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(en homenaje a José Vicente Blanes)

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WHICH IMMIGRANTS STIMULATE EXPORTS IN THEIR HOST COUNTRY?

(EN HOMENAJE A JOSE VICENTE BLANES)¹

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Abstract

We use province migration-trade panel data to examine the importance of geographic proximity in the effectiveness of ethnic networks on bilateral trade. Empirical findings from the gravity model show that the migration-trade link is clearly 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.

Keywords: province-level exports, immigration, ethnic networks, gravity

JEL classification: C23, F22, O24

Introduction

Since the seminal paper of Gould (1994), the migration-trade link has been studied extensively in the economic literature. In two recent meta-analyses of the impact of immigration on trade, which include about 50 studies, Genc et al (2011) and Lin (2011) show that an increase in the number of immigrants by 10 percent increases the volume of exports and imports by about 1-2 percent. Moreover, that impact is stronger for goods whose trade is likely to involve informational problems; and, in turn, that impact is stronger for trade with countries that are different from the reference country on a number

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of dimensions (different level of development, lack of common language and colonial ties, poor quality of institutions).

Two main channels have been described in the literature to explain how immigrants can enhance trade: the information/search cost channel and the transaction cost channel. Migrants can serve as information providers and trade intermediaries because they have a deep knowledge of their home country's opportunities and potential markets, access to distribution channels, contacts and familiarity to local customs, law and business practices. Individual immigrants' business connections or personal contacts with the home country will lower transaction cost, but it could also be the case that transaction costs are lowered because immigrants bring to host country additional knowledge about foreign markets and about different social institutions. This second effect will be higher the more home and host countries are different and the less information is available on migrants' home countries (Gould, 1994; Rauch and Trindade, 2002).

The objective here is to study how important is geographic proximity to explain the trade-enhancing effect of immigrant networks. If proximity matters, local networks of immigrants groups within the host country should be more effective in overcoming the information barriers and transaction costs than the networks where members are separated by greater distance (Rauch, 2001). Our paper is motivated by several factors. First, the study of Herander and Saavedra (2005) disentangle the impact of both the in-state and out-state stocks of immigrants of 36 countries on US state exports between 1993 and 1996. They find that both in-state and out-state immigrants have a positive impact on the state's exports to the country of origin of immigrants. Since the impact of in-state immigrants is greater than that of out-state immigrants, they conclude that network links are about proximity. Second, the number of papers studying migration-trade link that use sub-national data is still limited and none

after Herander and Saavedra (2005) has examined again whether geographic proximity matters for the impact of migration networks on trade.²

Third, in terms of the database we have accessed to bilateral trade flows and immigrant stocks at province level for three host countries (Italy, Spain and Portugal) and about 100 countries of origin of immigrants over the period 2002-2010. Each host country has the area similar to that of a US state (i.e. Italy - Arizona; Spain - California; Portugal - Minnesota) and each of them is divided into many provinces (103 Italian provinces, 50 Spanish provinces and 20 Portuguese districts). The use of such small sub-national geographic units allow for greater precision in identifying local networks of immigrants by nationality and in estimating their impact on local exports towards the country of origin of the immigrants.

Finally, in terms of the methodological approach, we fully exploit the panel dimensions of the data set and include country-year fixed effects in the regression to control for the common determinants of trade and immigration at the national level. At the same time, we include trading-pairs fixed effects to account for push and pull factors at the home-country and host-region levels, which allow us to precisely isolate the in-province and out-province pro-trade effect of immigrants.

The results show clearly that the geographical proximity of members of the same nationality increase the network's efficacy in promoting exports from the host province to their countries of origin. Once we control for time-invariant unobservable characteristics between country-province pairs, only in-province immigration have a positive impact on exports.

The rest of this paper is structured as follows. Section 2 presents the empirical specification and the data. Section 3 presents the results and Section 4 concludes.

Empirical specification and data

² Wagner et al. (2002) use Canadian provinces; Bandyopadhyay et al. (2008) and Tadesse and White (2010) use US states; Briant et al. (2009) use French departments; Peri and Requena-Silvente (2010) use Spanish provinces; and Bratti et al. (2011) use Italian provinces.

We estimate a gravity equation to measure the impact of in-province and out-province immigration on exports, based on Chaney (2008) theoretical model and implemented recently by Bandyopadhyay et al. (2008) and Peri and Requena-Silvente (2010) to examine the determinants of (log) exports at sub-national level from province i to country j in year t :

$$\ln X_{ijt} = \delta_{ij} + \theta_{jt} + \alpha \ln(Y_{it}Y_{jt}) + \beta_1 \ln I_{jt}^i + \beta_2 \ln I_{jt}^{adjacent} + \beta_3 \ln I_{jt}^{rest} + \epsilon_{ijt}$$

where trading-pairs fixed effects (δ_{ij}) control for of time-invariant specific determinants of bilateral exports between partners and country-year fixed effects (θ_{jt}) control for the common determinants at the national level. The third term is the product of GDPs of the exporting province and the importing country. Our variables of interest are those based on how the total number of immigrants of certain nationality (j) is split into three groups with respect to a province of reference (i): immigrants living in the province (I_{jt}^i), immigrants living in adjacent provinces ($I_{jt}^{adjacent}$) and immigrants living in the rest of the country (I_{jt}^{rest}). Finally, ϵ_{ijt} is a stochastic error term capturing the determinants of trade omitted from the model; we clustered the robust standard errors at the province-country level.

If the geographical proximity of immigrants, both to one another and to trading opportunities within each country, increase the network's efficacy in promoting exports, we expect $\beta_1 > 0, \beta_2 > 0, \beta_3 > 0$. Moreover, as far as local (in-province) immigrants have a greater influence on province exports than do nonlocal (*adjacent* or *rest*) immigrants, we expect $\beta_1 > \beta_2 > \beta_3$.

We construct a new trade-immigration database using regional data for Italy, Portugal and Spain over the period 2002-2010 using three sets of variables: (1) Bilateral exports between a province of Italy, Portugal and Spain and a particular country; (2) Bilateral stocks of foreigners residing living in a province in Italy (103 provinces), Portugal (18 inland districts) or Spain (50 provinces); (3) A number of observed characteristics at both country level and

province level, including the standard gravity variables (GDP, distance, adjacency, EU-EFTA membership, common language/colonial ties).³

Table 1 shows the remarkable growth in immigrants arriving to Italy, Portugal and Spain along our period of study (2002-2010). Immigrant population has grown by a factor of 2 in Portugal, of 3 in Italy and of 4 in Spain, recording a rate of immigrants to total national population of 4.3%, 7.0% and 12.2%, respectively, at the end of the period. Moreover, immigrants have tended to be more locally concentrated than native population, as shown by the decrease of the geographical dispersion index of Florence reported in Table 1.

Table 1. Foreign born residents in Italy, Portugal and Spain, 2002-2010

	Italy	Portugal	Spain
Number in 2002	1334889	208198	1370657
Number in 2010	4235059	454151	5747730
Growth (%) 2002-2010	217%	118%	319%
% population in 2002	2.6	2.0	3.3
% population in 2010	7.0	4.3	12.2
Florence index 2002	0.52	0.80	0.58
Florence index 2010	0.44	0.64	0.42
Change 2002-2010	-0.07	-0.16	-0.15

Note: The Florence index is $\frac{1}{2} \sum_{i=1}^N \left| \frac{f_i}{F} - \frac{n_i}{N} \right|$ where f_i and n_i are foreign-born and native population in i th province and F and N are total foreign-born and native population in the country. A decrease in the value of the index indicates more concentration of foreign-born population compared to native population.

Estimation results

Table 2 shows the OLS results when including separate fixed effects for time, countries and provinces (as in Herander and Saavedra, 2005). Columns

³ The value of exports is taken from the publicly available databases in www.coeweb.istat.it (Italy), www.ine.pt (Portugal) and www.aeat.es (Spain). Foreign-born resident data are taken from the public available database in <http://demo.istat.it> (Italy), <http://sefstat.sef.pt/> (Portugal) and www.ine.es (Spain). Data on country Gross Domestic Product are taken from the World Development Indicators, and are expressed in current US dollars and thousands, respectively. The GDP of provinces are taken from EUROSTAT and then rescaled to match the value of national GDP of each country, as reported in WDI. Geodesic distance between countries and provinces has been constructed following methodology described in Mayer and Zignago (2011).

(1), (3) and (5) report the estimates of the in-province and out-province immigration elasticities of exports for each country. The estimated coefficients on in-province immigration groups are positive and significant for the three countries, with estimated elasticities of 0.17 for Italy, 0.27 for Portugal and 0.12 for Spain, respectively. The estimated coefficients of the out-province immigration groups are positive and significant for Italy and Portugal, and negative and not statistically different from zero for Spain. A Wald test indicates that the difference between the coefficients of in-province and out-province from the three data sets is statistically significant at the 5% level.

Next we decompose out-province immigration groups into immigrants living in adjacent provinces to the province of reference (i) and immigrants living in the rest of the country. Columns (2), (4) and (6) confirm the role of geographic proximity as a key factor for the effectiveness of immigrant networks: both local immigrants and immigrants living in adjacent provinces have a positive impact on local exports; local immigrants have a greater effect on local exports than immigrants living in adjacent provinces (the differences are statistically significant at the 5% level); finally, conational living far away of the province have no impact (or even negative as in the cases of Spain and Portugal).

Table 3 shows the results when including trading-pair and country-year fixed effects (our preferred specification, as described in Eq. 1). Now the results are more extreme: in-province network population have a positive and significant impact on local exports; the magnitude of the elasticities is smaller than before: 0.02 for Italy, 0.08 for Portugal and 0.07 for Spain; out-of-province network members, including those living in adjacent provinces, have no impact at all in promoting local exports.

Table 2. Dependent variable: $\ln(1+\text{exports})$. OLS estimates with country fixed effects, province fixed effects and year fixed effects.

	ITALY		PORTUGAL		SPAIN	
	(1)	(2)	(3)	(4)	(5)	(6)
ln(GDP prov x GDP cou)	0.309*** [0.0268]	0.299*** [0.0266]	0.312*** [0.0530]	0.300*** [0.0523]	0.856*** [0.0532]	0.849*** [0.0532]
ln(distance prov cou)	-0.847*** [0.0295]	-0.831*** [0.0292]	-1.013*** [0.165]	-0.985*** [0.165]	-1.637*** [0.0716]	-1.659*** [0.0717]
Adjacency	0.524*** [0.0378]	0.520*** [0.0719]			0.445*** [0.0362]	0.446*** [0.0361]
EU-EFTA	-0.136*** [0.0280]	-0.132*** [0.0286]	0.276*** [0.0335]	0.282*** [0.0338]	0.079*** [0.0255]	0.081*** [0.0268]
Common language / colony links			0.107*** [0.0308]	0.109*** [0.0309]	0.682*** [0.0261]	0.694*** [0.0265]
ln(Immigrants from country j living in province i)	0.172*** [0.00490]	0.151*** [0.00535]	0.278*** [0.0151]	0.246*** [0.0153]	0.119*** [0.0087]	0.099*** [0.0094]
ln(Immigrants from country j living outside province i)	0.074*** [0.0223]		0.0866*** [0.0208]		-0.0412 [0.0305]	
ln(Immigrants from country j living in adjacent provinces of i)		0.0655*** [0.00654]		0.135*** [0.0153]		0.0465*** [0.0112]
ln(Immigrants from country j living in non-adjacent provinces of i)		0.0142 [0.0206]		-0.102*** [0.0197]		-0.0656*** [0.0276]
Constant	3.460*** [0.466]	2.836*** [0.478]	8.994*** [1.638]	11.34*** [2.043]	0.792 [0.948]	2.465* [1.407]
Country fixed effects	130	130	126	126	101	101
Province fixed effects	103	103	18	18	50	50
Year fixed effects	9	9	9	9	9	9
Observations	120510	120510	20412	20412	45450	45450
R-squared	0.836	0.837	0.805	0.806	0.804	0.804

Note: Standard errors are clustered by trading-pair and robust to heteroskedasticity. *, ** and *** statistically significant at the 10, 5 and 1 percent level, respectively.

Table 3. Dependent variable: ln(1+exports). OLS estimates with country-province pair fixed effects and country-year fixed effects.

	ITALY		PORTUGAL		SPAIN	
	(1)	(2)	(3)	(4)	(5)	(6)
ln(GDP prov x GDP cou)	0.415*** [0.0417]	0.425*** [0.0415]	0.758*** [0.0887]	0.702*** [0.0860]	0.765*** [0.0645]	0.766*** [0.0640]
ln(Immigrants from country j living in province i)	0.0238** [0.0121]	0.0243** [0.0121]	0.0837*** [0.0233]	0.0884*** [0.0232]	0.0689*** [0.0186]	0.0711*** [0.0188]
ln(Immigrants from country j living outside province i)	0.0732 [0.0468]		0.0711 [0.0699]		-0.0386 [0.0847]	
ln(Immigrants from country j living in adjacent provinces of i)		0.00407 [0.0143]		0.0193 [0.0235]		-0.0399 [0.0264]
ln(Immigrants from country j living in non-adjacent provinces of i)		0.0558 [0.0459]		0.0135 [0.0541]		-0.00199 [0.0789]
Constant	-3.054*** [0.635]	-3.074*** [0.639]	-11.63*** [1.499]	-10.93*** [1.485]	-9.246*** [1.046]	-9.391*** [1.051]
Country-year fixed effects	1170	1170	1134	1134	909	909
Country-province fixed effects	13390	13390	2268	2268	5050	5050
Observations	120510	120510	20412	20412	45450	45450
R-squared	0.924	0.924	0.930	0.930	0.918	0.918

Note: Standard errors are clustered by trading-pair and robust to heteroskedasticity. *, ** and *** statistically significant at the 10, 5 and 1 percent level, respectively.

Conclusions

Our results for three Southern European countries (Italy, Portugal and Spain) show that the migration-trade link is clearly 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 time-invariant unobservable characteristics between country-province pairs. 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.

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