two basic channels: first, immigrants bring with them a preference for home country products and, second, immigration can reduce trading transaction costs. This reduction in transaction costs is twofold: first, immigration can create networks through knowledge of home country markets and business contacts and, second, cultural ties, like common languages, historical colonial ties, common preferences, or knowledge of political and social institutions, can reduce trading transaction costs. The existing literature suggests that the relevance of these channels is different for different types of products and for different types of immigrants or source countries. Those differences can allow us to identify the mechanisms behind the link between immigration and trade.

In this paper, we use bilateral Spanish trade data with 83 partner countries from 1995 to 2003. The empirical model is an augmented gravity equation, which includes immigration stock data. In order to identify the mechanism behind the linkage between immigration and trade, and not only the existence of an effect, immigrant data are classified by different individual and national characteristics and trade data by different types of products.

Apart from providing additional international evidence, this paper makes a contribution with respect to previous evidence in the Spanish case (Blanes, 2004). The data set is improved through the use of more recent data and a wide sample of partner countries and foreign population, and it also includes individual-specific immigrant characteristics. As a result, we obtain more robust evidence about the positive link between immigration and trade. We are also able to better test for the mechanisms behind this link.

The first section discusses how immigrant populations can influence trade in the host country. We will view the links between immigration and trade and the mechanisms explaining these links. Section two presents some facts about data on immigrants in Spain and the data used in this paper. The third section presents the gravity equation, the hypothesis to be tested and the empirical model implemented in this paper. Section four presents the econometric results and, finally, in the last section, we summarize the main conclusion of the paper and suggest proposals for further research.

1. THE LINKS BETWEEN IMMIGRATION AND TRADE

Theoretical literature about the effects of immigration on trade is scarce. The most relevant exception is the paper by Rauch (1999). Rauch argues that immi-

---

(2) *Encuesta de Población Activa* ("Active Population Survey"), *INE*.

grants can reduce trade transaction costs by creating social networks with their countrymen in their home country, which can facilitate trade between the home and the host country. Social networks help to match international buyers and sellers and, hence, reduce the transaction costs of trade. According to Rauch, this effect is greater for differentiated products than for products traded on organized exchanges (usually, homogeneous products).

This is one of the hypotheses that the existing empirical literature has tested. The pioneer study by Gould (1994) was followed by Head and Ries (1998) and Dunlevy and Hutchinson (1999), and more recently by Girma and Yu (2002), Wagner *et al.* (2002), Bryant *et al.* (2004), Blanes (2004) and Mundra (2005). Other papers, such as Rauch and Trindade (2002), Dunlevy (2004), Combes *et al.* (2005) and Herander and Saavedra (2005) focused on the transaction cost reduction effect resulting from immigrant networks. All these papers have found empirical evidence of a positive effect of immigration on bilateral trade between immigrants' host and home countries. From these papers, we can identify two channels through which immigrant populations can benefit bilateral trade between their home and the host countries. We can also identify a set of mechanisms through which these channels act. Furthermore, there is one channel through which immigration can reduce such trade. Table 1 summarizes the channels, mechanisms and empirical tests of the links between immigration and bilateral trade.

Immigration can positively affect trade flows through two basic channels: first, immigrants bring with them a preference for home country products (preference channel) and, second, immigration can reduce trading transaction costs (transaction cost reduction channel). This second channel is twofold. On the one hand, immigration can create (ethnic) networks - knowledge of home country markets and business contacts. Immigrants can have an advantage in dealing with their countrymen who remain in the home country as a result of greater trust and/or a mutually understood culture (ethnic network mechanism) [3]. On the other hand, cultural ties, like common languages, historical colonial ties, common preferences, and knowledge of political and social institutions, can reduce trading transaction costs. Moreover, the immigrant population may reduce trade transaction costs by using its knowledge about the products produced in both countries and their characteristics (information mechanism).

The existing literature suggests that the importance of the two channels on bilateral trade is different depending on whether we are considering export or import trade flows. The effect of the second channel also differ depending on the type of products traded, the home country of the immigrants, and the personal characteristics of the immigrants, such as their level of education or their job or business activity in the host country. These differences can help us identify the mechanism through which this link between immigration and trade acts.

While trade transaction costs reduction affects both imports and exports in a similar way, immigrant preference for home country products would affect only im-

---

(3) The relevance of networks in reducing trade transaction cost and the positive role that immigrants can play in creating these networks have been formalized by Rauch (1999) and surveyed by Rauch (2001).

Table 1: Summary of channels, mechanisms and empirical tests
of the link between immigration and bilateral trade

	Positive link			Negative link
Channels	Preference effect	Transaction cost reduction effect		Trade-substitution immigration effect
Mechanisms		Ethnic networks	Information increase	
Empirical evidence if immigration effect on trade flows is:	Positive and bigger on imports than on exports	Positive and bigger on consumer goods than on producer goods		Negative
		Positive and bigger for more skilled than for less skilled	Positive and bigger for immigrants from countries with different social and political institutions than for immigrants from countries with similar social and political institutions	
		Positive and bigger for related to business than for not related to business		

Source: Own elaboration.

ports from the home countries. Hence, if we only find a positive effect of immigration on imports but not on exports, it implies that immigration affects trade through immigrants' preference for home country products. If both imports and exports are positively affected, but the effect is greater for imports, this preference mechanism would account for the difference. Moreover, this preference effect is likely to be larger for differentiated products than for homogeneous products, as pointed out by Head and Ries (1998). When goods are homogeneous there is little reason to prefer goods sourced from a specific country; however, when goods are differentiated, the 'ideal' variety may be unavailable locally and require importation.

With respect to transaction cost reduction, as Gould (1994) points out, the additional information brought by immigrants can be more relevant for consumer goods than for producer goods, since the former tend to be more differentiated across countries. Moreover, Dunlevy and Hutchinson (1999) argue that the purchase of consumer goods and processed foodstuffs by immigrants would have a greater effect than that of crude or semi-manufactured goods because they are imported to satisfy specific tastes. So, if the positive effect of immigrant stock is

found to be stronger for consumer goods than for producer goods, it could be deduced that the mechanism behind the immigration-trade link is an increase in information about foreign products gained through immigrants.

Secondly, where the immigrants come from can also be important. Some home countries have social and political institutions similar to the ones in the host country. This is often the case of countries with colonial or cultural ties or countries like those in the European Union that are involved in the same economic integration agenda and which share common institutions. In such cases, immigrants from these countries bring with them less additional information than immigrants from other countries and they contribute less to reducing transaction costs. In other words, for this mechanism, the effect of immigration on bilateral trade depends on which country that immigrant comes from.

Immigrants can also reduce transaction costs through individual personal contacts with other immigrants or through connections with their home country. This effect is independent of the country of origin of the immigrant[4]. So, if we find a positive effect of immigration on trade with countries which present different social and political institutions but not with countries with similar ones, the mechanism through which immigration increases trade is the additional knowledge about these institutions brought by immigrants. If there is a positive effect for both groups, but the effect on trade is greater for the former group of countries than for the latter, this mechanism accounts for the difference. If there is no difference between the two groups of immigrants, personal contacts or connections with the immigrant's home country explains the immigration-trade link.

Finally, different personal characteristics of immigrants can result in different effects of immigration on trade. Gould (1994) and Head and Ries (1998) argue that the more skilled the immigrants are, the greater the chance that they possess the knowledge and contacts necessary to increase trade flows. Thus, if the link works through immigrants' knowledge about business in their home countries or by contacts with home country residents, the effect of immigration is greater, the more skilled or educated the immigrants are or the more involved they are in business activities.

Despite all the possible positive effects of immigration on bilateral trade, there can also be a negative effect. Dunlevy and Hutchinson (1999) point out a trade-substitution immigration effect when immigrants apply their knowledge about technology or production methods and about immigrants' tastes to host country production or transmit them to local producers in such a way that previously imported goods can be replaced by local production.

2. IMMIGRANT DATA IN SPAIN

The number of immigrants in Spain is not well known as figures differ depending on the source used. There are also some methodological problems due to

_____

(4) These two mechanisms are called non-individual-specific and individual-specific, respectively, by Girma and Yu (2002). In the former case, the effect of the immigrant-link would be universal and, in the latter, non-universal.

legal changes, such as the Schengen Agreement, which allows EU citizens to live and work in other Schengen countries with no need for a legal permit. The highest figures, from census data, are around 30% higher than those from legal data, the lowest figures. It is generally considered that, for different reasons, census data and legal data offer figures that are too high and too low, respectively, compared with the actual numbers[5]. Census data offer little information about immigrants' individual characteristics. For example, the 'Censo de Población' (National Census) is carried out only every ten years and immigration was not addressed in detail until the last one in 2001. The 'Padrón Municipal' (Municipal census) includes immigrants that are registered twice and sometimes immigrants register relatives that are not yet living in Spain. Legal data on immigrants, such as that from the Interior Ministry's 'Residence Permit Register' or the Employment Ministry's 'Work Permit Register' suffer from the fact that they are legal registers and not statistical sources, so they only include legal immigrants. Also, information about individual countries is only offered for the most important source countries (about 42 countries). Another limitation of the 'Work Permit Register' is that it only includes immigrants who want to work and are legally able to work, and thus excludes the young and the elderly. The advantage of the 'Residence Permit Registration' is that it is a regular source of information and is available for every year.

Compared with the immigrant data sources mentioned above, the *Encuesta de Población Activa* (EPA) –Active Population Survey– presents several advantages. Apart from including a wider range of the population, it presents information about a large number of foreign nationalities and countries of birth and, more importantly for the purposes of this paper, it offers information about individual characteristics, such as the level of education and whether the individual is an employer or an employee. It also avoids the problem posed by the Schengen agreement with regard to EU immigrants. As a result, we have chosen the EPA as our source of data and we use yearly data on immigrants from 83 countries in Spain for the period 1995 to 2003.

Table 2 summarizes immigration and trade data in Spain from 1995 to 2003 according to trade partner (country). Although the number of immigrants from developing countries has grown faster than the average, immigration is still evenly distributed across northern and southern countries of origin and Spain hosts a significant number of immigrants from both developed and developing countries. Of all the countries, Morocco was still the main source of immigrants in 2003. However, immigrants from some Latin American countries, like Ecuador, are the ones that show the highest annual growth rates. Figures from some Eastern European countries, such as Romania, Bulgaria and Poland, have also quickly increased in Spain.

With regard to individual characteristics (Table 3) –level of education and job situation– about half the immigrants have a secondary level of education (Edu3), although the number of immigrants with no education (Edu1) increases constantly

---

(5) The number of irregular immigrants in Spain is estimated to be close to half a million people or a third of legal immigration in 2003 (Arango, 2003).

Table 2: IMMIGRANTS AND TRADE BY PARTNER COUNTRY:
NUMBER AND ANNUAL GROWTH RATE (1995-2003)

Country	Immigrants			Exports*			Imports*		
	1995	2003	%	1995	2003	%	1995	2003	%
Europe	*318960*	*556346*	*7.2*	*53743*	*93728*	*7.2*	*61523*	*115483*	*8.2*
EU	*285361*	*388064*	*3.9*	*51932*	*90429*	*7.2*	*59148*	*110665*	*8.1*
Austria	2390	1600	-4.9	577	1122	8.7	798	1675	9.7
Belgium	11679	24842	9.9	2181	3690	6.8	3079	5074	6.4
Czech Republic	0	2431	(1)	131	605	21.1	103	566	23.8
Cyprus	0	0	(1)	66	157	11.5	10	14	4.4
Denmark	1855	1476	-2.8	484	811	6.7	723	1350	8.1
Finland	1340	3474	12.6	262	488	8.1	790	1267	6.1
France	115485	113557	-0.2	14619	23708	6.2	15296	27111	7.4
Germany	50785	87362	7.0	10859	14738	3.9	13606	27526	9.2
Greece	1756	0	(1)	718	1491	9.6	301	410	4.0
Hungary	1479	157	-24.5	124	661	23.2	305	1016	16.2
Ireland	1529	2640	7.1	259	704	13.3	947	2373	12.2
Italy	13173	20269	5.5	6470	11989	8.0	8268	15422	8.1
Luxembourg	170	1336	29.4	0	152	(1)	0	234	(1)
Malta	0	0	(1)	80	98	2.6	10	46	21.6
Netherlands	11357	12914	1.6	2584	4205	6.3	3865	6745	7.2
Poland	2411	17008	27.7	343	1222	17.2	250	1096	20.3
Portugal	35876	43227	2.4	5926	11878	9.1	2653	5460	9.4
Sweden	2209	6639	14.7	640	1179	7.9	1137	2473	10.2
UK	31869	49134	5.6	5608	11530	9.4	7009	10807	5.6
Non EU	*33599*	*168282*	*22.3*	*1811*	*3300*	*7.8*	*2375*	*4818*	*9.2*
Albania	0	1108	(1)	1	24	46.2	0	6	44.1
Andorra	1589	4471	13.8	374	756	9.2	12	35	14.5
Bulgaria	1142	23908	46.3	24	160	26.4	112	161	4.6
Iceland	0	0	(1)	23	32	4.1	54	132	11.9
Liechtenstein	0	211	(1)	3	4	3.5	0	37	101.6
Norway	1311	5016	18.3	426	416	-0.3	507	1263	12.1
Rumania	937	85380	75.8	63	290	21.0	101	306	14.8
Russia	1557	5967	18.3	41	149	17.6	258	527	9.3
Servia & Mont.	1335	982	-3.8	63	155	11.9	26	72	13.9
Switzerland	25728	41238	6.1	793	1315	6.5	1304	2280	7.2
America	*193867*	*725193*	*17.9*	*6965*	*11118*	*6.0*	*9691*	*12882*	*3.6*
Latin Am.	*181380*	*710241*	*18.6*	*3686*	*5459*	*5.0*	*3554*	*6067*	*6.9*
Argentina	45611	109273	11.5	726	381	-7.7	641	1321	9.5
Bolivia	863	12242	39.3	18	17	-0.9	8	10	2.8
Brazil	7387	27999	18.1	666	785	2.1	867	1526	7.3
Chile	16565	19657	2.2	348	412	2.1	297	488	6.4

Table 2: Immigrants and trade by partner country:
number and annual growth rate (1995-2003) (continuation)

Country	Immigrants			Exports*			Imports*		
	1995	2003	%	1995	2003	%	1995	2003	%
Colombia	8948	145617	41.7	220	217	-0.2	180	204	1.6
Costa Rica	0	550	(1)	31	98	15.7	76	57	-3.6
Cuba	19518	37912	8.7	319	410	3.2	72	119	6.4
Dom. Rep.	15795	32221	9.3	73	205	13.8	25	33	3.5
El Salvador	2030	1727	-2.0	20	49	12.2	9	13	5.0
Equador	1072	197807	92.0	78	117	5.2	163	148	-1.2
Guatemala	611	725	2.2	27	73	13.5	15	30	8.9
Haiti	0	0	(1)	0	6	(1)	0	1	(1)
Honduras	203	1028	22.5	44	90	9.2	56	36	-5.3
Mexico	6720	11986	7.5	433	1964	20.8	754	1342	7.5
Nicaragua	554	2845	22.7	27	24	-1.3	15	14	-0.5
Panama	1403	584	-10.4	57	109	8.3	58	37	-5.4
Paraguay	508	3048	25.1	25	22	-1.8	25	48	8.5
Peru	14468	27325	8.3	229	127	-7.1	111	285	12.5
Uruguay	6763	23824	17.0	143	68	-8.8	49	86	7.4
Venezuela	32361	53871	6.6	201	284	4.4	134	270	9.2
N. America	*12488*	*14952*	*2.3*	*3279*	*5659*	*7.1*	*6137*	*6814*	*1.3*
Canada	1440	3891	13.2	344	575	6.6	485	567	2.0
USA	11048	11061	0.0	2935	5084	7.1	5652	6247	1.3
Oceania	*3204*	*3864*	*2.4*	*305*	*580*	*8.4*	*317*	*541*	*6.9*
Australia	3059	3864	3.0	274	518	8.3	233	427	7.9
N.Zealand	145	0	(1)	31	62	8.9	84	114	3.8
Asia	*15158*	*35835*	*11.4*	*4004*	*5826*	*4.8*	*8070*	*16856*	*9.6*
Bangladesh	0	198	(1)	11	36	16.4	44	214	21.8
Camboya	0	239	(1)	1	2	10.6	2	23	35.0
China	1843	11466	25.7	509	621	2.5	820	2562	15.3
India	1554	4796	15.1	177	218	2.6	368	993	13.2
Indonesia	471	770	6.4	166	169	0.2	528	1302	11.9
Iran	813	457	-6.9	125	360	14.1	600	859	4.6
Israel	347	1459	19.7	486	513	0.7	250	480	8.5
Japan	828	1002	2.4	972	876	-1.3	2905	4404	5.3
Jordania	0	0	(1)	45	98	10.2	12	13	0.8
Laos	2413	582	-16.3	0	0	1.0	2	4	11.3
Libane	796	5101	26.1	102	171	6.7	5	19	17.2
N. Korea	0	209	(1)	0	9	47.6	3	7	11.5
Pakistan	1766	289	-20.2	53	63	2.2	112	251	10.6
Philippines	1631	7837	21.7	53	118	10.4	84	152	7.7
S. Korea	1182	198	-20.0	370	302	-2.5	747	2013	13.2

Table 2: IMMIGRANTS AND TRADE BY PARTNER COUNTRY:
NUMBER AND ANNUAL GROWTH RATE (1995-2003) (continuation)

	Immigrants			Exports*			Imports*		
Country	1995	2003	%	1995	2003	%	1995	2003	%
Saudi Arabia	424	0	(1)	375	520	4.2	983	1463	5.1
Syria	0	0	(1)	57	110	8.7	215	99	-9.2
Sri Lanka	0	716	(1)	5	13	11.5	19	40	9.4
Turkey	579	515	-1.4	488	1553	15.6	311	1637	23.1
Vietnam	511	0	(1)	8	74	31.6	60	321	23.5
Africa	*127635*	*273218*	*10.0*	*2225*	*3786*	*6.9*	*2961*	*7775*	*12.8*
Algeria	9001	19500	10.1	758	678	-1.4	743	2576	16.8
Cape Verde	1940	385	-18.3	4	10	11.2	0	0	9.3
Egypt	1754	986	-6.9	236	322	4.0	161	289	7.6
Equ. Guinea	3975	11211	13.8	15	73	21.8	12	589	63.0
Gambia	2283	11078	21.8	3	8	11.5	3	0	-27.4
Lybia	0	624	(1)	131	112	-2.0	934	1647	7.4
Morocco	105071	219890	9.7	601	1675	13.7	444	1461	16.1
Senegal	2894	8497	14.4	40	102	12.4	25	42	6.6
South Africa	443	126	-14.5	168	330	8.8	437	853	8.7
Tunisia	273	920	16.4	268	477	7.5	204	317	5.7
Total	*658824*	*1594456*	*11.7*	*67242*	*115040*	*6.9*	*82562*	*153536*	*8.1*

* Millions of 1995 euros.

(1) Number of immigrants or trade flow is zero in first or last sample year.

Source: *Encuesta de Población Activa (INE)* for immigration data and *Dirección General de Aduanas* for trade.

throughout our sample period. This makes sense considering that immigrants from developed countries, mainly the EU, have become relatively less common in comparison to immigrants from Latin America and Africa. About half of the immigrants in Spain are employees. In 2003, only 7% were self-employed or managers –with or without employees– whereas about 10% were in 1996. However, the percentage of Others, which includes 'family assistance', cooperative members and other such situations, is the same as the percentage of employees but shows a decreasing tendency.

Table 3: Immigrants' individual characteristics. In % of total number.
(Average for all sample countries)

Year	Immigrants (Total)	Edu1	Edu2	Edu3	Edu4	Self-employed	Employees	Others
1995	658465	8.9	23.0	51.6	16.5	8.4	31.5	60.1
1996	659767	9.9	20.3	52.7	17.2	10.0	31.8	58.3
1997	681811	9.3	20.3	52.3	18.0	9.8	34.4	55.8
1998	740249	10.7	18.9	52.5	18.0	9.4	38.1	52.5
1999	839862	9.6	17.7	55.0	17.7	8.1	40.2	51.8
2000	938781	11.9	24.4	45.3	18.3	8.2	39.8	51.9
2001	1099544	11.5	22.2	46.8	19.6	8.7	43.2	48.1
2002	1335763	14.1	20.8	46.6	18.5	6.9	44.6	48.5
2003	1593454	14.6	22.0	46.3	17.1	7.0	46.5	46.5

Edu1: no education; Edu2: some or completed primary education; Edu3: some or completed secondary education; Edu4: some or completed tertiary (university degree or more) education.

Source: *Encuesta de Población Activa (INE).*

3. The empirical model

In this study we first tested for the existence and relevance of a positive effect of immigrants living in Spain on the bilateral trade with their home countries. Then, we tried to identify some of the mechanisms through which this positive effect takes place, making use of information about product types and national (non-individual-specific) and personal (individual-specific) characteristics of immigrants. In all the cases, we estimated a specification that includes all the variables that the previous literature suggests are relevant. Then, we tested the robustness and sensitivity to specification of our results by estimating different combinations of explanatory variables, particularly a set of control variables in the form of dummy variables which take into account certain characteristics of partner countries. Results for the sensitivity analysis are presented in the Appendix, in Table A2.

3.1. The link between immigration and trade, and the preference and transaction costs reduction channels

Following the previous literature, we used an augmented gravity equation for trade to test the link between immigration and bilateral trade. The basic gravity equation for trade relates the volume of trade positively to the mass of the two countries and negatively to the trade costs between them (variables reflecting trade impediments). We used the product of Spain and partner i GDP in year t relative to World GDP in the same year to measure the size of the two countries ($rgdp_{it}$):

$$rgdp_{it} = \frac{GDP_{it} \times GDP_{spain,t}}{GDP_{World,t}}$$

Distance ($dist_{it}$), which proxies trade costs between countries, was measured by the geographical distance, in kilometres, between the capital of Spain and the capital of the partner country i.

In addition to this basic specification, we included a measure of the immigrant stock from country i in Spain in year t (mig_{it})[6], which we expected to positively affect both Spanish imports from and exports to immigrants' home countries, for the reasons explained above[7].

We used data on Spain and 83 partner countries for the period from 1995 to 2003. Although we had a panel of data, we did not include country fixed effects in the model, since that would eliminate some relevant variables that do not vary over time –such as distance and other country-specific variables– [as well as skip all the between variation of the model] when we use differences between source countries to identify the mechanism behind the link between immigration and trade. We controlled for time effects by including a time dummy variable ($year_t$).

We also included a set of control variables in the form of dummy variables to take into account particular characteristics of partner countries that can increase trade flows. These variables are, first, a dummy variable for membership of the European Union (EU_i) because the Single European Market facilitates trade between its members; second, a dummy variable that takes into account whether a country shares a border with Spain, since a common border can increase trade between countries (frt_i); and finally, sharing a common language, which would also facilitate trade, independent of the immigration effect, thus reducing trade transaction costs ($lang_i$). Depending on the set of included variables, we call the resulting specifications Specification 1a to 1h.

Thus, specification 1a is expressed as follows:

(Specification 1a)

$$y_{it} = \beta_0 + \beta_1 mig_{it} + \beta_2 rgdp_{it} + \beta_3 dist_i + \beta_4 lang_i + \beta_5 frt_i + \beta_6 eu_i + \sum_{t=1996}^{2003} \beta_{7,t} year_t + \mu_{it}$$

where y_{it} stands for either Spanish imports (m_{it}) from or exports (x_{it}) to the immigrants' home country i, μ_{it} is the i.i.d. error term, and all variables, except for dummy variables, enter the equation in natural logarithms.

The estimation of this first specification separately for imports and exports allows us to test both for the existence of a link between immigration and trade and for the effect of the two channels causing this link. If we obtain a positive effect of immigration on imports but not on exports, it will reveal that the only explanation for the link between immigration and trade is the preference effect. If we obtain a positive effect for both trade flows but the impact on imports is greater, both channels will explain the link and the preference effect will account

---

(6) Trade data is taken form *Dirección General de Aduanas* (*Ministerio de Comercio y Turismo*), GDP data is taken from PWT 6.1, immigrant data comes from the *Encuesta de Población Activa* (*EPA*), *Instituto Nacional de Estadística* (*INE*) and distance from PC GLOBE.

(7) One exception is the import-substitution effect as pointed out by Dunlevy and Hutchinson (1999).

for the difference. If the effect turns out to be bigger for exports than for imports, the negative substitution effect could be at work.

Estimating the model for different sets of variables allows us to test the robustness and sensitivity to specification of our results.

3.2. *The mechanisms behind the link*

We performed four tests to identify some of the mechanisms explaining the link between immigration and trade. In doing so, we used information about product types –since they are related to its sensitivity to trade transaction cost– and immigrants' national and individual characteristics related to their capability to reduce these costs.

In order to test if the link works as a result of an increase in information on the part of the immigrant with regard to home or host country products, we divided trade flows into two types of goods, according to the BEC classification: producer goods (PG) and consumer goods (CG)[8]. Then, we estimated specifications 1a to 1h separately for each type of goods. As mentioned before, we expected immigrants' stock to have a greater positive effect on consumer goods than on producer goods.

Second, we considered the hypothesis of a lower positive effect of immigrants from home countries with similar social and political institutions to the ones in the host country, since they bring with them less additional information. The test had two parts. First, we assumed that immigrants coming from former Spanish colonies would benefit bilateral trade less[9]. This was based on a suggestion by Girma and Yu (2002), who tested this hypothesis for immigrants from Commonwealth and non-Commonwealth countries to the UK and express the aim of extending their study to other European countries with similar colonial pasts. We defined two dummy variables: we gave one of them the value 1 for countries that had been colonies of Spain and 0 if they had not (col_{it}) and we gave the other the value 1 for countries that had not been colonies of Spain and 0 if they had ($nocol_{it}$). Then a multiplicative variable of these dummies and mig_{it} was included in the model instead of the immigrants' stock variable. This allows the elasticity of immigration to vary across the different groups of countries[10]. Thus, we estimated the following specification:

---

(8) The BEC is the "Classification by Broad Economic Categories" (United Nations). This classification is intended to categorize trade statistics into large economic classes of commodities and to supplement the summary data compiled on the basis of the sections of the Standard International Trade Classification (SITC). The classification unit is the end-use category of transportable good. BEC codes 111, 121, 21, 22, 31, 32, 41, 42, 521 and 53 correspond to producer goods and BEC codes 112, 122, 51, 522, 6 and 7 correspond to consumer goods. See *http://unstats.un.org/unsd/cr/registry/regcst.asp?Cl=10&Lg=1* for detailed structure and explanatory notes of this classification.
(9) For example, language is already known since it is the same in Spain as in its former colonies (Philippines being the only exception in the sample). Hutchinson (2002) finds that the fact that a country has English as the first or second language of its population facilitates trade with the United States of America.
(10) This is the methodology used by Girma and Yu (2002).

(Specification 2a)

$$y_{it} = \beta_0 + \beta_1 migcol_{it} + \beta_2 mignocol_{it} + \beta_3 rgdp_{it} + \beta_4 dist_i + \beta_5 col_i + \beta_6 frt_i +$$

$$+\beta_7 eu_i \sum_{t=1996}^{2003} \beta_{8,t} year_t + \mu_{it}$$

Notice that in specification 2a we dropped the common language variable ($lang_i$). In our data set, this variable and the variable for countries that were Spanish colonies (col_i) are highly correlated since all former Spanish colonies but one (the Philippines) have Spanish as its official language[11].

Although Spain could be considered the country whose colonial past is most similar to that of the UK, there are also big differences between the two. For example, the process of de-colonization was considerably earlier in the case of Spain and there is no organization like the Commonwealth for Spain and its former colonies. Moreover, Spain, especially in the last decades, has integrated more fully into Europe, becoming a member of the EU and, hence, sharing common political and economical institutions with other EU member states. Consequently, we believe that EU immigrants to Spain probably bring with them less additional information and we test this hypothesis by differentiating between EU and non-EU immigrants.

(Specification 3a)

$$y_{it} = \beta_0 + \beta_1 migEU_{it} + \beta_2 mignoEU_{it} + \beta_3 rgdp_{it} + \beta_4 dist_i + \beta_5 EU_{it} + \beta_6 lang_i +$$

$$+\beta_7 frt_i + \sum_{t=1996}^{2003} \beta_{8,t} year_t + \mu_{it}$$

Finally, we focused on personal (individual-specific) characteristics. The objective was to determine if the link works through immigrants' knowledge about business in their home countries or by contacts with home country residents (network effect). If this was the case, more skilled or educated immigrants would increase trade the most, since they are more able to bring and use information about home markets and social and political institutions and about products and their characteristics. Furthermore, the more related to business the immigrants were, the greater the chance that they would use the knowledge and contacts to increase trade flows.

From the EPA we can compute two sets of variables that take into account both types of individual-specific characteristics. First, we placed immigrants into four groups by education level: no education ($migedu1_{it}$), some or a completed primary education ($migedu2_{it}$), some or a completed secondary education ($migedu3_{it}$) and some or a completed university degree ($migedu4_{it}$). Then, we put immigrants from each country into three groups: managers, which include employers and managers without employees ($migm_{it}$), employees ($mige_{it}$) and others ($migo_{it}$). This last group includes people who work in a family business but are not official-

---

(11) The correlation coefficient is 0.9725. See the correlation matrix in Table A1 in the Appendix.

ly employed, cooperative members and those in other such situations. All these variables were computed for each immigrant's home country (i) and year (t)[12].

Thus, we have estimated the following two specifications:

(Specification 4a)

$$y_{it} = \beta_0 + \beta_1 migedu1_{it} + \beta_2 migedu2_{it} + +\beta_3 migedu3_{it} + \beta_4 migedu4_{it} + \beta_5 rgdp_{it} +$$

$$+\beta_6 dist_i + \beta_7 lang_i + \beta_8 frt_i + \beta_9 eu_i + \sum_{t=1996}^{2003} \beta_{10,t} year_t + \mu_{it}$$

(Specification 5a)

$$y_{it} = \beta_0 + \beta_1 migm_{it} + \beta_2 mige_{it} + \beta_3 migo_{it} + \beta_4 rgdp_{it} + \beta_5 dist_i + \beta_6 lang_i + \beta_7 frt_i +$$

$$+\beta_7 eu_i + \sum_{t=1996}^{2003} \beta_{8,t} year_t + \mu_{it}$$

As with Specification 1, we performed the sensitivity analysis for specifications 2 to 5. For specification 2, we dropped the common language variable, due to its high level of correlation with the former Spanish colonies variable. For specification 3, the number of alternative specifications decreases due to the inclusion of the European Union membership variable in all of them. In the next section we present and discuss the estimation results.

4. RESULTS

Testing for the impact of immigration stock on Spanish bilateral trade, we found a positive effect both for exports and imports (Table 4). These results held when we included in the model other variables that affect trade costs, such as European Union membership, a common border and language, and when we included different combinations of them (specifications 1b to 1h in Table A2). A 10% increase in immigrant stocks would increase exports between 2.8% and 3.8% and imports between 1.8% and 2.6%, depending on the specification. Hence, to consider in our model the *EU* variable or the *frt* variable –alone or together– slightly decreases the coefficient for the immigrant stock variable, both in exports and imports equations, but they remain positive and significant at 99% percent. These two variables had the expected positive coefficient in all cases. The results of including the *lang* variable were somewhat unexpected. When this variable was included in the model, the effect of immigrant population on trade is higher. Moreover, when the *lang* variable was significant, the fact of sharing a common language negatively affects bilateral Spanish trade. One possible explanation for this last effect is that it may reflect the fact that trade between Spain and these countries is clearly

---

(12) Blanes and Martín-Montaner (2006) consider immigrants' occupations. They found that immigrants working in tertiary occupations increase both Spanish exports and imports while immigrants working in primary activities or industry do not.

below the sample average. Finally, the rest of the variables presented the expected results. The mass of the two countries (*rgdp*) affects their trade relations positively and the distance between them (*dist*), negatively. In specifications where other variables were included, the coefficients for *rgdp* and *dist* decreased –slightly for the first– and in some cases *dist* was not significant in the imports equation.

Table 4: Impact of immigration in Spanish bilateral trade. (Specification 1A)

	Exports	Imports	Exports		Imports	
	All goods	All goods	Producer goods	Consumer goods	Producer goods	Consumer goods
mig	0.28***	0.18***	0.04	0.31***	0.00	0.26***
	(10.01)	(6.44)	(0.67)	(9.28)	(0.06)	(5.83)
rgdp	0.54***	0.81***	0.01	0.47***	-0.04	0.78***
	(13.83)	(22.66)	(0.24)	(10.29)	(-0.61)	(17.54)
dist	-0.16***	-0.06	-0.41***	-0.28***	-0.42***	0.20***
	(-2.83)	(-1.15)	(-3.68)	(-3.95)	(-3.09)	(2.58)
lang	0.04	-0.00	0.10	0.09	-0.75**	0.05
	(0.29)	(-0.05)	(0.41)	(0.57)	(-2.25)	(0.31)
frt	1.19***	0.61***	-0.02	1.02***	-0.04	0.80***
	(8.20)	(5.58)	(-0.04)	(7.39)	(-0.06)	(4.31)
eu	1.14***	1.17***	0.36	1.91***	0.52	1.38***
	(14.69)	(14.87)	(1.30)	(18.55)	(1.52)	(9.34)
constant	6.63***	1.05	20.98***	7.37***	22.88***	-2.94***
	(10.63)	(1.18)	(13.97)	(9.68)	(13.40)	(-2.59)
R^2	0.7381	0.8058	0.0433	0.6657	0.0529	0.6571
Obs.	620	620	615	618	617	617

OLS estimations including time dummies variables.

***, **, *, indicates significance at the 1%, 5% and 10% level, respectively.

t-ratios, based on heteroscedasticity robust standard errors, are given in parentheses.

Source: Own elaboration.

Hence, we can conclude that, despite the likely collinearity between other variables in the model, there is a positive link between the immigrant population in Spain and its bilateral trade with immigrants' home countries, as found by Blanes (2004).

Considering now the evidence for the two channels (preference and trade costs reduction), our results do not support the existence of a preference effect, since the coefficients are higher for exports than for imports. Although unexpect-

ed, this result is often found in the literature. Using a different methodology (estimating the determinants of marginal intra-industry trade), Blanes and Martín-Montaner (2006) also found the same evidence for the Spanish case. They found that the stock of immigrants in Spain increases both imports and exports at a similar level since this variable has a positive effect on marginal intra-industry trade, that is, the matched increase of both trade flows.

One possible explanation for this result could be that the imports-substitution effect outweighs the positive effects of transaction cost reduction and preference for home country products channels. If this is the reason, we should find an increase in Spanish production of 'foreigner'[13] goods. Although we do not have data about this kind of activity, it does not seem to be a good explanation since immigration in Spain is a recent phenomenon and the stock of immigrants is probably not great enough to explain an import-substitution effect. Another explanation could be the different types of goods that comprise exports and imports. Non-consumer goods, especially raw materials like oil, are more relevant to Spanish imports than to exports. The positive effect of immigration on trade would be lower for these kinds of goods than for consumer goods, according to the literature discussed in Section 1. As an example, Gould (1994) found evidence of a stronger effect of immigration on consumer goods in US imports than on producer goods, which, in fact, was non-significant. Blanes (2005) also points to these conclusions, since he finds a stronger effect from immigrant stock on intra-industry trade –mainly differentiated products– than on inter-industry trade-mainly homogeneous goods.

In the last four columns of Table 4 and in Table A2, we show the results from estimating separately for producer and consumer goods. As with all kind of products estimation, we obtained a stronger effect of immigrants on exports than on imports. So the different composition of Spanish trade does not seem to explain that fact. However, we do find evidence for an information effect. As in Gould (1994) and Dunlevy and Hutchinson (1999), our results show that immigrants have a positive effect on trade in consumer goods and not on producer goods both for exports and for imports. As trade in consumer goods is more affected by information constraints, our results indicate that one mechanism behind the link between immigration and trade is the increase in information about home and host country products due to the immigrant population. This result holds for all eight specifications.

We now turn to immigrants' national characteristics. Results are shown in Tables 5 and A2. First, we tested the hypothesis that immigrants from non-former Spanish colonies may benefit trade more since they bring with them more additional informational and, hence, contribute more to reducing transaction costs. Results for all specifications showed a positive effect of immigrants both from former and non-former Spanish colonies on Spanish bilateral exports as well as imports. However, this effect is higher –and this difference is statistically significant[14]– for immigrants from countries that have never been Spanish colonies. The dummy variable for countries that have been colonies of Spain had a positive effect on their bilateral

---

(13) Typical goods from immigrants' home countries.

(14) Except for imports in specification 1e.

trade[15]. That is, controlling for all the trade advantages of being a former colony, immigrants from these countries do not have a higher positive effect on bilateral Spanish trade than immigrants from other countries. Immigrants from non-former colonies seem to bring to Spain the information about social institutions that is already known to a higher degree about former colonies. So, just as Girma and Yu (2002) found in their study on the UK, we find evidence for the hypothesis that immigration reduces trade transaction costs because immigrants increase the host country knowledge about social institutions in their home countries.

The second test we performed to test that hypothesis, i.e using EU membership as a proxy for similar social institutions, did not offer results to confirm our hypothesis. Immigrants from EU countries have a higher effect on Spanish bilateral exports than immigrants from non-EU countries. The difference is close to double for exports and fifty per cent for imports. The difference of coefficients is statistically significant in all cases for exports and in two out of four for imports (it is not significant when we include the *frt* dummy variable). It may be that social and cultural differences between Spanish and other EU citizens are still higher than those between Spain and its former colonies and EU immigration is contributing to an increase in reciprocal knowledge. Or perhaps EU immigrants have a stronger preference for home country products and they have a greater ability to consume them in Spain. This explanation is reasonable if we consider that a high percentage of EU immigrants in Spain are retired people; however, this would hardly explain the results in the exports equation.

Finally, we tested for individual characteristics of immigrants. First, we considered the hypothesis that more skilled immigrants would contribute more than less skilled immigrants to trade transaction costs reduction and, hence, to increase bilateral trade (ethnic-network effect). Our results show (Tables 6 and A2) that immigrants that have a secondary level of education are the only ones that have a positive effect on Spanish bilateral trade. The rest of the immigrants do not seem to have any effect, with a few exceptions[16]. Thus, results indicate that in order to be able to exploit their personal contacts and their greater knowledge than natives about social institutions, immigrants have to have a certain level of education.

As a final test to identify the mechanisms behind the link between immigration and trade, we divided the immigrant population according to three types of employment situations: Managers, Employees and Others. In all eight specifications, and both for exports and imports, immigrants that are managers have a positive and highly significant effect on bilateral Spanish trade. Employees do not have any effect on trade and the group of Others have a positive effect on exports but not on imports[17]. The positive effect on trade of the group Others may be due to the fact that many of the immigrants included may be involved in business activities –the ones classified

---

(15) Except for the import equation when the *eu* variable is included in the model.

(16) Immigrants with a primary level of education have a positive effect on Spanish exports in specifications 4a and 4d. Immigrants with a university degree have a positive effect on exports in specifications 4g and 4h and on imports in specification 4g. Immigrants with not even primary education have a negative effect on imports in specification 4g.

(17) Except at 90% in specifications 5d and 5f.

Table 5: Impact of immigration on Spanish bilateral trade
by partner colonial status and by partner EU membership

	Specification 2a		Specification 3a	
	Exports	Imports	Exports	Imports
migcol	0.20***	0.14***	–	–
	(7.04)	(3.77)		
mignocol	0.33***	0.20***	–	–
	(9.15)	(5.80)		
col	1.04***	0.51	–	–
	(3.02)	(1.24)		
migeu	–	–	0.45***	0.21***
			(11.57)	(5.94)
mignoeu	–	–	0.26***	0.17***
			(8.62)	(5.77)
eu	1.09***	1.15***	-0.44	0.85**
	(14.08)	(14.12)	(-1.26)	(2.46)
rgdp	0.54***	0.81***	0.53***	0.81***
	(13.87)	(22.67)	(13.49)	(22.30)
dist	-0.14**	-0.05	-0.17***	-0.06
	(-2.55)	(-0.98)	(-2.97)	(-1.17)
lang	–	–	0.06	-0.00
			(0.47)	(-0.01)
frt	1.09***	0.55***	0.79***	0.53***
	(6.95)	(4.62)	(4.89)	(4.53)
constant	6.19***	0.83	6.99***	1.13
	(9.27)	(0.87)	(10.77)	(1.21)
R^2	0.7402	0.8062	0.7408	0.8059
Obs.	620	620	620	620

OLS estimations including time dummies variables.

***, **, *, indicates significance at the 1%, 5% and 10% level, respectively.

t-ratios, based on heteroscedasticity robust standard errors, are given in parentheses.

Source: Own elaboration.

as 'Family Assistance' and 'Members of Cooperatives'. So there is evidence that immigrants are taking advantage of their contacts in and knowledge about their home countries in business activities that increase trade, especially imports. This network effect was also found by Combes et. al (2005) with regard to trade between French provinces, Dunlevy (2004) for the USA, and Herander and Saavedra (2005) and Rauch and Trindade (2002) for countries with a important Chinese population.

Table 6: IMPACT OF IMMIGRATION ON SPANISH BILATERAL TRADE:
INDIVIDUAL-SPECIFIC IMMIGRANTS CHARACTERISTICS

	Education level (Specification 4a)		Business related activity (Specification 5a)	
	Exports	Imports	Exports	Imports
migedu1	0.02	-0.02	–	–
	(0.45)	(-0.51)		
migedu2	0.03	-0.03	–	–
	(0.38)	(-0.44)		
migedu3	0.17**	0.29**	–	–
	(2.42)	(2.34)		
migedu4	0.12*	0.10	–	–
	(1.92)	(1.05)		
migm	–	–	0.15***	0.22***
			(2.80)	(3.92)
mige	–	–	0.05	-0.01
			(0.83)	(-0.15)
migo	–	–	0.22***	0.13
			(3.08)	(1.60)
rgdp	0.34***	0.57***	0.36***	0.60***
	(6.28)	(10.70)	(8.93)	(12.15)
dist	-0.08	-0.17**	-0.06	-0.13**
	(-1.16)	(-2.53)	(-0.94)	(-2.18)
lang	-0.41**	-0.53***	-0.33**	-0.32**
	(-2.24)	(-2.90)	(-2.21)	(-2.32)
frt	0.84***	0.36**	0.81***	0.23***
	(4.87)	(2.31)	(6.39)	(2.67)
eu	1.62***	1.41***	1.46***	1.40***
	(12.37)	(10.88)	(15.39)	(15.39)
constant	10.18***	5.59***	8.92***	5.18***
	(10.42)	(3.72)	(13.73)	(3.67)
R^2	0.8357	0.8522	0.8348	0.8315
Obs.	252	252	347	347

OLS estimations including time dummies variables.

***, **, *, indicates significance at the 1%, 5% and 10% level, respectively.

t-ratios, based on heteroscedasticity robust standard errors, are given in parentheses.

Source: Own elaboration.

5. Concluding remarks

In this study, we tested for the existence of a link between immigration and bilateral trade using a new set of data for the Spanish economy. We used a gravity equation for trade augmented with an immigrant stock variable. In addition, we tested the robustness of our results by including and excluding some control variables. We also explored some possible mechanisms through which the stock of immigrants in a country can contribute to its trade. The methodology used was to estimate models for different product types and for different immigrants' national and individual characteristics. Such characteristics can contribute in different ways to increasing the volume of bilateral trade.

Immigration has a clearly positive effect both on Spanish exports and imports. A 10% increase in immigrant stock contributes to a 2.8% - 3.8% increase in Spanish exports and a 1.8% - 2.6% increase in Spanish imports, depending on the specification estimated. This significant, positive effect is robust to the different specifications estimated in this paper. Our results do not present evidence for the preference effect, since the impact on imports is not greater than that on exports. One explanation could be that the import-substitution effect due to immigration balances out the trade transaction costs reduction effect. But this does not seem to be a good explanation since immigration in Spain is a recent phenomenon and the stock of immigrants is probably not great enough to explain an import-substitution effect. Another possible reason for this result is rejected by our results: the product composition of Spanish imports and exports differs. The importance of raw materials, especially oil, is greater in imports than in exports. If we accept, as the literature claims, that the effect of immigration on trade is greater for consumer –or differentiated– products than for other kinds of products, we should expect a greater effect of immigration on Spanish exports than imports. However, when we estimate for producer consumer goods, the coefficient continues to be higher for exports. Consequently, our results indicate that immigrants increase trade via trade transaction cost reduction. More research on the estimation method, as Wagner *et al.* (2002) suggested, would be needed to try to clarify this result.

We then tested for some mechanism to explain the link between immigration and trade. First, estimating models for different types of goods, we found that immigration contributes to increased trade in the types of goods that are more sensitive to trade transaction costs: consumer goods. This result offers empirical evidence about the information effect of immigrants, i.e. immigrants increase trade because they reduce trade transaction costs via their greater knowledge than natives/countrymen at home country about foreign/host country products and their characteristics.

Second, we focussed on immigrants' characteristics. Beginning with national (non-individual-specific) characteristics, assuming that social and political institutions in Spain are more similar to those in the former colonies than those in other countries, we found evidence for the hypothesis that immigration stimulates trade because it reduces trade transaction costs by increasing the knowledge about social and political institutions. However, this result is not robust to another specification that considers that EU member countries are the ones with social and polit-

ical institutions more similar to those in Spain. In fact, immigrants from EU countries have a bigger impact on Spanish imports than other immigrants.

Finally, we turned to personal (individual-specific) characteristics: level of education and job situation. Results reveal that immigrants may be taking advantage of their business and personal contacts at home to increase bilateral Spanish trade flows (network effect). Immigrants that have a secondary –and in some specifications a tertiary– level of education are the ones that have a positive effect on trade. Moreover, our results show that immigrants that are managers are the ones that contribute to an increase in trade while employees do not. Managers are likely more able to establish and take advantage of social networks that contribute most to trade transaction costs reduction.

This paper provides more international evidence about the link between immigration and trade and improves on previous empirical evidence about the Spanish case. However, more work can be done to improve and enhance this research in at least two directions. First, it would be very interesting to analyse if the immigrant population has an effect on trade that is decreasing over time, as found first by Gould (1994). Second, the inclusion of trade flow lags would also improve estimations since there can be some hysteresis in trade between countries. Some previous studies have addressed this point but have used estimation methods that give non-efficient estimators, with the exception of Mundra (2005), who estimates using a dynamic panel data (DPD) model. Studying a possible decreasing effect or to do a DPD estimation would require more data than is currently available.

APPENDIX

Table A1: CORRELATION MATRIX

	Imports	Exports	Imports (PG)	Imports (CG)	Exports (PG)	Exports (CG)	mig	migedu1	migedu2	migedu3	migedu4
Imports	1										
Exports	0.897	1									
Imports (PG)	0.1804	0.1708	1								
Imports (CG)	0.7572	0.8259	0.136	1							
Exports (PG)	0.1014	0.0984	0.846	0.073	1						
Exports (CG)	0.8499	0.9627	0.1755	0.7436	0.109	1					
mig	0.3977	0.4923	0.099	0.4885	0.1408	0.4712	1				
migedu1	0.2004	0.2369	0.1013	0.2309	0.1086	0.1869	0.6873	1			
migedu2	0.1919	0.2953	0.0607	0.277	0.0923	0.2728	0.8218	0.7101	1		
migedu3	0.4063	0.4663	0.0933	0.4727	0.1138	0.466	0.9317	0.5939	0.7199	1	
migedu4	0.4099	0.4266	0.1133	0.4462	0.1421	0.4233	0.7583	0.513	0.5115	0.7685	1
migm	0.5274	0.5667	0.0818	0.5836	0.0832	0.5146	0.7621	0.512	0.608	0.7382	0.6659
mige	0.2667	0.3579	0.1092	0.3891	0.1215	0.3714	0.9095	0.6585	0.7899	0.9058	0.7421
migo	0.4266	0.5009	0.1081	0.4627	0.1382	0.4807	0.9367	0.728	0.8402	0.911	0.7759
miccol	-0.6095	-0.5368	-0.1904	-0.4378	-0.0575	-0.4749	0.0682	-0.0222	0.0508	0.0396	0.078
mignocol	0.6941	0.644	0.211	0.5452	0.0892	0.5779	0.1623	0.1798	0.1385	0.1748	0.097
migEU	0.7375	0.8046	0.1853	0.6355	0.1098	0.8237	0.3211	0.104	0.2	0.3282	0.2388
mignEU	-0.6731	-0.7192	-0.1694	-0.5421	-0.079	-0.7448	-0.0784	0.069	0.0029	-0.1036	-0.0546
rgdp	0.8226	0.734	0.1348	0.7565	0.0405	0.6597	0.1641	0.033	-0.0114	0.2445	0.3183
dist	-0.1895	-0.1768	-0.2428	0.0176	-0.244	-0.1977	-0.0686	-0.1863	-0.1302	-0.053	-0.0413
lang	-0.6169	-0.5363	-0.1977	-0.4737	-0.0715	-0.4791	0.0123	-0.0504	-0.0139	-0.0099	0.037
col	-0.6368	-0.5628	-0.2062	-0.4812	-0.0705	-0.495	-0.0037	-0.0864	-0.008	-0.0314	0.0095

PG: Producer goods; CG: Consumer goods.

Table A1: CORRELATION MATRIX (continuation)

	migm	mige	migo	miccol	mignocol	migEU	mignEU	rgdp	dist	lang	col
Imports											
Exports											
Imports (PG)											
Imports (CG)											
Exports (PG)											
Exports (CG)											
mig											
migedu1											
migedu2											
migedu3											
migedu4											
migm	1										
mige	0.6425	1									
migo	0.7412	0.8546	1								
miccol	-0.1065	0.0841	0.0032	1							
mignocol	0.2804	0.1257	0.2119	-0.9734	1						
migEU	0.3926	0.2489	0.3213	-0.4956	0.564	1					
mignEU	-0.2154	-0.0259	-0.0951	0.5394	-0.5515	-0.9693	1				
rgdp	0.3781	0.0859	0.2473	-0.5387	0.5705	0.5089	-0.4931	1			
dist	0.0071	-0.0724	-0.1599	0.2704	-0.2832	-0.0969	0.0842	-0.0335	1		
lang	-0.1437	0.0233	-0.0484	0.968	-0.9546	-0.4861	0.5149	-0.5573	0.2389	1	
col	-0.1667	0.0146	-0.0689	0.9916	-0.9816	-0.4998	0.5252	-0.5638	0.2664	0.9725	1

PG: Producer goods; CG: Consumer goods.

Source: Own elaboration.

Table A2: Sensitivity analysis – Results for Spanish Exports

Results for Spanish Exports

Included immigr. var.	Especification		Included transaction costs variable						
			none	lang	frt	eu	lang&frt	lang&eu	frt&eu
			(b)	(c)	(d)	(e)	(f)	(g)	(h)
mig	1	Total	0.35***	0.38***	0.30***	0.31***	0.32***	0.28***	0.29***
		PG	0.06	0.06	0.05	0.05	0.05	0.04	0.05
		CG	0.41***	0.45***	0.35***	0.34***	0.38***	0.34***	0.32***
migcol	2		0.19***	–	0.19***	0.21***	–	–	0.20***
mignocol			0.47***	–	0.39***	0.37***	–	–	0.33***
migeu	3		0.55***	–	–	–	–	0.54***	0.45***
migneu			0.27***	–	–	–	–	0.26***	0.27***
migedu1	4		0.03	-0.03	-0.04	0.09	-0.09	0.06	0.05
migedu2			0.17*	0.16*	0.01	0.08	0.02	0.08	0.03
migedu3			0.24**	0.26**	0.23***	0.15**	0.25***	0.17**	0.16**
migedu4			-0.04	0.08	0.11	0.02	0.21***	0.06	0.07
migm	5		0.27***	0.23***	0.23***	0.17***	0.20***	0.16***	0.16***
mige			0.05	0.10	0.02	0.05	0.06	0.07	0.03
migo			0.20**	0.27***	0.18**	0.21***	0.23***	0.24***	0.20***

OLS estimations including time dummies variables.

***, **, *, indicates significance at the 1%, 5% and 10% level, respectively.

Table A2: Sᴇɴsɪᴛɪᴠɪᴛʏ ᴀɴᴀʟʏsɪs – Rᴇsᴜʟᴛs ғᴏʀ Sᴘᴀɴɪsʜ Exᴘᴏʀᴛs (continuation)

Results for Spanish Imports

Included immigr. var.	Especification		Included transaction costs variable						
			none	lang	frt	eu	lang&frt	lang&eu	frt&eu
			(b)	(c)	(d)	(e)	(f)	(g)	(h)
mig	1	Total	0.23***	0.26***	0.19***	0.19***	0.22***	0.19***	0.18***
		PG	-0.05	0.03	-0.65	-0.07	0.00	0.00	-0.07
		CG	0.33***	0.36***	0.29***	0.29***	0.31***	0.28***	0.27***
migcol	2		0.12***	–	0.12***	0.14***	–	–	0.14***
mignocol			0.32***	–	0.27***	0.22***	–	–	0.20***
migeu	3		0.28***	–	–	–	–	0.28***	0.21***
migneu			0.17***	–	–	–	–	0.17***	0.17***
migedu1	4		-0.19	-0.08	-0.07	0.03	-0.12**	-0.01	0.16
migedu2			0.07	0.06	-0.04	-0.01	-0.04	-0.01	-0.03
migedu3			0.34**	0.36**	0.34**	0.27**	0.36***	0.29**	0.28**
migedu4			-0.04	0.09	0.07	0.01	0.18*	0.08	0.03
migm	5		0.32***	0.29***	0.29***	0.23***	0.27***	0.22***	0.23***
mige			-0.02	0.02	-0.05	-0.03	-0.00	-0.01	-0.03
migo			0.10	0.16*	0.09	0.11	0.14	0.13*	0.10

OLS estimations including time dummies variables.

***, **, *, indicates significance at the 1%, 5% and 10% level, respectively.

Source: Own elaboration.

REFERENCES

Arango, J. (2003): "Europa, ¿Una sociedad multicultural en el Siglo XXI?", *Papeles de Economía Española*, 98, págs. 2-15.

Blanes, J.V. (2004): "El nexo entre la inmigración y el comercio en España", *Información Comercial Española – Revista de Economía*, 814, págs. 39-48.

Blanes, J.V. (2005): "Does Immigration Help to Explain Intra-Industry Trade? Evidence for Spain", *Review of World Economics – Weltwirtschftliches Archiv*, 141, n.º 2, págs. 244-270.

Blanes, J.V. and J.A. Martín-Montaner (2006): "Migration Flows and Intra-Industry Trade Adjustment", *Review of World Economics – Weltwirtschftliches Archiv*, 142, n.º 3, págs. 568-585.

Bryant, J., Genç, M. and D. Law (2004): "Trade and Migration to New Zealand", *New Zealand Treasury*, Working Paper 04/04.

Combes, P.P., Lafourcade, M. and T. Mayer (2005): "The Trade Creating Effects of Business and Social networks: evidence from France", *Journal of International Economics*, 66, n.º 1, págs. 1-29.

Dunlevy, J.A. (2004): "Interpersonal Networks in International Trade: Evidence on the Role of Immigrants in Promoting Exports from the American States", Working Paper, Departament of Economics (Miami University).

Dunlevy, J.A. and W. Hutchinson (1999): "The impact of immigration on American import trade in the late nineteenth and twentieth centuries", *Journal of Economic History*, 59, n.º 4, págs. 1043-62.

Girma, S. and Z. Yu (2002): "The link between immigration and trade: Evidence from the UK", *Weltwirtschaftliches Archiv*, 138, n.º 1, págs. 115-130.

Gould, D. (1994): "Immigrant links to the home country: empirical implications for U.S. bilateral trade flows", *The Review of Economics and Statistics*, 76, n.º 2, págs. 302-316.

Head, K. and J. Ries (1998): "Immigration and trade creation: Econometric evidence from Canada", *Canadian Journal of Economics*, 31, n.º 1, págs. 47-62.

Herander, M.G. and L.A. Saavedra (2005): "Exports and the Structure of Immigrant-Based Networks: The Role of Geographic Proximity", *The Review of Economics and Statistics*, 87, n.º 2, págs. 323-335.

Hutchinson, W.K. (2002): "Does Ease of Communication Increase Trade? Commonality of Language and Bilateral Trade", *Scottish Journal of Political Economy*, 49, n.º 5, págs. 544-556.

Mundra, K. (2005): "Immigration and International Trade: A Semiparametric Empirical Investigation", *Journal of International Trade and Economic Development*, 14, n.º 1, págs. 65-91.

Rauch, J. (1999): "Networks versus markets in international trade", *Journal of International Economics*, 48, n.º 1, págs. 7-35.

Rauch, J. (2001): "Business and social networks in international trade", *Journal of Economic Literature*, 39, n.º 4, págs. 1177-1203.

Rauch, J.E. and V. Trindade (2002): "Ethnic Chinese Networks in International Trade", *The Review of Economics and Statistics*, 84, n.º 1, págs. 116-130.

Wagner, D., Head, K. and J. Ries (2002): "Immigration and Trade of Provinces", *Scottish Journal of Political Economy*, 49, n.º 5, págs. 507-525.

RESUMEN

Este trabajo contrasta la existencia de una relación de causalidad positiva entre la inmigración y el comercio internacional y explora varios de los mecanismos que la explican. Se analiza el caso de la economía española para el período 1995-2003 mediante la estimación de una ecuación de gravedad ampliada con diversas variables que aproximan la población inmigrante y sus características, tanto nacionales como individuales. Se encuentra evidencia sobre la existencia de un efecto positivo de la inmigración sobre el comercio bilateral de España. El nexo se produce mediante la reducción de los costes de transacción y no por la preferencia de los inmigrantes por productos de su país. Se identifica tanto un efecto información –los inmigrantes aportan información adicional sobre los productos y sobre las instituciones– como un efecto de red étnica –los inmigrantes con un nivel educativo medio y aquéllos relacionados con actividades empresariales son los que ejercen un efecto positivo sobre el comercio.

Palabras clave: Comercio Internacional, inmigración.

Clasificación JEL: F10, F22.