Immigration and trade networks: the importance of informational barriers in the Italian case

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ABSTRACT

The research issue addressed by this paper is the effect of migrations on trade and, in particular, the idea that the gradual development of migrant communities in destination countries leads to an intensification of bilateral trade flows with their origin countries, by lowering the informational and relational costs of establishing new cross-border transactions. In other words, migration flows can be seen as a knowledge transmission channel between origin and destination countries. The kind of knowledge circulating through migration networks contains valuable specific information on import and export opportunities. Its diffusion cuts the sunk costs for the firms who want to engage in trade relationships between the two countries, expanding the "extensive margin" of trade.

We perform this statistical analysis by considering both residence permits and bilateral trade of Italy with origin countries at the provincial level. In particular, the residence permits are a unique dataset that has never been explored beforehand.

Our preliminary results point to a strong nonlinear effect of distance on the trade-migration relationship: closer origin countries seem to experience an appreciable correlation, whereas this is not so for further countries. In other words, the informational advantage that networks of migrants can offer seems to count only when distance is not so large.

Keywords: Network effects, extensive margin of trade

JEL Codes: F10, F22, F23

1. Introduction and Literature Review

The research issue addressed by this paper is the effect of migrations on trade and, in particular, the idea that the gradual development of migrant communities in destination countries leads to an intensification of bilateral trade flows with their origin countries, by lowering the informational and relational costs of establishing new cross-border transactions. In other words, migration flows can be seen as a knowledge transmission channel between origin and destination countries. The kind of knowledge circulating through migration networks contains valuable specific information on import and export opportunities. Its diffusion cuts the sunk costs for the firms who want to engage in trade relationships between the two countries, expanding the "extensive margin" of trade.

In the economic literature there have been some empirical papers that tested this assumption for US data and Canadian data. For instance, Jim Rauch (1999, 2001) has explored this idea in a series of papers. Gould (1994) and more recently Rauch and Trinidade (2002) use bilateral US data with origin countries to validate statistically the assumption.

For Italy the work by Murat and Pistoresi (2007) is the closest one to our analysis, but they use more aggregated data than we consider in this paper since they did not use any territorial breakdown in the destination country (specifically, Italian provinces). We are able to perform this analysis due to the availability of a detailed dataset of residence permits by country of origin at the provincial level in Italy.

More exactly, we explore the empirical relevance of this mechanism on the export side in the Italian case. In other words, we look for evidence that migration inflows to Italy translate into more intense export flows to the migrants' origin countries. Our assumption is that these linkages can be detected more easily at the local level, given the importance of proximity among immigrants to generate the network externalities involved in this process.

This paper is structured in other three sections. The next one is devoted to a description of the Italian immigration with a special attention to its geographical distribution. Section 3 is the core of our analysis and proposes an investigation of the possible link between migration and bilateral trade at a detailed geographical level (the province level) for Italian holders of residence permits. Section 4 concludes.

2. The migration phenomenon in Italy

In this study, our main aim is to study the characteristics of the total immigrant population in Italy in relation to the export performances of the provinces where they reside. We devote special attention to the different nationalities in order to uncover the possible network effects that could have affected the bilateral trade between Italy and each one of the countries of origin of the main immigrant nationalities.

In this section we present the main characteristics of the recent and rapid Italian immigration.

Regarding the available data on migration, there are two main sources of (stock) data on immigrants in Italy: population registries, directly from the Italian Institute of Statistics (ISTAT), and residence permits, which are originally issued by the Ministry of the Interior. Our analysis is mainly based on the data of Residence Permits (*Permessi di Soggiorno*), although completed by data from the Population Registries (*Anagrafi Comunali*). The *Permessi di Soggiorno* represents a valuable data set for two main reasons. First, they distinguish among the different migration motives (work,

family reunion, etc.). Second, they go back till 1992, while data from the population registries are not available before 2002.

An overview of the main characteristics of the Italian immigrants, including their rapid dynamics and their spatial distribution over time, follows in the next sections.

2.1. Important and diversified immigration

Table 1 presents the number and the proportion of each main nationality (including Italian natives) and their evolutions over time by considering the residence permits.

Table 1 – Immigrants' presence in Italy by origin in 1995 and 2006: number of residence permits and growth rates over the 11-year period

	1995		2006		Growth between 1995 and 2006 (%)
	Number	*%*	Number	*%*	
Italy	56844408		58751711		*3,36*
Natives	56115249		56336739		*0,39*
Total foreign population	729159	*100,00*	2414972	*100,00*	*231,20*
Romania	14212	*1,95*	278582	*11,54*	*1860,19*
Albania	30183	*4,14*	282650	*11,70*	*836,45*
Ukraine	909	*0,12*	118524	*4,91*	*12938,94*
Poland	13955	*1,91*	78930	*3,27*	*465,60*
Ex-Yugoslavia	70057	*9,61*	138825	*5,75*	*98,16*
Germany	30235	*4,15*	33493	*1,39*	*10,78*
France	21006	*2,88*	23991	*0,99*	*14,21*
United Kingdom	20505	*2,81*	23226	*0,96*	*13,27*
Morocco	81247	*11,14*	258571	*10,71*	*218,25*
Tunisia	30666	*4,21*	64870	*2,69*	*111,54*
China	16200	*2,22*	122364	*5,07*	*655,33*
Philippines	36007	*4,94*	76413	*3,16*	*112,22*

Source: *Permessi di Soggiorno* (Italian Ministry of the Interior and ISTAT)

In 1995 the immigrant population with a residence permit in Italy was almost 730,000 and represented 1.3% of all Italian residents. Since then, the immigrant population showed a very rapid growth. In 2006, adding up all the migrants from the 194 different nationalities, there were over 2,41 million immigrants with regular resident permits (4.1% of total population).

In other words, during the 11-year period, Italy experiences a 231% increase in residence permits. If we look at the ISTAT data from population registries, the stock of legal immigrants in Italy in 2006 reaches 2.93 million that represents 5% of the Italian population.

In terms of nationalities' composition, in 2006 Europeans hold the first place (48.2%) with the biggest stocks coming from Romania (11.5% of total of immigrants) and Albania (11.7%). They are followed by the North Africans (14.1%) with an overall majority from Morocco (10.7 %).

The immigrant population in Italy has been going through a process of radical transformation. During this last decade immigrants from Eastern Europe have been the most dynamic component

(Tables 1 and 2). For instance, the Ukrainian community – now the fifth nationality in Italy – showed an exceptional increase between 1995 and 2006 from 909 to 118524 residence permits. During the same period the population of the Romanians, the Albanians and the Poles increased respectively by eighteen, eight and almost five times. As expected, immigrants from more richer countries although showed an increase, this has been much more modest (between 10 and 13% from France, Germany and UK).

Table 2 – Immigrant distribution by period of arrival in Italy (2001)(%)

	Total foreign population	Albania	Romania	Ukraine	Poland	Small Yugoslavia	Germany	France	United Kingdom	Morocco	Tunisia	China	Philippines
Before 1992	32	12	9	7	26	20	59	60	61	36	50	26	46
1992-1996	27	31	28	16	36	37	16	14	15	25	20	33	28
1997-1999	25	38	37	39	24	28	15	13	12	25	17	29	16
2000	9	11	15	21	8	8	6	6	6	9	7	6	6
2001	7	8	12	17	6	6	5	6	6	6	5	6	4
Stock 2001	100	100	100	100	100	100	100	100	100	100	100	100	100

Source : ISTAT, *14th General Population and Housing Census Legal Population* (2001)

In terms of declared motives for the residence permits, "work" and "family reunification" are two most important ones both in 1995 and 2006. Actually, the shares of both types of permits increased over time (Table 3) by rising from 54% to 61% for "work-related" permits and from 21% to 31% for "family reunions".

However, this general trend is not observed for all ethnic communities. For instance, during the period 1995-2006 we observe a sort of substitution between work permits and family permits for some relevant nationalities, i.e. the Albanians (work permits are 15 percentage points less in 2006 and family permits are 20 percentage points more), the Moroccans (17 percent fewer work permits and 17 per cent more family permits), the Tunisians (similar to Moroccans) and, to a lesser extent, for the Filipinos. An opposite tendency is observed instead for immigrants from Romania (where the role of refuges may have been important right after the fall of the Communist regime) and Ukraine (although the total number of immigrants in 1995 may be too low for any general conclusion).

Table 3 – Immigrant distribution by motive of immigration in Italy in 1995 and 2006(%)

Motive of immigration	Year	Total foreing population	Romania	Albania	Ukraine	Poland	Ex Yugoslavia	Germany	France	United Kingdom	Morocco	Tunisia	China	Philippines
Work	1995	54.05	39.54	67.15	31.68	42.88	26.31	40.45	44.67	50.01	80.89	81.18	66.88	80.50
	2006	60.58	68.51	52.39	78.83	69.41	54.99	42.38	50.91	47.46	63.32	65.94	69.26	77.07
Family	1995	21.39	32.32	22.20	26.22	25.66	6.76	19.73	24.09	23.47	17.30	15.75	27.41	8.54
	2006	31.63	28.05	42.54	18.44	24.14	37.36	24.46	26.61	22.99	34.80	32.41	27.69	16.47

Source : Authors' calculations on *Permessi di Soggiorno*

2.2. Immigrant spatial location patterns

In this section we present some stylised facts concerning the spatial distribution of immigrants in Italy for the period of 1995-2006.

2.2.1. Unequal spatial distribution

The spatial Gini indexes presented in Table 4 show two important characteristics of immigrants' concentration in Italy. First, immigrants with work permits are more concentrated than on average for both years 1995 and 2006 (the only exception is Morocco in 2006). However, the range of the Gini indexes is very wide and spans from 0.20 for the Albanians to almost 0.70 for the Filipinos. This means that in Italy every nationality has its own spatial pattern.

Second, if we compare 2006 and 1995, in general the degree of concentration has slightly decreased for all nationalities with very few exceptions.

Table 4 – Gini indexes[1] in 1995 and 2006 by motive of immigration

Year	Motive of immigration	Total foreing population	Romania	Albania	Ukraine	Poland	Ex Yugoslavia	Germany	France	United Kingdom	Morocco	Tunisia	China	Philippines
2006	All motives	0.22	0.39	0.19	0.28	0.27	0.51	0.46	0.47	0.41	0.28	0.33	0.39	0.59
	Work	0.24	0.42	0.20	0.31	0.29	0.56	0.62	0.57	0.52	0.27	0.36	0.40	0.62
	Family	0.19	0.34	0.21	0.18	0.24	0.51	0.34	0.40	0.32	0.31	0.26	0.38	0.50
1995	All motives	0.31	0.26	0.18	0.44	0.49	0.44	0.48	0.46	0.45	0.24	0.35	0.52	0.65
	Work	0.32	0.40	0.20	0.54	0.52	0.60	0.54	0.51	0.48	0.31	0.35	0.53	0.69
	Family	0.26	0.23	0.18	0.33	0.32	0.45	0.32	0.37	0.44	0.32	0.34	0.54	0.45

Source : Authors' calculations on *Permessi di Soggiorno*

The cartographic analysis highlights a very contrasting geographic location of immigrants between Southern and Northern Italy (see Figure 1 and 2). The provinces in the North and the Center host the major portion of the immigrants, with presence rates (percentage over total population) more than three times higher than in the South (Table 5). In Southern Italy we note a strong concentration in two provinces: Reggio Calabria and Ragusa. The foreign presence is very limited in Insular Italy.

At the same time, during the last decades, the Northern and Center provinces recorded a big increase of immigrants' presence rates, as well as in absolute value (see Figure 2). However, when we distinguish among immigration motives and focus on immigrants with work permits (analysis available from the authors upon request) the strong difference between North-Center and Southern Italy is less pronounced. In other words, differently from overall residence permits, we observe an interesting increase in work permits in the South at a rate more comparable to other areas as if there

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[1] The Gini index is double the area of the surface comprised between the Lorenz curve and the line of perfect equality and it is always between 0 and 1. For z locations : $IG = 1 - \sum_{k=0}^{k=z-1} (X_{k+1} - X_k)(Y_{k+1} + Y_k)$ where X and Y are the cumulated populations of natives and immigrants respectively.

were a lag in the employment growth of migrants in the South, probably due to the lower income growth and lower per capita income in the region.
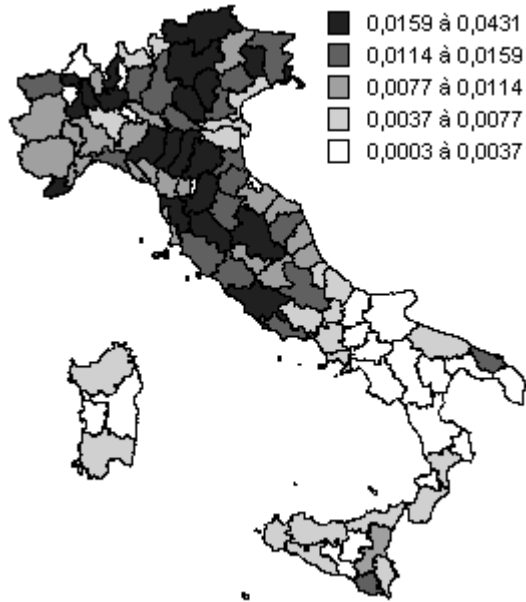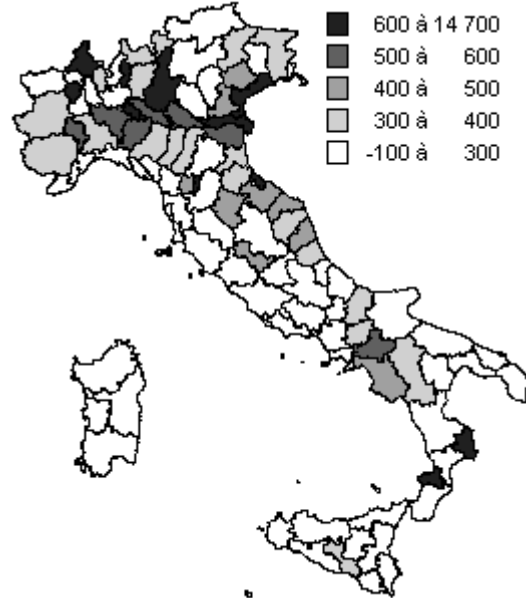
Figure 1
Immigrants' Presence Rates in 1995

Figure 2
Percentage Increase in Immigrants'
Presence Rates 1995-2006

0,0159 à 0,0431
0,0114 à 0,0159
0,0077 à 0,0114
0,0037 à 0,0077
0,0003 à 0,0037

600 à 14 700
500 à   600
400 à   500
300 à   400
-100 à   300

By means of the data from population registries, it is possible to compute the Gini indexes at the municipality level and then average it for each Italian region. These data reveal that the concentration is strongest in the South (see Figure 3), whereas the most homogeneous geographical distribution of immigrants is found in the Center Italy.

Figure 3
Gini indexes by region at municipalities level,
total foreign population, 2006

0,413 - 0,414
0,294 - 0,413
0,245 - 0,294
0,209 - 0,245
0,127 - 0,209
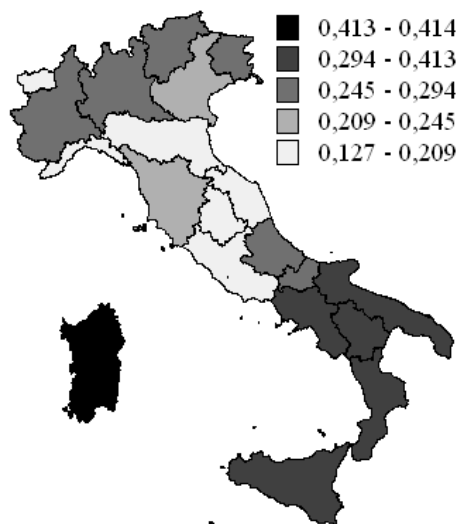
Source: ISTAT *Population registries*

By looking at the spatial distribution of immigrants by origin, divergences and similarities among the different ethnic communities are revealed (analysis available from the authors upon request). All communities, without exception, are overrepresented in the North and the Centre of Italy, however, with very different presence rates (Table 5). On the contrary, the two main Italian islands are characterized by the slimmest presence of immigrants.

Table 5 – Immigrants Presence Rates by Macroregions (%)

	Total foreign population	Albania	Romania	Ukraine	Poland	Small Yougoslavia	Germany	France	United Kingdom	Maroc	Tunisia	China	Philippines
North-West	7.75	0.87	1.31	0.20	0.08	0.17	0.07	0.09	0.05	0.98	0.17	0.31	0.28
North-East	8.15	0.95	1.23	0.29	0.16	0.65	0.09	0.04	0.04	1.03	0.26	0.38	0.13
Cente	7.34	0.93	1.74	0.23	0.31	0.30	0.10	0.08	0.09	0.44	0.13	0.37	0.32
South	2.16	0.30	0.38	0.27	0.13	0.07	0.03	0.02	0.02	0.22	0.04	0.11	0.04
Islands	1.84	0.09	0.33	0.03	0.08	0.03	0.05	0.03	0.02	0.19	0.23	0.10	0.07

Source : Authors' calculations on *Permessi di Soggiorno*

Because of their important sizes, the spatial distribution of people from Romania, Morocco and Albania play an important role in the general location pattern of immigrants. In general, as in the overall tendency mentioned above, their presence is highest in the provinces of the North and of the Centre. However, the Romanians and the Poles are more present in the region of the Centre Italy. The case of the Ukrainians is also very interesting. Their (regular) presence has increased massively in the last years, but differently from other communities, they spread equally all over Italy (except for the islands), according to Table 5. In reality, when looking at more detailed data, they tend to concentrate in a few provinces in each of the macroregions spelled out in Table 5. For instance, in the South they are mainly concentrated in the province of Naples and surrounding, in the Centre mainly in the Umbria provinces, and in the North mainly in some of the provinces of Romagna and Veneto.

In order to identify possible common location patterns, we performed a factor analysis on the presence rates and identified which ethnic groups' locations were explained by common factors. Table 6 reports the results of the factor analysis and highlights the role of the most important factor for each ethnic group. In general, origin countries which are "close" geographically and culturally seem to share main common factors validating the hypothesis of important network effects in the location decision. So, we found common factors for the Moroccans with the Tunisians, for the Ukrainians with the Poles, for the Germans with the French and the British, for the nationals of Small Yugoslavia with the Romanians and the Albanians. Filipinos differ from other communities in their spatial distribution and they are more characterized by the distinction urban vs. non-urban location.

Table 6 – *Factor analysis on Immigrants presence rates (Provinces, 2006)*

| | Factor pattern | | | | |
	Factor1	Factor2	Factor3	Factor4	Factor5
Albania	**0.77**	0.24	0.17	0.17	-0.11
Romania	**0.65**	0.2	0.23	-0.22	0.09
Small Yougoslavia	**0.4**	0.14	0.26	-0.21	-0.59
China	**0.57**	-0.27	-0.09	0.07	0.18
France	0.11	**0.77**	-0.22	0.19	0.24
Germany	-0.1	**0.74**	0.12	0.07	-0.2
United Kingdom	0.33	**0.71**	0.26	-0.23	0.15
Poland	0.17	0.14	**0.81**	-0.1	0.13
Ukraine	0.01	-0.06	**0.76**	0.27	-0.07
Morocco	0.63	0.03	-0.01	**0.51**	-0.06
Tunisia	0.06	0.07	0.12	**0.79**	0.08
Philippines	0.22	0.13	0.2	-0.03	**0.79**

Source : Authors' calculations on *Permessi di Soggiorno*

2.2.2. Accessibility to the country of origin

According to the cartographic analysis, the South and the islands in Italy seem to be ignored by the majority of immigrants. One plausible explanation could be the lower dynamics of local labour markets (in particular, lower labour demand due to lower growth rates). However, this phenomenon can be also explained by the fact that most of the entrance points on the Italian territory are in the Northern part of the country. This is particularly true for Romanians, for instance. There are many exceptions to this general rule: many Poles and Ukrainians are in the South of the country, although their main entrance point is the Northeast frontier of Italy; very large Albanian and Tunisian communities are present in Northern Italy, while they enter to a great extent from the South.

For migrants from distant and not bordering countries, namely China and the Philippines, distance inside Italy does not seem to be an important factor: although slightly stronger in the North, there is no significant difference in presence rates between Northern and Southern Italy..

The correlation coefficients between presence rates and distance from the origin country for ethnic community having easily identifiable entrance points to Italy (mainly border countries) confirms the suggestions of the cartographic analysis.

In general, we obtain negative correlation coefficients (Table 8). This negative correlation is particularly high for the neighbouring countries: France, the ex-Yugoslavia and Morocco (all lower than -0,66). They are followed by the Romanians (-0,63), the Ukrainians (-0,47) and the Germans (-0,25). Albania and Tunisia are atypical cases with positive correlation coefficients. Except for Polish immigrants, in general, the correlation presence-distance decreases for "work immigrants".

Table 8 – *Correlation coefficients between presence rates and the distance from the home country** *(province level, 2006)*

	Albania	Romania	Ukraine	Poland	Yugoslavia	Germany	France	Morocco	Tunisia
All motives	0.36	-0.63	-0.47	-0.21	-0.83	-0.37	-0.66	-0.74	0.41
Work	0.35	-0.54	-0.41	-0.30	-0.55	-0.23	-0.46	-0.65	0.00
Family	0.36	-0.63	-0.37	-0.03	-0.82	-0.16	-0.46	-0.74	0.39

* China, Philippines and UK have been axcluded since no evident port of entry is identifiable.
Source : Authors' calculations on *Permessi di Soggiorno*

2.2.3. The Urban Character of the Immigration in Italy

The localization of foreigners, whether in small towns or big cities, is different among the different nationalities (Table 9). By using data at the municipality level (from population registries), in general Italian immigrants are overrepresented in the urban area (69% versus 64% for the natives) and tend to concentrate in medium to big cities. Indeed, almost 37% of immigrants are located in the province capitals (*capoluoghi di provincia*), i.e. 7.5% more than for the natives. At the same time, Germans, the British, Moroccans and nationals from the Ex-Yugoslavia are also overrepresented in rural areas; it is likely that in the two former cases we deal with retired people, whereas in the latter two nationalities employment in agriculture may be an important factor.

Filipinos represent a very special case since they are extremely concentrated in large cities or big towns; in particular, over 94% are located in urban areas and over 80% in province capitals. In these province capitals there is also an overrepresentation of foreigners from France and China – 46% and 47% respectively versus 37% for the immigrants as whole and 29% for the natives.

Table 9 – *Presence rates of immigrants : urban vs. rural locations[2] in 2006 (%)*

	Italy	Total foreign population	Albania	Romania	Ukraine	Poland	SmallYougoslavia	Germany	France	United Kingdom	Morocco	Tunisia	China	Philippines
Provinces capitals	29.11	36.53	26.42	29.64	37.28	33.97	27.22	27.91	45.62	35.13	21.35	28.05	47.31	80.47
RURAL	36.37	30.96	36.49	36.43	26.70	36.05	43.66	46.34	26.30	39.65	43.26	37.39	23.23	5.99
more 2000 inh/km²	*17.52*	*19.87*	*11.01*	*15.19*	*22.00*	*10.27*	*9.99*	*13.73*	*25.18*	*18.52*	*13.08*	*12.74*	*25.55*	*45.70*
Total URBAIN	63.63	69.04	63.51	63.57	73.30	63.95	56.34	53.66	73.70	60.35	56.74	62.61	76.77	94.01

Source: Authors' calculations on ISTAT *Population registries*

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[2] We considered as "rural" any municipality with a population density less or equal to 300 inhab/km². Following the definition by INEA, *Istituto Nazionale di Economia Agraria*, (see Storti D., 2000), there is another equirement on a minimum of « green surface » within the municipality. We neglected this last requirement for lack of detailed geographical data.

3. Migration-trade linkages in the Italian provinces

One simple way to start the analysis is to study the correlation between the intensity of immigrant inflows and merchandise exports at the local level. More precisely, for any pair of provinces and partner countries, we compute two similar indices of immigration and export intensities, which reveal to what extent bilateral flows exceed an appropriate neutrality threshold, revealing the existence of a preferential linkage between an Italian province and an origin country of its immigrants.

On the migration side, the *provincial revealed destination preference* (RDP_{ij}) index can be defined as follows:

$$RDP_{ij} = (I_{ij} / I_{iw} - I_{oj} / I_{ow})/ (I_{ij} / I_{iw} + I_{oj} / I_{ow}) \qquad [1]$$

where:
I_{ij} : immigrants from country j to province i;
I_{iw} : total immigrants from the world to province i;
I_{oj} : immigrants from country j to the rest of Italy;
I_{ow} : total immigrants from the world to the rest of Italy.

The range of RDP_{ij} goes from -1 (no immigrants from country j to province i) to +1 (province i attracts immigrants only from country j and is the only Italian province hosting immigrants from country j) with a geographic neutrality threshold of zero, when the importance of country j for province i as origin of its migration inflows is equal to its importance for the rest of Italy. Positive values of this indicator reveal that province i is relatively more attractive than the rest of Italy for migrants coming from country j, as its share of migration inflows from country j to Italy is larger than its share of total inflows to Italy.

A similar *provincial revealed export preference* (RXP_{ij}) index can be defined as follows:

$$RXP_{ij} = (X_{ij} / X_{iw} - X_{oj} / X_{ow})/ (X_{ij} / X_{iw} + X_{oj} / X_{ow}) \qquad [2]$$

where:
X_{ij} : exports from province i to country j;
X_{iw} : total exports from province i;
X_{oj} : exports from the rest of Italy to country j;
X_{ow} : total exports from the rest of Italy.

The range of RXP_{ij} goes from -1 (no exports from province i to country j) to +1 (province i exports only to country j and is the only Italian province exporting to country j) with a geographic neutrality threshold of zero, when the importance of country j for province i as destination of its exports is equal to its importance for the rest of Italy. Positive values of this indicator reveal that exports of province i are relatively more oriented than the rest of Italy towards country j, as its share of Italian exports to country j is larger than its share of total Italian exports.

This index conveys the same kind of information as traditional trade intensity indices, such as the Balassa index of geographic specialisation, but it does not incur their statistical problems, since its range is independent of country size and symmetrical around the geographic neutrality threshold (Iapadre, 2006).

We have computed RDP_{ij} and RXP_{ij} for the Italian provinces and the ten main origin countries of migrants to Italy. Our assumption is that cases in which both indices are positive can be considered as *prima facie* evidence of a possible effect of migration inflows on the geographic direction of exports. If a province's exports to a given country are larger than what implied by the neutrality

criterion, this reveals that specific proximity factors make trade more intense than what could be expected on the basis of traditional gravity factors (size and distance), which determine the overall relative value of Italian exports to that country. Specific proximity factors include international production fragmentation, generating trade flows in intermediate goods, and migration flows, which, as argued above, can stimulate exports by lowering the informational costs of establishing new trade flows. So, if a province resulting as a preferred destination of immigrants from a given country happens to show also a relatively strong orientation of its exports towards that country, this can be considered as a case in which migration inflows could have affected the direction of trade.

In order to summarise the information contained in our data, we have computed the linear correlation coefficients between the two indices RDP_{ij} and RXP_{ij} for the entire period under consideration. The results are shown in Table 10.

Table 10: Correlation between migration and export intensities

	Albania	China	Ecuador	Morocco	Peru	Philippines	Poland	Romania	Senegal	Tunisia	Yugoslavia	Average
1991	0,03	0,04	0,29	-0,05	0,33	0,31	0,14	-0,03	0,24	0,14	0,33	0,16
1992	0,10	0,07	0,18	0,02	0,29	0,17	0,17	0,13	-0,02	-0,07	0,37	0,13
1993	0,13	0,20	0,14	-0,03	0,26	0,19	0,28	0,36	0,11	0,06	0,38	0,19
1994	0,16	0,34	0,11	0,06	0,36	0,32	0,28	0,24	-0,07	0,12	0,41	0,21
1995	0,38	0,38	0,14	0,19	0,32	0,03	0,33	0,45	0,06	-0,19	0,40	0,23
1996	0,36	0,38	0,27	0,04	0,31	0,19	0,05	0,28	0,22	0,03	0,43	0,23
1997	0,39	0,33	0,37	0,21	0,31	0,20	0,04	0,31	0,21	0,00	0,40	0,25
1998	0,36	0,35	0,39	0,14	0,06	0,18	0,04	0,38	0,21	0,19	0,39	0,25
1999	0,33	0,31	0,35	0,16	0,25	0,23	-0,09	0,44	0,26	0,30	0,49	0,28
2000	0,39	0,26	0,40	0,04	0,21	0,18	-0,05	0,45	0,31	0,27	0,36	0,26
2001	0,34	0,22	0,38	-0,12	0,17	0,15	-0,06	0,40	0,18	0,19	0,35	0,20
2002	0,30	0,12	0,37	-0,13	0,13	0,20	-0,12	0,42	0,19	0,18	0,37	0,18
2003	0,25	0,08	0,34	0,10	0,27	0,17	-0,18	0,28	0,20	0,24	0,44	0,20
2004	0,24	0,09	0,42	-0,10	0,32	0,17	-0,19	0,36	0,19	0,22	0,46	0,20
2005	0,33	-0,04	0,37	0,02	0,09	0,18	-0,22	0,30	0,33	0,27	0,54	0,20
2006	0,05	-0,13	0,12	0,18	0,00	0,00			-0,02	0,28	0,44	0,10
2007	0,23	-0,12	0,36	0,09	0,12	0,14			0,19	0,08	0,38	0,16
Average	0,26	0,17	0,29	0,05	0,22	0,18	0,03	0,32	0,16	0,13	0,41	0,20

Linear correlation coefficients between the intensity of migration inflows to and exports from Italian provinces

A positive correlation between the intensity of migration inflows to Italian provinces and of their exports to the origin countries of immigrants is recorded for all countries, even if the average coefficient for the observed period is very low in some cases (Morocco and Poland). The highest correlation emerges with South Eastern European countries (Albania, Romania and former Yugoslavia) and with Latin American countries (Ecuador, Peru). In the first case, this might be due to the interaction between migration inflows, international production and exports, favoured by the relatively limited distance between these countries and several Italian provinces, particularly along the Adriatic coast, where the interaction might have been facilitated by specific transport infrastructures. In the second case, international production fragmentation has probably a very marginal role. It should be reminded that these two countries, given their limited economic size and large distance, absorb a very low percentage of Italian exports (respectively 0.04 and 0.07 per cent in 2007). At the same time, the presence of immigrants from these countries is very concentrated among a few Italian provinces[3]. So, it may be argued that immigrants from these countries, given

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[3] The first five provinces host 73 per cent of immigrants from Peru and 75 per cent from Ecuador. The Finger-Kreinin dissimilarity indices between the provincial distributions of immigrants from those two countries and from the world are the highest (respectively 0.56 and 0.47) among the countries considered in this study.

their concentration, tend to establish more intense relationships among themselves and that the resulting network effects on exports are more visible also because of the relatively limited value of trade flows.

The average correlation between the intensity of migration inflows and exports for the countries considered in this study has been steadily growing in the Nineties, from a minimum of 0.13 in 1992 to a maximum of 0.28 in 1999. The following decade has been characterised by a marked downward trend, particularly in the first three years[4]. This time pattern is not easy to explain. It could be due to the fact that network effects are more important in the initial periods of immigration, such as in the Nineties for Eastern European countries, whereas their intensity tends to become weaker as immigrants spread over the Italian territory and become more integrated into local economic systems. However, this is clearly an issue deserving further research.

A more detailed picture of the correlation between migration and export intensities can be obtained by concentrating the analysis on specific Italian regions, where geographical and historical factors have favoured the concentration of immigration flows from certain countries.

For example, as already mentioned, Adriatic regions, and particularly those located in North-Eastern Italy, tend to attract more easily immigrants from South-Eastern European countries, such as Romania and the former Yugoslavia.

Actually, figure 4 confirms a significant positive correlation between *RDP* and *RXP* indices in the relationships between North-Eastern Italy provinces and the former Yugoslavia. To a lesser extent, this correlation emerges also with Romania (figure 5). In both cases relative geographic proximity and foreign outsourcing by Italian firms may have facilitated the development of migratory networks with positive spillover effects on the intensity of trade.

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[4] Data for 2006 and 2007 are not comparable to the previous years, because Poland and Romania are not included in the data-base after 2005.

Figure 4: North-Eastern Italy and former Yugoslavia: immigration and export intensity (1991-2006)
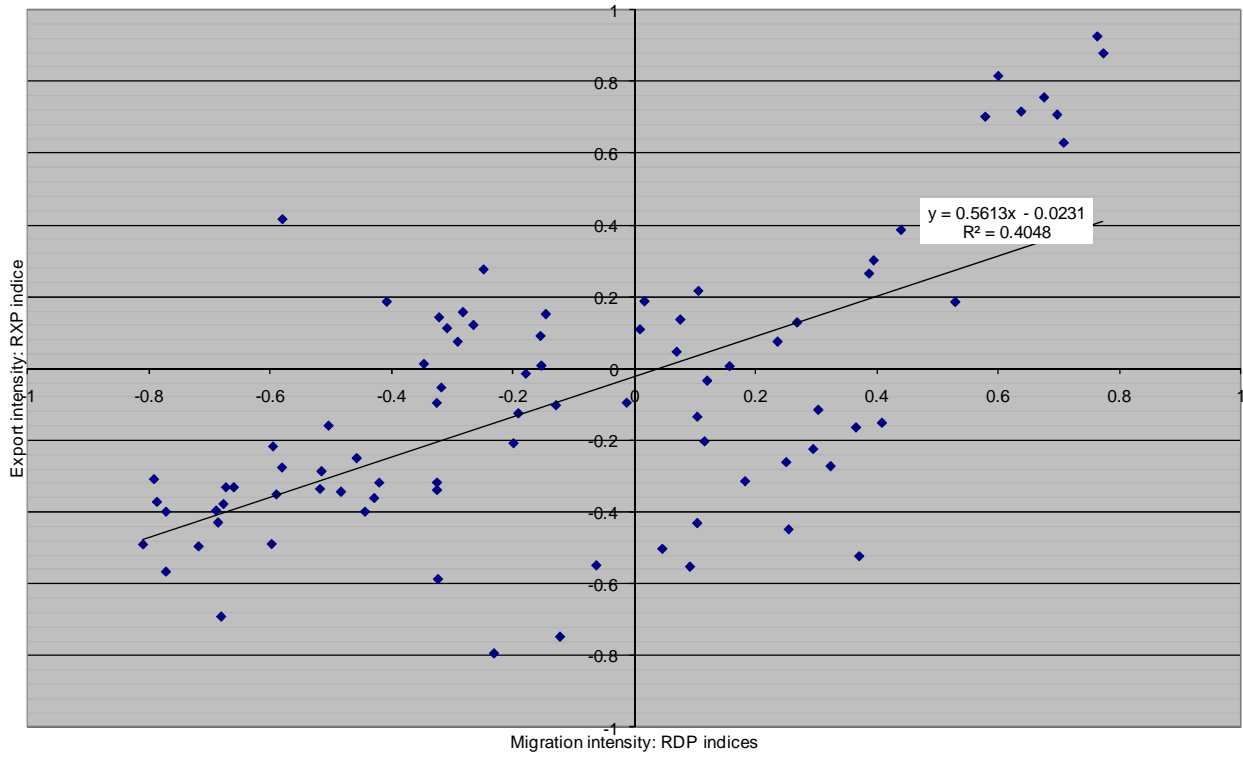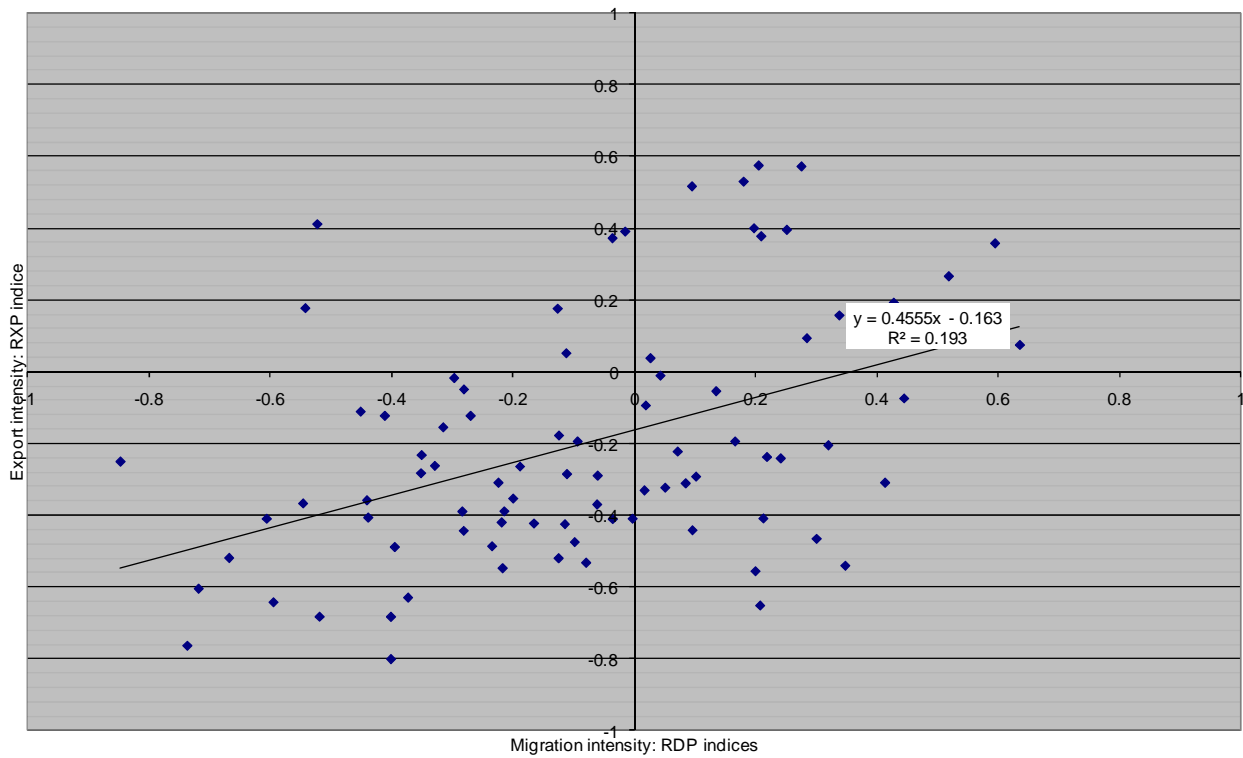

Figure 5: North-Eastern Italy and Romania: immigration and export intensity (1991-2006)

However, in other cases, this relationship is less easily visible. For example, contrary to what expected, the correlation between immigration and export intensity does not emerge strongly from the data about Apulia and Albania (figure 6) or from those about Southern Italy (Calabria and Sicily) and Tunisia (figure 7).

Figure 6: Apulia and Albania: immigration and export intensity (1991-2006)
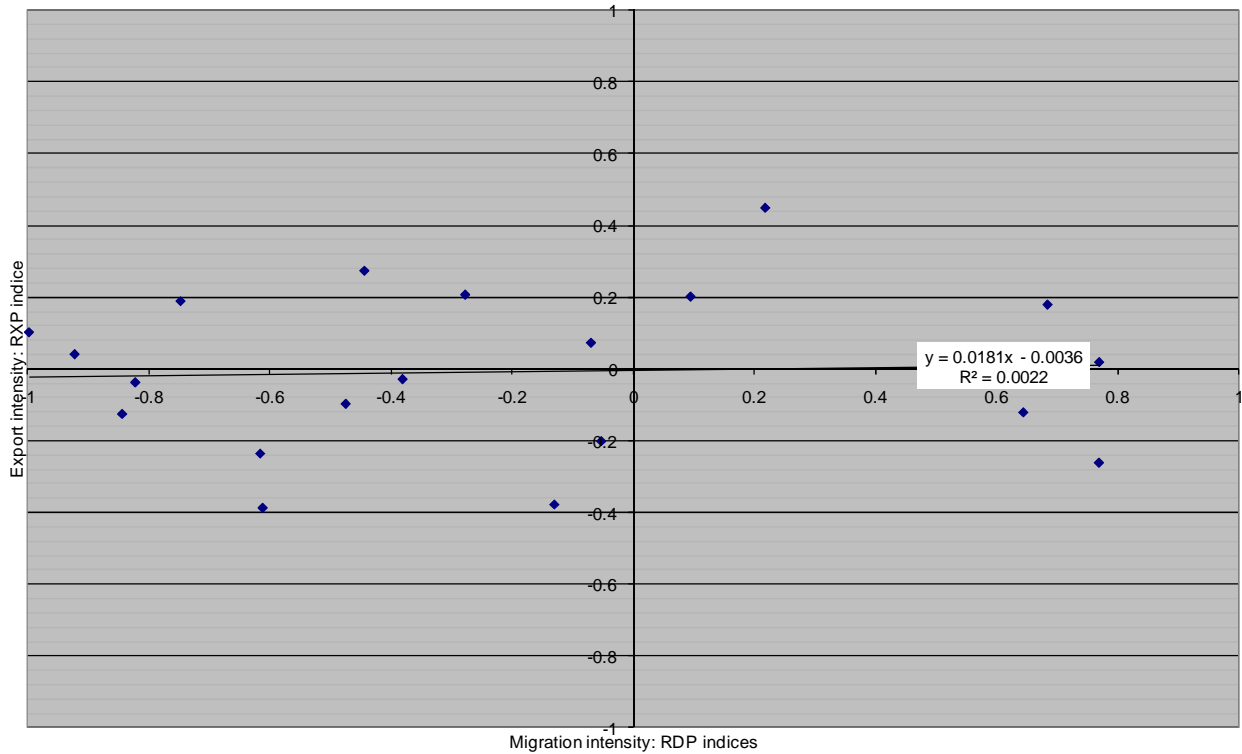
Figure 7: Southern Italy (Calabria and Sicily) and Tunisia: immigration and export intensity (1991-2006)
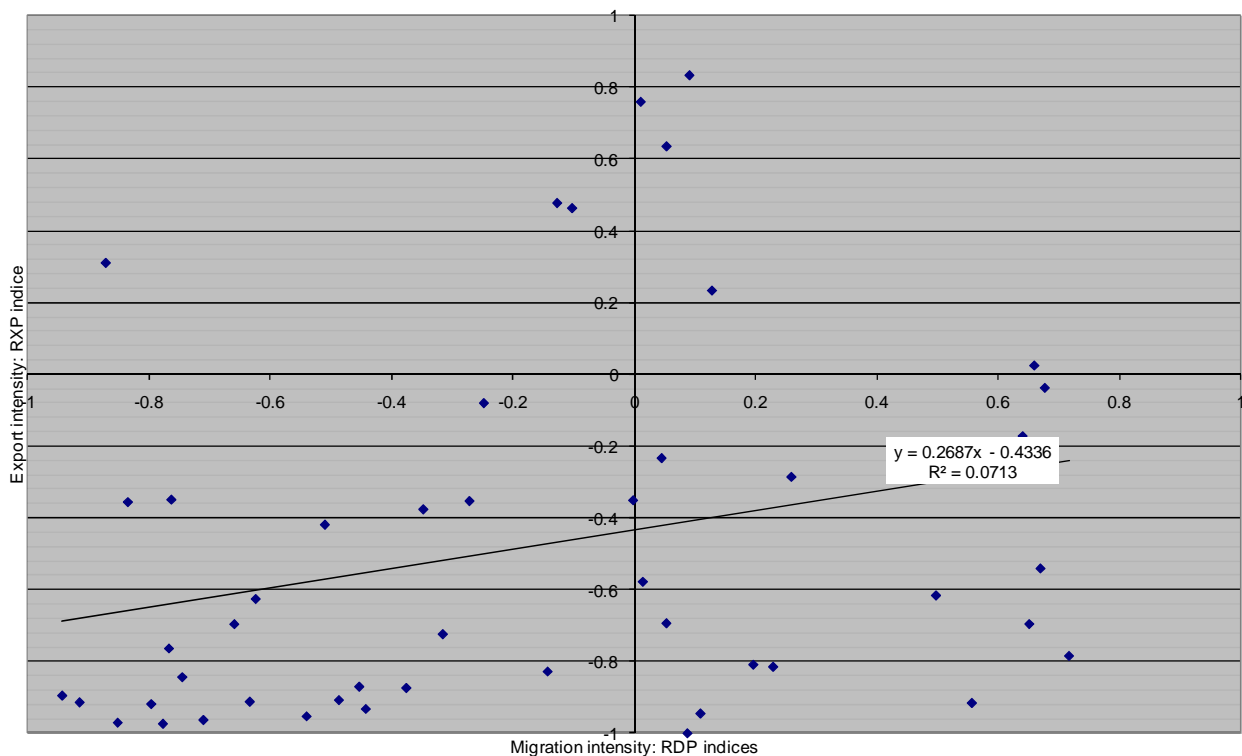
This lack of a significant correlation might be due to the lower density of migratory networks in Southern Italy. Many immigrants reach these regions only as an initial destination and tend subsequently to move into other Italian provinces, where the expected probability to find a job is higher.

Some interesting patterns emerge at a more detailed level of territorial disaggregation. For example, in the case of the former Yugoslavia, it is clear that sharing a common border with some Italian provinces facilitates both migration inflows and exports. Figure 8 shows the intensity of immigration from the former Yugoslavia into the four provinces of the Friuli Venezia Giulia (FVG) region, which is the only Italian region touching Slovenia. Although showing a slight downward trend in the last few years, the RDP indices remain generally very high, particularly in the two small border provinces of Gorizia and Trieste, but relatively less so in the province of Pordenone, which is the only one without an international border.

Figure 8: Intensity of migration inflows from the former Yugoslavia into Friuli - Venezia Giulia provinces
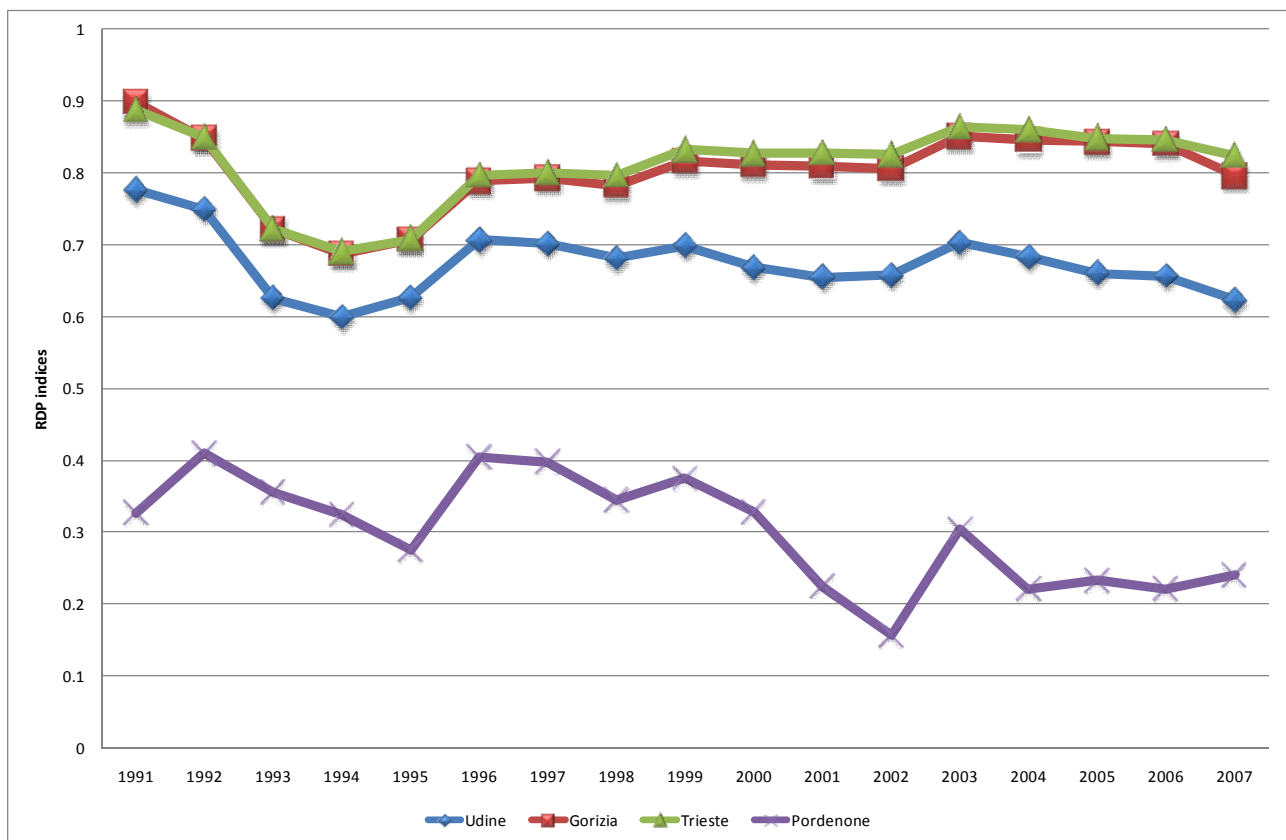
A similar pattern is shown by trade data (figure 9). The intensity of exports to the former Yugoslavia is extremely high in the provinces where the common border with Slovenia is relatively more important. The downward trend shown by the RXP index in all provinces may be traced back to the general increase of the geographic diversification degree of Italian exports, which reflects the progress in international economic integration and represents another dimension of the so-called "extensive margin" of trade. Clearly the trade effects of migration networks, although important, are not enough to counteract this general trend. Anyway, considering the entire 1991-2007 period, the correlation between RDP and RXP indices of the four FVG provinces with the former Yugoslavia is 0.88.

Figure 9: Intensity of exports from Friuli - Venezia Giulia provinces to the former Yugoslavia
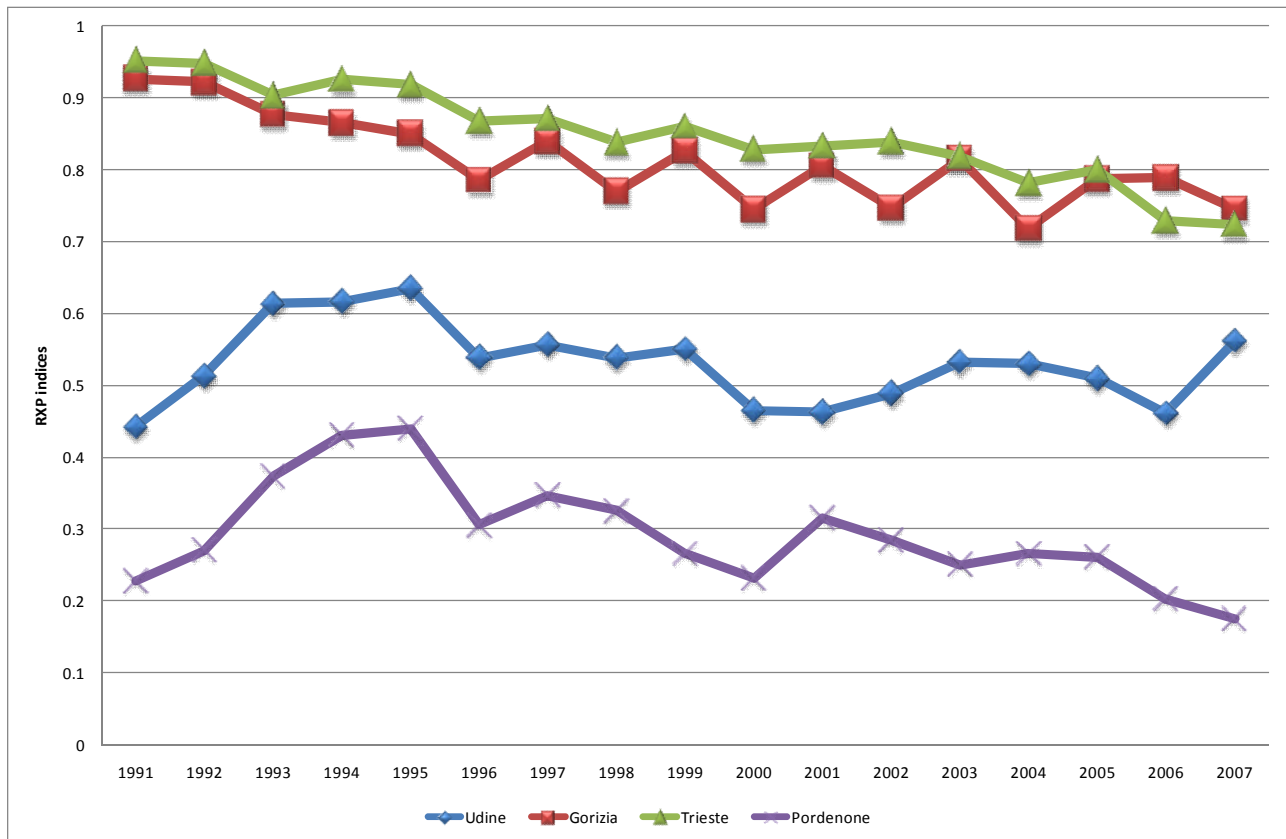
A relatively strong correlation emerges also in other Adriatic regions, such as Abruzzo and Marche, and particularly in Veneto. Harbour infrastructures regularly connected to the former Yugoslavia help explain this pattern.

The case of Albania and Apulia is slightly different. Figure 10 shows that the intensity of migration inflows, although still very strong, has underwent a marked decline in all provinces since the mid-nineties. On the other hand, trade linkages, as measured by the RXP index (figure 11), have been increasing, particularly in the last decade. It might be argued, as already mentioned, that the fall in RDP indices reflects the gradual dispersion of Albanian immigrants entering Apulia throughout the Italian territory, whereas the increase in export intensity could be mainly the result of cross-border outsourcing carried out by Apulia firms in traditional consumption goods. However, the intensification of bilateral trade could also represent, to a certain extent, the effect of migration networks, which have developed more recently with respect to other Italian regions.

Figure 10: Intensity of migration inflows from Albania into Apulia provinces
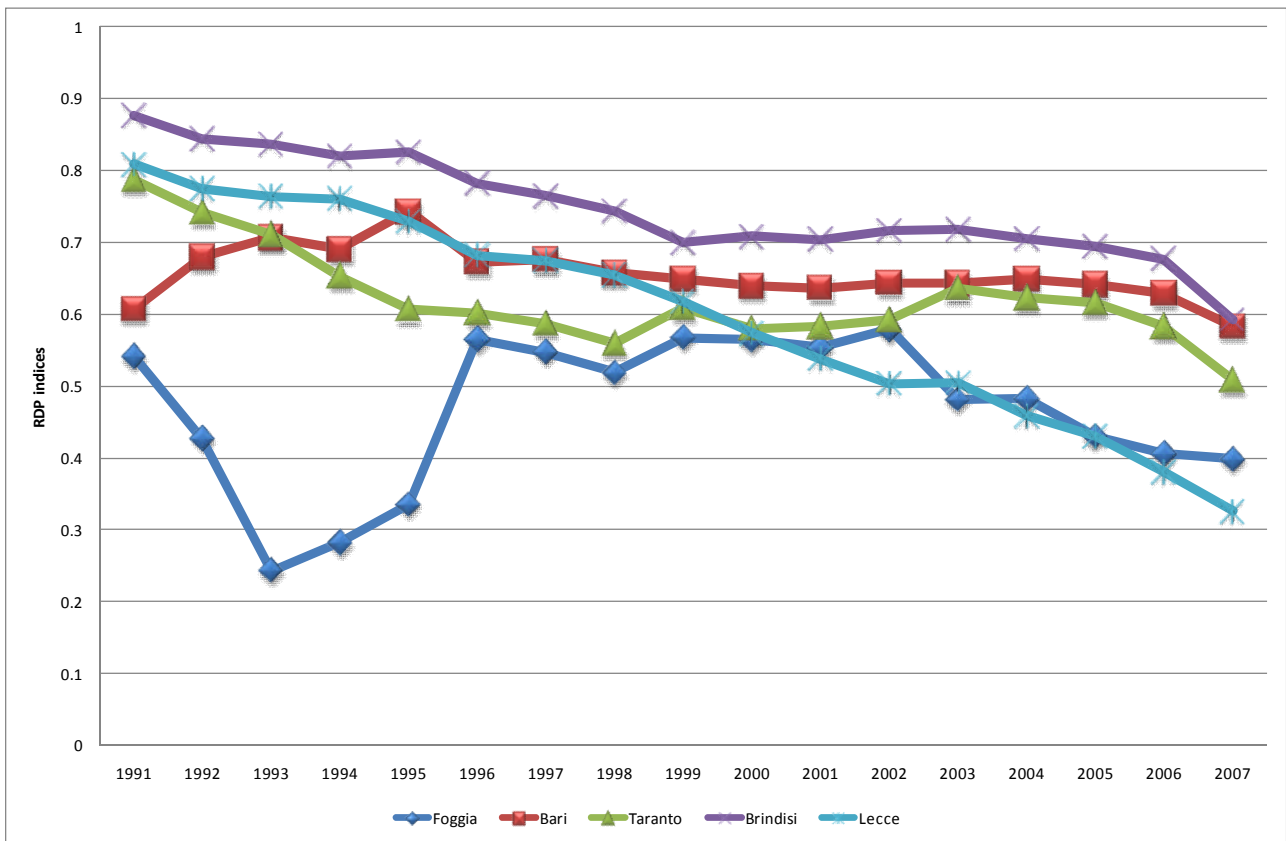

*Figure 11: Intensity of exports from Apulia provinces to Albania*

A similar picture emerges from the relationships between Romania and some Italian provinces (Arezzo, Ascoli Piceno, Macerata, Padova, Terni, Treviso, Verona), where the presence of Romanian immigrants is (or was) relatively more intense. A gradual weakening of RDP indices has been generally accompanied by an increase in export intensity, which could possibly be related to international production fragmentation.

In the case of Tunisia, as expected, the highest combined indices of migration and trade intensity emerge with some provinces of Sicily, particularly Ragusa and Trapani. Both RDP and RXP indices tend to show increasing trends. Similarly to what discussed in the case of the former Yugoslavia, provincial differences in relative proximity to Tunisia seem to exert a strong influence on the intensity of the trade-migration linkage.

A well-known case of a migratory network strongly connected with an Italian industrial district is that of the Chinese community in Prato (Tuscany). In our database, Prato is included in the data of the province of Florence, to which it belonged until 1995. The RDP index remains very high, even if a downward trend is visible since 1999. On the other hand the RXP index, which was strongly negative in the early Nineties, has been gradually rising, reaching a positive level for the first time in 2005 (figure 12). It might be argued that changes induced by the Chinese presence in the structure of the local production system, including the growth of immigrant entrepreneurship often replacing locally-owned firms, is slowly changing the geographic direction of exports from the entire province of Florence. A more detailed analysis of recent data for the province of Prato could be useful to test this hypothesis.

Figure 12: Intensity of migration inflows and exports between the Florence province and China
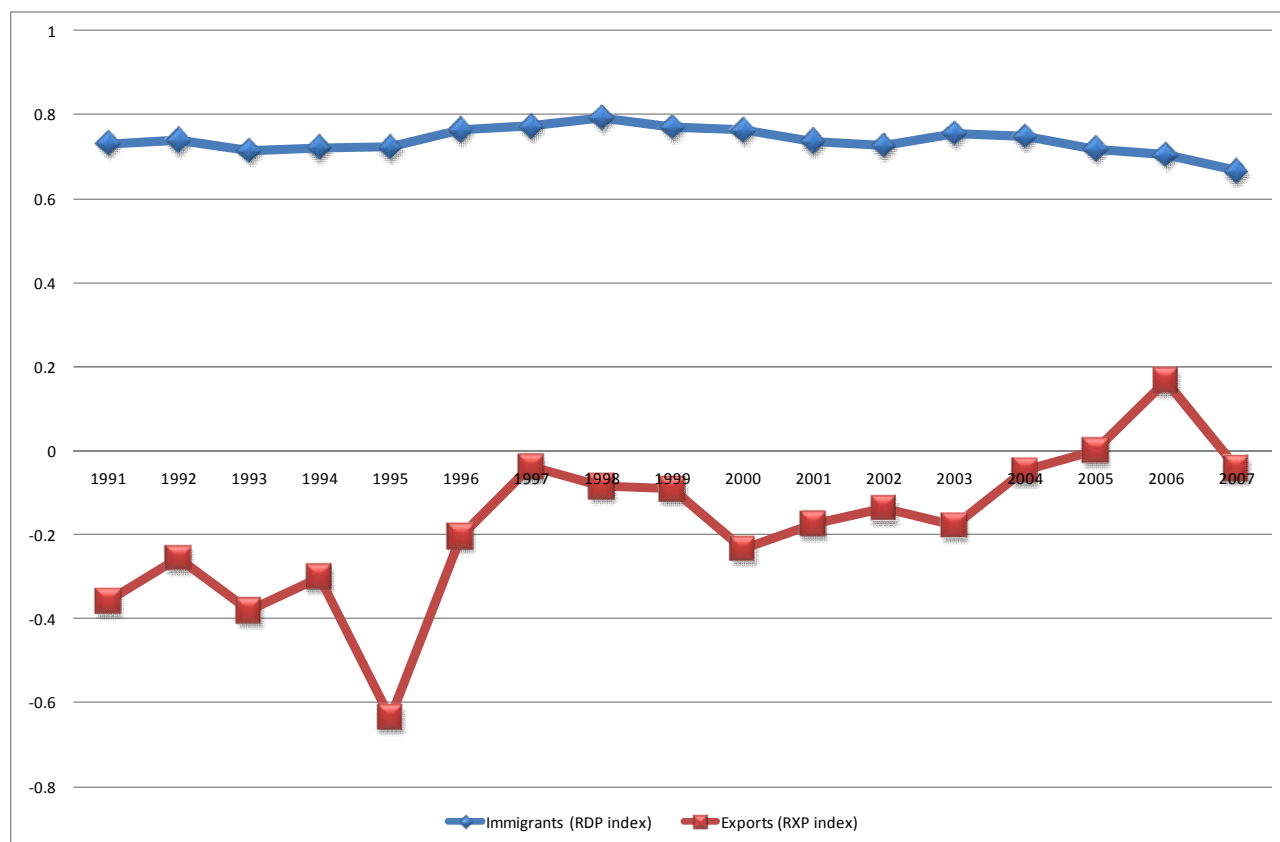
Similar processes could be at work in other Italian provinces, such as Teramo and Avellino, but in general our exploratory analysis does not detect strong signs of a possible immigration-export linkage in the case of China. This is also due to the fact that the provincial distribution of Italian

exports to China is less diversified than towards other markets, as shown by the low average level of the RXP index.

5. Conclusions

Our exploratory study finds some support to the the idea that the gradual development of migrant communities in destination countries leads to an intensification of bilateral trade flows with their origin countries, by lowering the informational and relational costs of establishing new cross-border transactions. From this perspective, migration flows can be seen as a knowledge transmission channel between origin and destination countries. The kind of knowledge circulating through migration networks contains valuable specific information on import and export opportunities. Its diffusion cuts the sunk costs for the firms who want to engage in trade relationships between the two countries, expanding the "extensive margin" of trade.

We have performed this statistical analysis by considering both residence permits and bilateral trade of Italy with origin countries at the provincial level.

Our preliminary results point to a strong nonlinear effect of distance on the trade-migration relationship: closer origin countries seem to experience an appreciable correlation, whereas this is not so for further countries. Broadly speaking, it seems that proximity factors, such as common borders and harbour infrastructures, play a more important role with countries, such as Yugoslavia and Tunisia, for which distance differences across Italian provinces are relatively more pronounced. In other words, when distance is very high, as with China, being located in one or another Italian province does not change significantly trade and migration costs. On the contrary, in the case of South-Eastern Europe, cross-border transactions are more affected by differences in relative proximity across Italian provinces. Migratory networks seem to exert their informational effects on trade more smoothly at a shorter distance, where personal contacts among traders may be exploited more easily. . In other words, the informational advantage that networks of migrants can offer seems to count only when distance is not so large.

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