Migrant Networks: Empirical Implications for the Italian Bilateral Trade

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ABSTRACT   A significant number of empirical studies, focusing on different countries, have found a positive link between migration and trade. This paper studies the relationship between emigration, immigration and trade using Italian data. The sample regards 51 foreign trading partners and spans from 1990 to 2005. The results suggest that networks of Italian emigrants in foreign countries boost bilateral trade. The effects of immigrants are weak on exports and negative on imports. Results do not change when cultural and institutional dissimilarities between countries are considered.

1.   Introduction

A country of huge emigration flows in the past, Italy now is a land of immigration. From 1861 to 1976, approximately one Italian out of four emigrated and the majority settled permanently abroad, principally in other European countries and the Americas (Del Boca & Venturini, 2003; Hatton & Williamson, 1998; Bevilacqua *et al*., 2001; Maddison, 2001). Many of the emigrant communities have maintained strong relations with the home country. These cultural, familiar and socio-economic links have also been reinforced by institutional norms, as

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the Italian law of citizenship, which establishes that the emigrants' offspring are themselves Italian, and by numerous bilateral treaties between the home country and the principal destination countries, which specified various aspects of the emigrants' status in the receiving country (Gabaccia, 2000).

By the mid 1970s Italy had became one of the richest countries in the world. As a consequence, the direction and entity of its migration's flows changed significantly: while the emigration numbers fell abruptly, those of immigration started to rise rapidly. The fewer and more modern emigrants began to include some countries of East Europe, Asia, Africa and the Middle East among their preferred destinations, while the growing flows of immigration originated mainly from the developing countries of North Africa, East Asia and, more recently, Latina America and East Europe. The share of immigrants was about 1.3% of the Italian population in 1990, it was 5% in 2005 and, in the Italian national institute of statistics (ISTAT) projections, it will reach 10% by 2010.

In this paper we investigate whether these immigration and emigration flows have an influence on Italian bilateral trade. This relates to an empirical literature that gives support to the hypothesis that the transnational social and business networks of immigrants have a positive impact on the bilateral trade relations between their countries of origin and of destination (e.g. Gould, 1994; Head & Ries, 1998; Girma & Yu, 2002; Wagner *et al.*, 2002; Herander & Saavedra, 2005; Dunlevy, 2006).

Because of a generalized scarcity of data on emigration, these studies have focused just on the effect of immigrants on bilateral trade flows (an exception is Rauch & Trindade, 2002). However, as we discuss in the next section, a natural interpretation of network theory is that both immigrants and emigrants may affect trade.

Data are available on both the Italian emigration and immigration phenomena, and this makes the wider perspective of this paper feasible. In particular, records of the presence of Italian emigrants worldwide are kept in the Registry of Italians Residing Abroad (AIRE), held by the Italian Ministry of the Interior. This paper is based on these data, as well as on those data on immigration and on the flows of Italian bilateral trade with 51 foreign trading partners. The data span from 1990 to 2005.

In particular, we test whether the effects of emigrants and immigrants networks are statistically significant on Italian exports and imports, taking into account potential endogeneity concerns. Moreover, we ask whether these effects, when present, work through information about economic opportunities abroad and/or preferences for home-country products.

We also test a corollary of the general prediction saying that the information provided by migrant networks is most valuable when referring to more dissimilar economies (Girma & Yu, 2002; Dunlevy, 2006). The underlying presumption is that dissimilarities between countries give rise to informal barriers between them, and hence enhance the value of the information provided by the migrant networks. To this aim, we split the sample into two subsets. One, which is called 'Old Markets,' is composed of the group of countries that have older commercial, political and colonial relations with Italy and, also, share institutional, religious and cultural similarities with it (e.g. many European and American partners).

The other subset, of the 'New Markets,' has opposing characteristics. It mainly includes Asian countries and East European economies. Following the hypothesis on dissimilarity, the migrants' networks related to the New Markets should be those having a higher impact on the Italian bilateral trade.[1]

Our dataset shows that emigrants reside mostly in countries of the Old Markets, while immigrants originate principally from the New Markets. Moreover, Asia and East Europe represent the areas of the world where the Italian trade flows are growing more rapidly. Following the hypothesis on dissimilarity, this evidence suggests that the immigrants' links with the New Markets should have a positive and strong impact on bilateral trade.

Our findings are as follows. At the aggregate level, only the networks of emigrants have a positive and statistically significant impact on Italian trade. Furthermore, this effect works through the information effect and not through the preference channel: emigrants influence trade because of their knowledge on foreign market opportunities, not because of their preference for home-market products. The partition of countries into the New and Old markets does not modify these results and only corroborates the prevalence of the network effects of emigrants. Hence, the hypothesis on dissimilarity does not find econometric support for the case of Italy. More specifically, the emigrants' transnational links matter even for the Old Markets, where, according to the hypothesis, they should be absent or weaker, while those of immigrants are too weak to affect the Italian bilateral trade even for the New Markets, where they should be positive and significant.

The paper is organized as follows. Section 2 discusses the theoretical framework. Section 3 introduces the econometric specifications and the expected signs of the determinants of Italian trade. Section 4 presents the results. Section 5 concludes.

2. Emigrant and Immigrant Networks: Theoretical Framework and Some Stylized Facts

The central hypothesis of the theory of social and business networks is that the transnational links shaped by migrants foster bilateral trade by lowering informal impediments to it. In what follows, we will call it the general *networks effect*. Its relevance has been tested for a number of countries. Gould (1994) has found trade creating effects of immigrants for the United States, Head and Ries (1998) for Canada, Girma and Yu (2002) for the United Kingdom, Rauch and Trindade (2002) for the Chinese communities worldwide and, finally, Wagner *et al.* (2002), Herander and Saavedra (2005) and Dunlevy (2006) have confirmed the positive impact of immigrants at the sub-national level in the international trade of the Canadian provinces and American states.

Most studies distinguish between two main channels through which the networks effect is supposed to work. The first is the *information effect*. It consists of a reduction of the information costs and uncertainty that characterize economic

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[1]The complete list of countries defining the Old and New Markets is given in Table 7.

interactions in international markets. Migrants are able to provide information about business opportunities, the bureaucratic and commercial environments of potential trading partners and their reputations. The second is the *preference effect* taking place through the diffusion of preferences: immigrants in a country increase imports from their country of origin due to their taste for products from home.

The predictions of network theory have been tested for a variety of countries, but, with the exception of Rauch and Trindade (2002), they have been focused on just one side of the phenomenon: immigration. This can be due to a generalized scarcity of databases on countries' emigration flows and on the final destinations of expatriates, but a natural interpretation of the theory is that both kinds of communities, immigrants as well as emigrants, may influence the countries' bilateral trade flows. There are available data for both the Italian emigration and immigration in Italy and this makes the wider perspective of this paper feasible.

When both emigrants and immigrants are taken into consideration, as they are in this paper, then the separated and potentially different effects of their networks on a country's bilateral trade can be analysed. Differences in their effects can depend on various reasons. For example, emigrants and immigrants can be connected to different sets of countries, with characteristics that affect the value of their transnational ties. In Rauch and Casella (2002), this value relates to differences in the relative resource endowments of countries, in Girma and Yu (2002) and Dunlevy (2006) it is a positive function of differences in culture and institutions. The underlying hypothesis is that more dissimilar countries are separated by higher informal barriers, and higher barriers make the information conveyed by the migrant networks more valuable. Another possibility is that the bulk of emigration and immigration have occurred in different historical periods, and time may affect the strength of the ties with the country of origin. Gould (1994) hypothesises that time has a negative effect on ethnic links, Rauch (2003) sees time as a factor that may cause a decay on diasporas' ties. Other elements of differentiation may be related to the characteristics of the goods traded, or to those of the individuals belonging to each set of networks.[2]

The raw data on Italian emigration and on immigration in Italy shows that there is only a minor overlap between the distributions of the two phenomena over time and space. This reinforces the substantial independence between the two variables. In particular, the geographic separation makes the analysis in terms of the characteristics of countries sensible. To control how each group affects trade in relation to the economies they are tied to, we will focus on differences between countries in terms of culture and institutions. For example, Girma and Yu (2002) and Dunlevy (2006) have found that the subsets of immigrants related to more dissimilar countries have a higher impact on exports in the UK and USA.

In our paper, when splitting the data on emigrants and on immigrants in relation to the similarity of countries, we can expect two kinds of results. First we should

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[2]If emigrants or immigrants affect differently the trade of differentiated and homogenous goods then, following Rauch and Trindade (2002) and Rauch and Casella (2002) they should have a different impact on trade. Also individuals' characteristics, such as skills or level of education, can affect trade differently.

find a positive and higher impact of both subsets of emigrants and immigrants related to the more dissimilar countries. Second, the impact of the group with a geographic distribution more biased towards the more dissimilar countries should be stronger.[3]

To test these points, we separate the set of countries into two groups. We call *Old Markets* those countries that have traded since olden times with Italy, have been Italian colonies in the past, or share with the country more institutional and cultural factors. To this group belong members of the European Union, some Scandinavian economies, North and South American countries and, finally, Libya, which has been an Italian colony. The *New Markets* have the opposite features and, mostly, are composed by Asian, African and East European countries. The latter, in particular, have only recently started to trade into the world markets, and consequently do not belong to the group of Italy's historic trade partners. More generally, the overall information possessed abroad on their economies' potential is still scant, and this adds to any cultural or institutional difference separating them from Italy and other foreign partners.

A variety of indicators measure the degree of institutional and cultural similarity of the New and Old Markets with Italy. In particular, the indexes contained in Kaufmann *et al*. (1999) are used as proxies for the 'quality of institutions.' The first six rows of Table 1 concern these indexes. Higher values of the coefficients are associated with more effective institutions.[4] The first and the second columns of Table 1 confirm that the Old Markets have a higher degree of similarity with Italy than the New Markets. The second set of indicators indicates the average percentage of Christians in the total population of each country and the presence of Italian schools.[5] The latter are a proxy for the diffusion of the Italian language and culture in foreign countries (the three rows from below in Table 1). Also in this case, the figures of the first two columns are more similar to each other than to those of the third: Italy and the Old Markets are closer in terms of culture and institutions than they are to the New Markets.

Rows 1 and 2 of Table 2 show that Italy trades more with the Old Markets, to which most of its similar and oldest trade partners belong. However, trade is gradually shifting toward the New Markets: the flows with the latter are growing more rapidly than those with the Old Markets (rows 3 and 4). This is not surprising, considering that the same phenomenon is taking place in the majority of the developed countries.

More interestingly, row 5 of Table 2 shows that the Italian emigration is highly concentrated into the group of similar countries, the Old Markets, concerning

[3]The geographic distribution of each group is, of course, not static. The empirical analysis of the subsequent sections will take into account the time variation of trade and migration in relation to the two sets of countries.
[4]Index values are positive functions of civil liberties, political rights, independence of the media, political stability, quality of bureaucracy, the supply of public services, effectiveness and predictability of judiciary institutions and enforceability of contracts, and negative functions of regulatory burdens on foreign trade and business development and corruption.
[5]'Christianity' includes a variety of religions, which are listed in the footnote of Table 1. Italian schools, expressed in absolute numbers and as a percentage of the total population of each country, are those officially recognized by the Italian state.

Table 1. Institutions and culture: Old and New Markets

Variables	Italy	Old Markets*	New Markets**
Institutions			
Voice and accountability (a)	1.05	0.40	0.04
Political instability and violence (b)	0.26	0.23	−0.08*
Government effectiveness (c)	0.84	0.60	0.12
Regulatory burden (d)	0.89	0.46	0.12
Rule of law (e)	0.78	0.53	0.05
Corruption (f)	0.68	0.60	0.02
Culture			
Christians on population	0.95	0.81	0.31
Number of Italian schools		323	47
Share of schools on population (millions)		0.35	0.08

Notes: *, **A detailed list of the countries belonging to each group is in Table 7.

a, b, c, d, e, f are the (cross-sectional and time series) averages of six standardized indicators provided by Kaufmann *et al*. (1999). Each original indicators is expressed in terms of deviations from its own mean: greater values are associated to greater effectiveness of institutions. The values in this table (averages) also have the same meaning. The negative value (*) is associated to greater political instability. 'Christians' includes Roman Catholics, Greek Catholics, Protestants, Anglicans, Lutherans, Orthodox, and other Christians. Italian Schools includes Dante Alighieri and other Italian Schools. Further details on these variables in Table 8.

Table 2. Trade and migration: Old and New Markets

Variables	24 Old Markets*	27 New Markets**
Trade		
Exports ($ mill.)	13.909	3.665
Imports ($ mill.)	13.337	4.253
Exports growth#	0.8	2.7
Imports growth #	0.6	3.1
Migration		
Emigrants (stocks)	33.895	419
Immigrants (stocks)	3.478	13.350
Emigrant growth#	350	1128
Immigrant growth#	80	981

Notes: *, **A detailed list of the countries belonging to each group is in Table 7.
percentage increase between 2005 and 1990.

mostly the Western areas of the world. The average presence of Italians in the Old Markets is 80 times higher than in the New Markets. The former have been the traditional destinations of the historical Italian emigration: the data also show that the very recent emigration is gradually shifting toward the New Markets, which include most of the emerging world economies.[6]

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[6]The AIRE dataset spans from 1990 to 2005, but a substantial part of the entries corresponds to emigrants of the second or even third generation, which are concentrated into the Old Markets. These registrations are a consequence of the Italian law of citizenship. In addition, entries in the Old Markets are concentrated in the very initial years of the registry's existence (since 1990) and then grow very slowly, while the opposite happens with the entries of the New Markets.

Immigration, on the other hand, originates mostly from the New Markets. This is shown in row 6 of Table 2. The average number of immigrants originating from countries of the New Markets is four times higher that the number originating from the Old Markets. More significantly, row 8 of Table 2 shows that the immigration from the New Markets is increasing very rapidly. Since 1990, it has increased tenfold, while that from the Old Markets has increased by less than double. In sum, Table 2 shows that trade is concentrated into the Old Markets but is shifting toward the New Markets and, also, that emigration and immigration are independent phenomena, with distinct geographical distributions and evolutions in history.

3.   Empirical Model

In this section, we estimate a gravity model of trade augmented by both the emigration and immigration variables to assess the links between migration and bilateral trade flows between Italy and 51 foreign countries in the period 1990–2005.

The specification used by the empirical literature on trade and migration, based on an 'augmented' version of the 'gravity model' (e.g. Bergstrand 1985, 1989 on gravity; Gould, 1994; Head & Ries 1998; Rauch & Trindade 2002; Girma & Yu 2002; Dunlevy 2006 on migration and trade) is: $Y_{it} = (X_{it}, IMMI_{it})$, where the Y_{it} is the home exports of goods (or imports from) to foreign country i at time t, X_{it} is a vector of explanatory variables influencing the bilateral trade between home country and foreign country i, (e.g. tariff rates and transportation costs, differences in factor endowments, populations, languages, institutions) and $IMMI_{it}$, represents the immigrants from foreign country i to the home country.

In particular, we use distance to capture the time and costs of trading, the GDP terms to represent countries' demand and supply, the GDP deflators to capture substitution effects, populations to express market sizes, the stock of Italian emigrants in country i and the stock of immigrants from country i to Italy.

The model to be estimated is:

$$Y_{it} = a + \alpha_1 GDP_{it} + \alpha_2 DEFL_{it} + \alpha_3 POP_{it} + \alpha_4 GDP_{ITt}, + \alpha_5 DEFL_{ITt}$$
$$+ \alpha_6 POP_{ITt} + \alpha_7 DIST_{it} + \alpha_8 EMI_{it} + \alpha_9 IMMI_{it} + \alpha_{10} D_{EU}$$
$$+ \alpha_{11} D_{NM} + u_{it} \tag{1}$$

where $i = 1, \ldots, 51$ (countries) and $t = 1990, 1995, 2000, 2005$. Variables, except dummy variables, are in natural logs. Specifically, Y_{it}: volume of Italian exports or imports, GDP_{it}, GDP_{ITt}: foreign country and Italian GDP; $DEFL_{it}$, $DEFL_{ITt}$: foreign country and Italian deflators; POP_{it}, POP_{ITt}: foreign country and Italian populations; $DIST_{it}$: the great circle distance from the capital city in country i and Rome (km); EM_{ITt}: stock of emigrants from Italy to country I; IM_{it}: stock of immigrants in Italy from country I; D_{EU}: European Union dummy, equal to 1 when a country is in the European Union from the 1990s; D_{NM}: New Markets dummy, equal to 1 when a country in the sample belongs to the 'new markets' group (for example Asia, East Europe); D_{OM}: Old Markets dummy, equal to

1 when a country in the sample represents an old market (for example Latin America, EU (except Ireland), USA, Japan, Australia).[7]

Italy has always traded with all the countries analysed during the sample period. Hence, unlike Head and Ries (1998) and Eaton and Tamura (1994), we use pooled OLS rather than Tobit estimation. Further details on databases and sources are given in Table 8, later.

The expected signs of the gravity model are as follows. Distance has a negative effect on trade (both exports and imports), because the overall transaction costs of bilateral trade (given by formal and informal barriers to trade, and transportation costs) generally increase with distance. The importing country's GDP should have a positive effect on bilateral trade (foreign GDP for the export equation and Italian GDP for the import equation). The signs of the coefficient of the population variables are a priori ambiguous. They depend on which effect, market size or specialization, prevails when the size of population varies. The signs of the coefficients of the deflators are also influenced by different factors. However, under the normal hypothesis of the elasticity of the trading countries' aggregate demand and supply, the deflator of the foreign country can be expected to have a positive effect on the export equation and a negative effect on the import equation of the home country, while the coefficients of the home country deflators are expected to have the opposite signs.[8]

As said in the previous paragraph, the theory of transnational networks predicts a positive effect of migrants on bilateral trade. This is the *network effect*. It works through two main channels. One concerns information, migrants may be in a better position than other people to conduct trade with their country of origin or of destination because of the information they posses, they have deeper knowledge of business opportunities, the bureaucratic and commercial environments of potential trading partners and their reputations. This leads to the *information effect*. The other channel determines a *preference effect*: migrants increase trade from their countries of origin because of their taste for goods from their home countries.

If there is a positive relationship between migration and bilateral trade flows, indicating a network effect, the coefficients of emigration and immigration variables, α_8 and α_9, should have positive signs. The information effect should have a positive influence on both imports and exports, while the preferences of immigrants for home goods should positively affect imports and the preferences of emigrants should positively affect exports. Hence, the coefficient of the immigrant variable is expected to be higher in the import equation, and the coefficient of the emigrant variable is expected to be higher in the export equation.[9]

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[7]For a detailed account of the countries belonging to the EU, New and Old Markets see Table 8.

[8]See Gould (1994) for a more complete discussion on the expected signs; in particular, on the sign of population it is stated that: '[h]ome country and [partner country] populations are not signed because market size can have a negative effect on trade if economies of scale are present or a positive effect if a larger population allows for more specialization though a greater division of labor,' p. 309. Among others, also Frankel (1997) and Hutchinson (2005) include both GDP and population as proxies for market size in the specification of the estimation equations.

[9]The results of previous studies are not conclusive in this respect, on this point see Wagner *et al.* (2002).

The impact of networks on bilateral trade can marginally decrease with the size of migrant stocks and with the passage of time. A generally accepted explanation is that the interactions between the members of networks become more difficult and information circulates less easily as their numbers increase (Gould, 1994). In addition, ties with the country of origin can become weaker, and the information about business opportunities conveyed by migrants can be less valuable, as the time of migration extends farther into the past. As in Rauch and Trindade (2002), we control for the size effect by adding the squared variable to the regression. If the impact of networks is positive but marginally decreasing in size, the expected signs of coefficients are, in turn, positive for the stock variable and negative for the squared variable. Time will be explicitly considered in section 4.2.

The model includes observations on the Italian GDP and on the Italian deflator and population, which do not vary across trading partners but only over time,[10] and hence, we do not jointly utilize time dummies capturing unobservable time heterogeneity.

Unlike Gould (1994) and Head and Ries (1998), we do not include the lagged dependent variable among the regressors. Given the time dimension of our data, a five-year lag in exports and imports would not be meaningful in accounting for possible decision, production and delivery lags.

The prevalent cross-sectional nature of our data prevents a direct test of the hypothesis that the causality runs from migrants to trade. However, we exclude the potential endogeneity of the networks with respect to trade by evaluating a model where emigrants and immigrants are replaced by lagged pre-determined regressors.[11]

With the purpose of avoiding potential multicollinearity with the distance variable, which changes across trading partners but not over time, we do not use country-specific dummies. A related reason is that these dummies would cancel from our data all of the between-country heterogeneity in trade and migrations: the object of this study. Moreover they are scarcely significant. Instead, we include the specific fixed-effect dummies, D_{EU} and D_{NM}, which are meant to capture the different propensities of the Italian economy to trade with these geographic areas. The dummy D_{EU} (European Union) is used to control for the common market effect, while the dummy D_{NM} (New Markets) groups the 27 new trading partners discussed above.

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[10] We have also estimated the models reported in this paper, for both the export and import equations, by using country specific dummies and/or time dummies. However, the explanatory power of these dummies is always low.

[11] Empirical studies of networks generally assume that the direction of causality runs from immigration to trade. More generally, by focusing on immigration from developing economies, the literature partially excludes a problem of endogeneity: developed countries have binding quotas that make migration much more of an exogenously determined variable than trade flows. Besides, studies on migration suggest that individual migration decisions are primarily determined by wage differentials and the size of the existing migrant community, rather than the size of bilateral trade flows. On the other hand, these specifications apply less to migrants from a developed country. Hence, in principle, their decisions to migrate might be influenced by trade. However, IV estimation by using lagged migrant flows as instruments reinforce the hypothesis of causality from migration to trade.

After testing the main prediction of the theory about the trade effect of networks we are interested in testing the corollary that the information conveyed by migrants is most valuable when referring to the most dissimilar economies (Girma & Yu, 2002; Dunlevy, 2006). To this purpose, it is useful to use the geographic differentiation of the set of countries between Old and New Markets that has been developed in the previous paragraph.

To check for the potentially dissimilar effects of emigrants and immigrants in the two world areas, the stocks of emigrants and immigrants are disaggregated by multiplying them by the two dummies D_{NM} and D_{OM}. This allows the elasticity of the coefficients of the two variables to vary across the two groups of countries. For this purpose, the specification of the model is modified as follows:

$$Y_{it} = a + \alpha_1 GDP_{it} + \alpha_2 DEFL_{it} + \alpha_3 POP_{it} + \alpha_4 GDP_{ITt}, + \alpha_5 DEFL_{ITt}$$
$$+ \alpha_6 POP_{ITt} + \alpha_7 DIST_{it} + \alpha_8 EMI_{it*}D_{NM} + \alpha_9 EMI_{it*}D_{OM}$$
$$+ \alpha_{10} IMMI_{it}{}^* D_{NM} + \alpha_{11} IMMI_{it*}D_{OM} + \alpha_{12}D_{EU} + \alpha_{13}D_{NM} + u_{it} \quad (2)$$

The parameters α_8, and α_9 represent different elasticities on bilateral trade of Italian emigrants in the New and Old Markets, while α_{10}, and α_{11} represent different elasticities of immigrants in the New and the Old Markets.

As we have seen in Table 2, the average presence of emigrants in the New Markets is 80 times lower than in the Old Markets, while immigrants originate principally in the New Markets. Moreover, the Old Market economies share in common many institutional and cultural characteristics with Italy, while the New Markets are dissimilar in many respects. Taking into consideration these factors, the expected signs both for export and import are as follows.

If the trade effect of migrants mainly depends on the transmission of information and this, in turn, is related to the size of the networks, then the coefficient of the variable emigrants Old Markets should be positive and higher than the coefficient of the variable emigrants New Markets: $\alpha_9 > \alpha_8$. For the same reasons, the coefficient of the immigrants New Markets should be positive and higher than the coefficient of immigrants Old Markets: $\alpha_{10} > \alpha_{11}$.

On the other hand, if the value of the information transmitted is more related to its content than to the size of the networks, then the expected direction of the inequality between the coefficients on emigrants will change. The relation should be $\alpha_9 < \alpha_8$: the coefficient of the variable emigrants New Markets should be higher (or more significant) than the coefficient of the variable emigrants Old Markets.

4. Regressions Results

4.1 *Key Findings*

Tables 3 and 4 show the estimation results for the exports and imports equations respectively. Different specifications are reported to test for different hypotheses. In all cases, the explanatory power of the regressions is very high: in the export

Table 3. Export equation. Pooled regressions, 1990–2005

Explanatory variables	Model I	Model II	Model III♦	Model IV	Model V	Model VI
Intercept	−107.836 (−1.32)	−126.407 (−1.55)	−51.42 (−0.62); [−0.59]	−30.77 (−0.36)	242.141 (1.49)	−44.425 (−0.52)
Foreign-country GDP	0.691*** (16.19)	0.656*** (14.79)	0.661***,+++ (15.15), [14.17]	0.665*** (15.51)	0.643*** (14.29)	0.66*** (2.37)
Foreign-country deflator	0.302* (1.72)	0.338* (1.95)	0.336**, ++ (1.99) [2.40]	0.351** (2.05)	0.317* (1.95)	0.328* (1.92)
Foreign-country population	−0.078 (−1.60)	−0.058 (−1.20)	−0.079*, + (−1.67), [−1.70]	−0.094** (−2.08)	−0.033 (−0.66)	−0.080* (−1.67)
Italian GDP	0.046* (1.71)	0.060** (2.24)	0.061**,+ (2.35), [1.94]	0.063** (2.39)	0.062** (2.27)	0.062** (2.37)
Italian deflator	−0.302 (−0.38)	−0.104 (−0.41)	−0.112 (−0.45), [−0.44]	−0.090 (−0.36)	0.277 (0.93)	−0.106 (−0.43)
Italian population	5.936 (1.28)	6.94 (1.51)	2.72 (0.59), [0.56]	1.565 (0.33)	−13.78 (−1.04)	2.328 (0.49)
Distance	−0.640*** (−13.10)	−0.601*** (−11.99)	−0.579***,+++ (−11.60), [−11.09]	−0.565*** (−11.36)	−0.627*** (−11.74)	−0.581*** (−11.56)
Emigrants	0.079*** (3.99)	0.071*** (3.58)	0.129***,+++ (5.03), [4.69]			0.156*** (2.065)
Immigrants	0.012 (0.36)	0.016 (0.49)	−0.002 (−0.88), [−0.82]			−0.003 (−0.083)
Lagged Emigrants					0.124*** (4.64)	
Lagged Immigrants					−0.014 (−0.39)	
Squared Emigrants						−0.0017 (−0.38)
Emigrants Old Markets				0.134*** (4.54)		
Emigrants New Markets				0.123*** (4.09)		
Immigrants Old Markets				0.004 (0.12)		
Immigrants New Markets				0.024 (0.75)		
Dummy EU (1990)		0.260** (2.46)	0.356***,+++ (3.34), [2.79]	0.36*** (3.19)	0.261** (2.32)	0.354*** (3.28)
Dummy New Markets			0.412***,+++ (3.44), [3.18]	0.37*** (2.74)	0.430*** (3.36)	0.419*** (3.44)
Adjusted R^2	0.846	0.850	0.8585	0.8580	0.865	0.857
Observations	204	204	204	204	153	204

Notes: ♦ optimal model; *** 1%, ** 5%, * 10% significant level based on (*t*-values);

+ + + 1%, ++ 5%, + 10% significant level based on [*t*-values] – heteroskedasticity robust standard errors.

Testing restriction in model IV, H_0: Emigrants Old Markets = Emigrants New Markets, $F(1, 190) = 0.12$, *p*-value = 0.72;

Testing restriction in model VI, H_0: Squared Emigrants = 0, $F(1, 191) = 0.12$, *p*-value = 0.72.

Table 4. Import equation. Pooled regressions, 1990–2005

Explanatory variables	Model I	Model II	Model III♦	Model IV	Model V	Model VI
Intercept	−302.972** (−2.67)	−323.77*** (−2.87)	−275.59***,++ (−2.36); [−2.20]	−243.03** (−2.04)	−146.91 (−0.63)	−266.26** (−2.22)
Foreign-country GDP	0.601*** (10.24)	0.562*** (9.17)	0.567***,+++ (9.27); [10.48]	0.576*** (9.51)	0.572*** (8.82)	0.570*** (9.21)
Foreign-country deflator	−0.760*** (−3.15)	−0.719*** (−2.99)	−0.72,***,++, (−3.01); [−2.85]	−0.674*** (−2.77)	−0.753*** (−3.23)	−0.731*** (−3.02)
Foreign-country population	0.087 (1.30)	0.108 (1.61)	0.094 (1.40); [1.58]	0.072** (1.12)	0.148* (2.01)	0.094 (1.40)
Italian GDP	−0.009 (−0.25)	0.007 (0.19)	0.008 (0.21); [0.30]	0.008 (0.23)	−0.0006 (−0.15)	0.008 (0.23)
Italian deflator	0.601* (1.70)	0.595* (1.69)	0.590*,+ (1.69); [1.67]	0.565 (1.62)	0.918** (2.15)	0.598* (1.71)
Italian population	17.04*** (2.67)	18.18*** (2.86)	15.47***, ++ (2.35); 2.19	13.64* (1.82)	6.865 (0.52)	14.94** (2.21)
Distance	−0.742*** (−11.03)	−0.69*** (−9.89)	−0.683***, +++ (−9.66); [−9.86]	−0.673** (−10.02)	−0.77*** (−10.03)	−0.686** (−9.63)
Emigrants	0.091*** (3.31)	0.082*** (2.96)	0.119***, +++ (3.27); [2.74]			0.155 (1.45)
Immigrants	−0.092** (−2.01)	−0.088* (−1.92)	−0.100**, ++ (−2.17); [−2.18]			−0.100** (−2.16)
Squared Emigrants						−0.002 (−0.35)
Lagged Emigrants					0.097*** (2.52)	
Lagged Immigrants					−0.133** (−2.53)	
Emigrants Old Markets				0.123** (2.25)		
Emigrants New Markets				0.115** (2.17)		
Immigrants Old Markets				−0.089** (−1.99)		
Immigrants New Markets				−0.057^ (−1.50)		
Dummy EU (1990)		0.29** (1.99)	0.355**,+++ (2.34); [2.74]	0.330* (1.83)	0.255 (1.57)	0.349** (2.28)
Dummy New Markets			0.269 (1.56);[1.08]	0.14 (0.45)	0.247 (1.34)	0.270 (1.57)
Adjusted R^2	0.728	0.732	0.735	0.735	0.746	0.733
Observations	204	204	204	204	153	204

Notes: ♦ optimal model; *** 1%, ** 5%, * 10% significant level based on (*t*-values);
+ + + 1%, ++ 5%, + 10% significant level based on [*t*-values] – heteroskedasticity robust standard errors.
Testing restriction in Model IV, H₀: Emigrants Old Markets = Emigrants New Markets, $F(1, 190) = 0.032$, *p*-value = 0.85;
H₀: Immigrants Old Markets = Immigrants New Markets, $F(1, 190) = 0.68$, *p*-value = 0.40.
Testing restriction in model VI, H₀: Squared Emigrants = 0, $F(1, 191) = 0.14$, *p*-value = 0.70.

or non-significant coefficients in the two equations exclude a networks' effect of immigrants on trade.

As said previously, the network effect of migrants can be disaggregated into a preference and an information effect. If the preference effect of emigrants for home goods influences Italian exports, the coefficient of the variable emigrants should be higher in the export rather than in the import equation. Our findings, in Tables 3 and 4, are not consistent with this expectation: the difference between the two coefficients is not significant. However, this result should not be surprising. In previous works, from Gould (1994) to more recent studies, the preference effect has been conceived as an 'ethnic' component of the foreign demand of a country's products. While it can have some weight on a developing country's exports, it should not be expected to be significant for the exports of a developed economy, which, in a very significant proportion, are composed of goods produced for international rather than ethnic tastes.

Considering Model III in Tables 3 and 4, the final results are that a 10% increase in the stock of emigrants increases Italian exports by 1.3% and imports by 1.2% (positive trade effects), while a 10% increase in the stock of immigrants reduces the Italian imports by 1% (trade-substitution effect).[13]

We control for the direction of causality from migrations to trade assumed in this paper. To this aim we substitute the contemporary stocks of migrants by lagged emigrants and immigrants. In this way, these lagged variables are predetermined with respect to trade (see Model V in Tables 1 and 2). Despite the fact that the experiment is especially relevant for emigrants, the estimation reveals that the impacts on trade of both immigrants and emigrants do not change with the inclusion of the predetermined variables, hence migrations determine trade and not vice versa.[14]

Now, we test the hypothesis that the positive impact of emigrants on bilateral trade can marginally decrease with the size of the stock of emigrant networks and with time (see Model VI in Tables 3 and 4).[15] The coefficient of the stock of emigrants remains positive and significant in both the export and the import equations, while, as expected, the coefficient of the squared variable is negative, but it is not significant (also see the test in the Table notes). This suggests that the networks of Italian emigrants have an impact on trade that does not tend to decrease significantly with size and time.[16] Model IV illustrates the results of the disaggregation of the variables emigrants and immigrants for the two world

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[13]We also perform a sensitivity analysis to check for the robustness of the estimated elasticities of emigrants and immigrants to the inclusion of other potential determinants of trade: foreign direct investment (inward and outward), the number of Italian schools and of Italian entrepreneurs in the foreign countries. The dimension and significance level of the coefficients of the migrant networks are similar to those of the previous estimates. These results are available on request.

[14]Gould (1994) and Dunlevy and Hutchinson (2001) perform Granger causality tests finding that immigration precedes trade for most of the US's trading partners. We cannot perform these analyses because of the short span of our time series data.

[15]We perform the test only on emigrants because this is the only variable with a positive and significant coefficient.

[16]This result differs from Rauch and Trindade (2002), where the coefficient of the squared variable of ethnic Chinese immigrants is negative and significant.

areas, the New and the Old Markets (Tables 3 and 4) and for the two equations, exports and imports. This is useful to control for whether the migrant links with the New Markets have a higher impact on bilateral trade because of the extra information they convey.

Regarding immigrants, the disaggregation confirms the results obtained above: both groups have a negative impact on trade, which is significant only in the imports equation. Therefore, contrary to the expectations based on the hypothesis of Girma and Yu (2002), even the immigration originating in the more dissimilar economies, the New Markets, has a negative impact on import flows: the potential links that these immigrants establish is not strong enough to compensate for the negative or not significant effect that they seem to have on trade. More generally, it is not possible to reject the hypothesis that the effects on trade of these two different immigrants' stocks do not differ (see the linear restrictions reported in the notes of Table 4).

Again, relatively to emigrants, the disaggregation shows that the two coefficients are not significantly different (see the linear restrictions in the Table notes), but the meaning of this result is different from above. While it confirmed the absence of an effect of immigrants, relatively to emigrants it bears the opposite implication. The result shows that the emigrants' impact on bilateral trade is positive and robust to the division of the sample into the two subsets, one of similar and one of dissimilar countries, one with a large stock of emigrants, the other with a very reduced stock. The outcome is in contrast with Girma and Yu (2002) and Dunlevy (2002): the more marked dissimilarity of one subset of countries does not add value to the information conveyed by the networks related to those countries.[17]

4.2 *Checking for Changes in the Coefficients of Migrant Variables Over Time*

We now investigate possible changes over time of the estimated coefficients of our variables of interest. Specifically, we estimate four cross-section regressions, regarding the years 1990, 1995, 2000, 2005. Moreover, we also estimate a pooled

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[17] A frequently tested implication of network theory concerns the types of goods traded in the international markets (e.g. Gould 1994; Head & Ries 1998; Rauch & Trindade 2002). It is hypothesized that the value of the information provided is higher for differentiated compared with homogeneous goods (Rauch, 2001). To control for these aspects, we have separated the Italian bilateral trade flows into two main groups, one including differentiated manufactures and the other non-differentiated manufactures and other goods. The proportion of differentiated goods over the whole of bilateral trade with the Old Markets is 62%, while this share is 52% for the New Markets (ISTAT, COMTRADE). The lack of statistical differentiation between the coefficients of the variable emigrants in the Old and New Markets suggests that this differentiation is not relevant for our analysis. Another implication of network theory is that transnational links are more easily established by skilled migrants. The proportions of the stock of emigrants of people holding a tertiary degree and of entrepreneurs are both clearly higher in the New Markets than in the Old. In particular, the percentage of emigrants with tertiary education in the New Markets is 7.3% versus 2.4% in the Old Markets, while the share of entrepreneurs is 20% in the New versus 5.7% in the Old Markets (AIRE). Again, the two coefficients are not statistically different and the hypothesis is not supported by Italian data.

Table 5. Export equation – Changes over time of the coefficients of emigrants and immigrants

Explanatory variables	Pooled regression with time dummies 1990–2005	Cross section regression 1990	Cross section regression 1995	Cross section regression 2000	Cross section regression 2005
Emigrants	0.128***	0.121*	0.161***	0.133***	0.09*
	(3.50)	(1.89)	(3.34)	(2.75)	(1.83)
Immigrants	−0.0012	−0.049	−0.094	−0.023	0.035
	(−0.028)	(−0.64)	(−1.39)	(−0.335)	(0.52)
Time dummy 1	−0.89				
	(−0.71)				
Time dummy 2	0.07				
	(0.85)				
Time dummy 3	−0.01				
	(−0.28)				
Adjusted R^2	0.86	0.81	0.88	0.85	0.85
Observations	204	51	51	51	51

Notes: ***1%, **5%, *10% significant level based on (*t*-values) based on heteroskedasticity robust standard errors. The above regressions have been run for all the explanatory variables of Model III♦ in Table 3. Complete results are available upon request.

regression over the period 1990–2000 augmented by time dummies for each period. Although the estimation regressions have been run for all the explanatory variables of the gravity model (Models III of Tables 3 and 4), to be concise only the estimated coefficients of emigrants and immigrants are reported in Tables 5 and 6. These tables show that in all cases the explanatory power of the regressions is very high: in the exports equations, the adjusted R^2 ranges from 0.81 to 0.88, while in the imports equation it varies from 0.69 to 0.76.

For exports, results of the cross-section regressions show that the coefficients of emigrants are always significant and do not change substantially over time, they range from 0.9 to 0.16. In the pooled regression, the time dummies are not significant and the coefficient of the effect of emigrants on exports is 0.129, as in Model III of Table 3. For imports, the cross-section regressions reveal that the values of the coefficients of emigrants have decreased since year 2000. This diminished impact of emigrants on imports could be explained by the observed shifting over time of trade volumes from the Old to the New Markets, or, in other words, from the areas of emigration to those of immigration. In fact, the negative influence of immigration also loses significance since 2000.

In sum, this investigation on the time variations of the effects of our main variables of interest confirms that the effects of emigrants on trade are robust, especially on exports, and shows that the negative impact of immigration on imports tends to vanish over time.[18]

[18]We thank an anonymous referee for useful suggestions on this point.

Table 6. Import equation. Changes over time of the coefficients of emigrants and immigrants

Explanatory variables	Pooled regression with time dummies 1990–2005	Cross section regression 1990	Cross section regression 1995	Cross section regression 2000	Cross section regression 2005
Emigrants	0.118#	0.181**	0.192**	0.053	0.007
	(1.60)	(2.0)	(2.40)	(0.62)	(0.09)
Immigrants	−0.098#	−0.214**	−0.292***	−0.048	−0.015
	(−1.62)	(−2.1)	(−3.3)	(−0.71)	(−0.17)
Time dummy 1	−0.54***				
	(−2.85)				
Time dummy 2	−0.31**				
	(−2.58)				
Time dummy 3	−0.38***				
	(−4.16)				
Adjusted R^2	0.74	0.69	0.76	0.74	0.71
Observations	204	51	51	51	51

Notes: ***1%, **5%, *10% significant level based on (*t*-values) based on heteroskedasticity robust standard errors. The above regressions have been run for all the explanatory variables of Model III♦ in Table 4. Complete results are available upon request.

Table 7. Sample of countries and regional dummies

Countries		
Albania #	Malaysia #	Hungary #
Algeria #	Morocco #	Ireland*
Argentina	Mexico	Venezuela
Australia	Norway	
Austria	Netherlands*	
Brazil	Philippines #	
Bulgaria #	Poland #	
Canada	Portugal*	
Chile	UK*	
China #	Czech Rep. #	
South Korea #	South Africa	
Croatia #	Romania #	
Denmark*	Russia #	
Egypt #	Singapore #	
France*	Slovakia #	
Germany*	Slovenia #	
Japan #	Spain*	
Greece*	USA	
India #	Sweden*	
Indonesia #	Switzerland	
Iran #	Thailand #	
Israel #	Tunisia #	
Libya	Turkey #	
Luxembourg*	Ukraine #	

Notes: *denotes EU member countries in the 1990; # denotes countries included in the New Markets Dummy variable.

Table 8. Data and sources

Data	Source
Gross Domestic Product: current prices, US billion dollars	*World Economic Outlook 2006*, International Monetary Found. Available online at http://www.imf.org/external/pubs/ft/weo/2006/01/data/dbcdatm.cfm
Gross Domestic Product Deflator: index	*World Economic Outlook 2006*, International Monetary Found
Population	Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, 2005. *World Population Prospects: The 2004 Revision*. Dataset on CD-ROM. New York: United Nations. Available online at http://www.un.org/esa/population/publications/WPP2004/wpp2004.htm
Distance	The great circle distance in km between capital cities. Available online at http://www.wcrl.ars.usda.gov/cec/java/lat-long.htm
Italian emigrants: stocks	AIRE (Anagrafe Italiani Residenti all'Estero); emigrants registered at AIRE database from 1990 to 2005
Immigrants: stocks	ISTAT, migration trends and foreign population, ISTAT annuals on line; "Foreign presence in Italia: social – demographical characteristics; residence permits on 1st January of the year"
Exports: current prices, US million dollars	ISTAT, Coeweb – statistics on the international trade
Imports: current prices, US million dollars	ISTAT, Coeweb – statistics on the international trade. Values in current million dollars
Foreign direct investment inward and outward: current prices, US million dollars	OECD International Direct Investment Statistics International direct investment by country *Vol. 2005 release 01*
Italian Schools: total number of Dante Aligheri and other Italian Schools	• Dante Alighieri schools – http://www.scuoladantealighieri.org/ • Italian schools – list published by the Italian Foreign Ministry on www.esteri.it
Christians: % of Christians (Roman Catholics, Greek Catholics, Protestants, Anglicans, Lutherans, Orthodox and other Christians) on population	*The World Factbook*, Central Intelligence Agency

5. Conclusions

To our knowledge, this paper is the first empirical study of the relationship between emigration, immigration and Italian trade. We have focused on Italy because it represents a country characterized by important outflows and inflows of population and by a marked geographic and historical separation between the two phenomena.

The main prediction of network theory is that migrations can have a positive effect on bilateral trade flows. Our findings are that emigrants have a significant and robust effect on bilateral trade, especially on exports. Emigrants affect trade because of their knowledge on foreign market opportunities, not because of their preference for home-market products. We also find that the networks of immigrants in Italy are too weak to significantly affect the exports to their countries of origin and to compensate for the negative relation with the imports from them revealed by the estimates. These main results are confirmed when time dummies are included into the regressions and when the data are split in four subsequent time periods: emigrants have a strong influence on the country's bilateral trade, especially on exports, while that of immigrants remains non-significant or negative.

The geographical division of the world into two main areas – one consisting of countries that are culturally and institutionally similar to Italy and are know by Italian firms, the other by dissimilar and less explored economies – does not modify significantly these findings. The networks of emigrants influence trade flows with the known and similar countries, where ties could count less, and also with newer and dissimilar trade partners, where links should be more important, but the presence of emigrants is scant. The latter are, instead, the countries from which most of the immigration in Italy originates. However, even the impact on trade of immigrants originating from these areas remains weak or negative.

These results show that the Italian emigrants' communities maintain robust ties with their country of origin that do not seem to decay with time or be weakened by countries' similarities. They suggest that entrepreneurs and economic agents in Italy prefer to interact with their nationals abroad rather than with immigrants, even when the information potentially supplied by the latter could be economically more valuable. This may be related to the Italian economic structure, characterized by a small average size of firms and low-skill intensive sectors of specialization. A further investigation on these topics may help to shed light on the role of emigrants in facilitating trade and on the apparently absent effects of immigrants.

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