How does immigration affect native internal mobility? New evidence from Italy

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Abstract. This paper investigates the relationship between native internal mobility and immigrant inflows in Italy. This analysis is aimed at better understanding the impact of immigration on local labour markets and at valuing the consequences in terms of socio-demographic composition of local population. Native mobility is examined through both residential displacements across regions and demographic evolution of local labour markets. Endogeneity issues related to immigrant geographical distribution are addressed using both the existence of previous enclaves and the proximity to "gateways" as instruments. We find that immigrant inflows are positively associated to inflows of high-educated natives suggesting the existence of potential complementarities. The impact is concentrated on the young adults and it is higher in more urbanized areas. We also find a modest displacement of low-educated natives; in particular, immigrant concentration in the northern regions seems to have substituted the South-North mobility of less-skilled natives.

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1. Introduction

The aim of the present paper is to investigate the relationship between immigrant inflows and location choices of natives. It is worth noting that we look at mobility *between* labour markets and not *within*, say, a city. The latter is related to phenomena like urban segregation, rising of ghettos and the so-called white flight in metropolitan areas (Cutler *et al.*, 1999; Card *et al.*, 2007). Indeed, focusing on mobility between labour markets we put more emphasis on the externalities in production and on the effects on local labour force composition.

Most of the empirical studies regarding the labour market impact of immigration exploit the geographic clustering of immigrants. In these studies, a measure of native outcomes (e.g. wage) in a locality is usually regressed on the stock of immigrants in that locality. One important drawback of these "spatial correlations" is that labour markets are assumed to be closed, thus ignoring potential selective out-migration and in-migration of natives in response to immigrant inflows from abroad. Our scope is to examine this type of labour market adjustment to immigration in Italy. The empirical findings can be interpreted in both negative and positive terms: on one hand, they cast doubts on spatial correlation exercises if the selective migration of natives is observed to be at work; on the other, they enable us to test, to some extent, whether natives and immigrants are complements looking at what they express "with their feet".

Examining the link between immigration and location choices of natives is interesting also for socio-demographic issues, especially considering the human capital content of migration flows and the consequences in terms of ageing of the population. Therefore, we will investigate the geographical relocation of labour inputs and how immigration affects the human capital composition and the age structure of the local labour force.

Previous works on the relationship between native internal mobility and immigration inflows find conflicting results. In the 90s this was a topic in literature on demography and on economic geography. Frey (1996) reports a strong correlation between immigrant inflows and native outflows in US metropolitan areas, and he argues that this behaviour was leading to a "demographic balkanization". In contrast, Wright *et al.* (1997) show that immigrant inflows are unrelated to native outflows in

large metropolitan areas.[1] More recently labour economists have entered this field. Card and DiNardo (2000) find that an increases in immigrant population in specific skill groups lead to small increases in the population of native-born individuals of the same skill group; Card (2001) shows that inflows of new immigrants to cities did not generate large offsetting mobility flows by natives. In contrast, Borjas *et al.* (1997) report a strong negative correlation between native net migration and immigration by states; Borjas (2006) finds that immigration is associated with lower in-migration rates, higher out-migration rates, and a decline in the growth rate of the native workforce. Hatton and Tani (2005), examining the relationship between immigration and interregional mobility in Britain, find a negative displacement effect.

We investigate the impact of immigration on natives' location choices in Italy through two empirical exercises. In the first, we use data on the interregional migration of natives drawn from the General Population Register (GPR) and we examine how they respond to immigrant inflows. In the second, we use census data on the population growth of Local Labour Markets (LLMs) and we examine how it is related to immigration growth. Identifying the effects of immigration on natives' location choices is particularly challenging since the location of immigrants is itself the outcome of an economic decision. To address the endogeneity issue we rely on two instrumental variables. The first exploits the tendency of newly arriving immigrants to settle in places where previous immigrants of the same country already live. The second uses the distance between localities and the gateway through which immigrants enter Italy as exogenous determinant of their distribution over the territory.

We find that immigration has a negligible impact on overall native mobility while it does have a significant impact on its skill composition. Immigrant inflows lead to a modest displacement of low-educated natives; in particular, immigrant clusterization in the northern regions seems to have substituted South-North mobility flows of less skilled natives. In contrast, immigrant inflows are positively associated to high-educated native inflows. The impact is concentrated on young population and it is somewhat stronger in more urbanized areas. Yet it is not obvious how to interpret these results. If we consider the arguments in the labour literature, we should read these findings as evidence of substitutions effect for low-educated natives and of complementarities for high-educated ones. However, the impact of

[1] See also Filer (1992), Walker *et al.* (1992) and Kritz and Gurak (2001).

immigration on natives' location choices might work also through other channels such as the residential market and the preferences for ethnic composition of the local context. However, we include house prices in the regressions to control for the effects through the housing market; concerning "racial" preferences, they are likely to affect neighbourhood choice within a city rather than displacements across regions. Therefore, we argue that our estimates can be reasonably interpreted as the result of the interaction between immigrants and natives in the labour market.

Our empirical work adds to the existing literature in several dimensions. First, Italy represents an interesting case of study from an institutional point of view. Most of the existing empirical literature concerns the U.S. whereas we provide evidence on a country that is traditionally characterized by the presence of powerful trade unions, centralised bargaining, and a strong regulation of the labour market in general. Therefore it is reasonable to expect that adjustments to labour shocks occur more on the quantity side rather than on wages. Second, the analysis of interregional mobility is close to that of Hatton and Tani (2005) although our data present several advantages with respect to theirs. The most important is that native flows can be disaggregated by educational level, age and gender. Thus we can take account of individual heterogeneity in migration choices and estimate the response of specific groups to immigrant inflows. We also distinguish between push and pull effects. Third, with respect to previous analysis we provide evidence based on different partition of the territory in order to strengthen our results when a different definition of local labour market is adopted. The use of two different instrumental variables, in turn, is aimed at enhancing the reliability of the results because endogeneity biases are particularly severe when one analyzes the link between the location choices of natives and immigrants. Finally, we contribute to the literature on internal migration, putting emphasis on immigration as a further driving force in local labour force adjustments.[2]

The rest of the paper is structured as follows. In section 2 we present some theoretical arguments on the relationship between immigration and natives' location choices. In section 3 we provide a descriptive evidence of immigration in Italy. In section 4 we examine the impact of immigrant inflows on the interregional mobility of natives. In section 5 we analyze the effect of immigration growth on the demographic dynamic of LLMs. In section 6 we briefly report our conclusions.

[2] See Faini *et al.* (1997) for a critical analysis of labour mobility in Italy. See Mocetti and Porello (2009) for more recent evidence.

2. The impact of immigration on native mobility

The literature on migration has been traditionally focused on the impact on wages or employment opportunities of natives. The usual assumption is that the entry of immigrants into the labour market of a certain area should lower the wage of competing workers (workers who have the same type of skills), and increase the wage of complementary workers (workers whose skills become more valuable due to immigration). Yet the empirical evidences show that these effects are small and often not significant.[3] A drawback of many of these studies is that selective out-migration by natives may cancel out the immigrant inflows; that is, if the arrival of one unskilled immigrant leads one unskilled native to leave then immigrant inflows will have no detectable impact on local labour supply (thus, on wages). As a result, a comparison of the wages of native workers across regions with different incidence of immigrants might show little or no difference because the effects of immigration are diffused throughout the national economy, and not because immigration had no economic effects (Borjas, 2003).

In the present paper we examine whether this kind of labour market adjustment is at work in Italy. If so, this casts some doubts on spatial correlation exercises. However, the analysis of native location choices in response to immigrant inflows can still provide some evidence interpretable in terms of complementarities and substitution effects. After all, from Harris and Todaro (1970) on, migration decisions are motivated by expected earnings differentials, i.e. the wage differential between home and destination regions, adjusted for the probability of finding employment. Thus, if immigration impacts on natives' labour market opportunities in home and destination region then it also impacts on their migration decisions. In this framework, if we observe that a larger fraction of foreign-born people in a labour market is associated with higher out-flows (and/or lower in-flows) of natives, this means that immigrants compete with natives. If the opposite is true then foreigner workers and natives are complements.

Whether immigration harms, improves or has no effect on natives' labour opportunities is a complex issue. Potential complementarities between immigrants and more skilled native are intuitive.[4] Immigrants can fill manual and low-skilled

[3] Card (1990) is probably the most known article on this topic. See Okkerse (2008) and the works cited therein for a review of the literature.
[4] See Ottaviano and Peri (2005) for an analysis of complementarities between immigrants and natives.

jobs thus allowing more educated natives to specialize in producing goods and services that better suit their competencies. A higher supply of immigrants is also likely to require workers in jobs where they perform supervisory, training, and coordinating tasks. Furthermore, high skilled natives may pay less for the services that unskilled immigrants provide – painting houses, caring for old people and/or young children, etc. The relationship between immigrants and low-skilled natives also seems obvious. They belong to the same skill group and compete for the same jobs; therefore, negative displacement effects are expected. However, in a segmented labour market the substitutability between immigrants and less skilled natives can be far from perfect. Immigrants undertake jobs which natives refuse, and if these jobs address specific labour shortages, new employment opportunities for natives can become available (Gavosto *et al.*, 1999). The high supply of immigrants might also convince firms not to outsource abroad, thus increasing again local employment opportunities. Finally, the presence of new foreign workers implies a higher demand for consumption and services, so that immigration might simply increase total production and labour demand without any displacement effect.

However, immigrant inflows may also affect natives' location choices through other channels. The two most obvious are the impact on the residential market and the preferences for ethnic composition of one's place of residence. Saiz (2007) find that immigration is associated with an increase in rents and housing values in U.S. destination cities. If the same is true for Italy, then immigration might hamper mobility inflows through higher house prices. Native mobility choices can also be affected by personal attitudes toward immigrants (Mayda, 2006). Individuals might prefer to live in neighbourhoods with lower concentrations of immigrants and modify their location choice accordingly – a sort of "decentralized racism" in the definition of Cutler *et al.* (1999). There is no way to properly identify these separate effects. However, we include house prices in some specifications thus controlling for the effect through the residential market. As far individual attitudes towards immigrants, they are likely to affect neighbourhood choice and not displacement across distant local labour markets. Therefore the impact through racial preferences is arguably negligible as far as mobility between labour markets is concerned. It is also worth noticing that both the effect through the residential market and that through individual preference for one's neighbourhoods imply a negative relationship between immigration and native inflows. Therefore, if any, our estimates represent a sort of lowerbound to complementarities in the labour market.

3. Immigrants in Italy

Italy has been a country of emigration for a long time. However, in the last decades the flow has reversed and it has reached a positive migration balance. Starting from the second half of the 90s Italy and Spain have become prime destinations in the EU (see Table 1). The percentage of foreign-born individuals increased from less than 1 percent at the beginning of the 90s to about 6 percent in 2008.[5] In all areas of the country, immigration has contributed significantly to population growth. However, the growth intensity of the population and its driving factors are appreciably different across areas (see Table 2). Between 1995 and 2005, the population growth was 5 percent in the Centre-North and only 0.4 percent in the South. In the Centre-North, more than 90 percent of population growth is attributable to immigrants, and about one third to internal native mobility; on the contrary, the contribution of the natural balance was negative. The southern regions are characterized by strong internal migration towards the most developed areas of the country and a lack of attractiveness to immigration from abroad; the positive contribution of the natural balance has kept broadly unchanged the level of the population.

Looking at the distribution of immigrants by source country two main features arise. First, Italy is characterized by a high degree of ethnic fractionalization, though it has weakened across time. In 2006 the first 10 countries represent slightly more than half of the total number of immigrants (see Table 3). This is partly due to the great exposure of Italy towards the main international migration routes (see more on this below). Second, the composition of immigrants by source countries has greatly changed. With the exception of Morocco, the ranking of the first 5 countries is now different from that of 1991. The incidence of immigrants from Middle and Eastern Europe increased from around 10 percent at the beginning of the 90s to more than 40 percent in 2005; during the same period, the fraction of immigrants from Africa has decreased from 35 to 23 percent (see Figure 1). Generally speaking, in the past the international migration flows were mainly in the direction South-North. During the 90s, with the fall of communist regimes in Central and Eastern Europe, the

[5] During this period Italy implemented several regularizations that gave irregular immigrants the possibility to obtain a residence permit. The regularizations of 1995, 1998 and 2002 involved about 246, 217 and 700 thousands individuals, respectively.

dissolution of former Yugoslavia and the Soviet Union, and the EU enlargement process, intra-European East-West migrations have become predominant.

We believe that the (exogenous) variation in the composition of immigrants affected their geographical distribution over the territory. In Figure 2 we report the distribution of immigrants across provinces in 1991 and 2005. In 1991 the incidence of immigrants was relatively homogenous across provinces and there was not a clear territorial pattern. If any, immigrants tend to be relatively more concentrated in some southern provinces and in the North-West. In 2005 the North-South divide is noticeable and immigrants tend to be more clustered in the North-East. In these 15 years there was not any economic shock that can account alone for these different patterns. Looking for an explanation we investigate the geographical distribution of immigrants by source country. We build a concentration index obtained as the ratio between the fraction of immigrants of nationality *n* who live in province *i* and the fraction of all immigrants living in that province. For a sample of countries from each continent, we report in Figure 3 a graphical representation of this index. The chosen countries are Albania, Former Yugoslavia (Bosnia, Croatia, Macedonia, Serbia-Montenegro, Slovenia), Indian subcontinent (Bangladesh, India, Sri Lanka, Pakistan), Ecuador and Peru from South America and Tunisia. Moreover, we calculate the same index for 1990 and 2005. From these evidences two main facts arise. First, for each country of immigration the distribution across provinces is relatively stable across years. Second, the geographic clusterization is greatly differentiated by country. The concentration of Albanians is relatively higher in Apulia, the closest region from a geographical point of view. People from the Balkans are more concentrated in the North-East and in the provinces along the Adriatic Sea. Migrants from Indian subcontinent are clustered in metropolitan provinces and in the coastal provinces of Sicily, Calabria and Apulia. People from Ecuador and Peru are relatively more concentrated in Liguria. Finally, migrants from Tunisia (and more generally, from Africa) are clustered in the southern regions (especially in Sicily). This sketched representation of the distribution of immigrants over the territory clearly shows that their location choices are not driven only by local economic conditions, but that previous enclaves and proximity to the frontiers (that, in turn, are differentiated by countries and migration trajectories) play a key role. Therefore, it is likely that the shift in the ethnic composition of immigrant inflows has affected the distribution of immigrants over the territory. We will exploit these features to address endogeneity in the empirical section.

In table 4, we report occupation and sector distribution of natives and immigrants by educational level. Nearly half of foreign workers are low educated – with at most lower secondary education. However, the occupation and sector distribution of immigrants is not markedly different by educational level, contrarily to what happens for natives. Four immigrants out of five are blue-collar workers; they work in the industry and construction sectors and usually take jobs avoided by natives (e.g. low paid household and other service jobs). Moreover, they are usually employed in occupations that are lower ranked, in terms of skill content and wages, than native born workers with the same level of education.[6] Therefore immigrants, almost independently from their educational level, stay at the bottom of the employment ladder.

4. Analysis of the interregional flows

In this section we examine the impact of immigration on native interregional displacements. Our empirical strategy follows Hatton and Tani (2005).

4.1 Data and empirical approach

Data on native internal migration are drawn from the GPR.[7] Internal migration is defined as the residential move that occurs when a native changes his place of residence within the same country (about 2 percent of the population each year). In the empirical analysis we refer to displacements across Italian regions. We restrict the sample to Italian citizens thus excluding the mobility of previous immigrants. Interregional moves are further distinguished by socio-demographic characteristics. Namely, we consider three educational level (at most compulsory school, upper secondary school and university degree), two age brackets (young, between 15 and 45, and old, with more than 45) and gender. The knowledge of these individual characteristics allows us to take account of individual heterogeneity in migration choices and to look for a differential impact of immigration depending on the socio-economic group which natives belong to. We refer to the period 1995-2005 for

[6] See also Brandolini *et al.* (2005) and Münz (2007).

[7] This measure of residential mobility should be accompanied by two main caveats. First, there may be a time lag between the actual migration and its registration. Second, it does not take into account all the possible types of regional mobility. For example, some people may transfer to another municipality without formalizing it at the register offices.

reason of data availability. This provides us with a perfectly balanced panel with more than 50,000 observations.

Perhaps the most striking feature of internal mobility in Italy is the persistent net outflow from the South to the Centre-North. This flow was significant during the 1960's, when a considerable number of people were leaving the southern regions in favour of the northern (more developed) regions. The phenomenon lost strength in the 70's and in the 80's. In the middle of the 90s the migration flows from the South started to grow again, attracting new attention from researchers. In the 1995-2005 period, the net native migration rate was positive in all central and northern regions and negative in those of the South (see Figure 4). The highest net rate is recorded in Emilia-Romagna, with 4.7 persons per 1,000 inhabitants, per year. With respect to the past, the (human capital) composition of native migrants is changed since the fraction of those with a university degree has increased substantially. Considering high-educated natives, the southern regions loss was even more intense. The lowest net rates are recorded in Basilicata, Apulia, Calabria and Campania, with values ranging from -6.3 to -8.8 graduates per 1,000 inhabitants with the same educational level. From a microeconomic point of view, young adults and highly educated are the most mobile groups; no significant differences arise between males and females.[8]

Data on immigrants are drawn from the Ministry of the Interior and they refer to the number of residence permits.[9] Evidence on the presence of immigrants in Italy is reported in the previous section and we will not provide further details in the following. Other explanatory variables are used to control for further factors that may affect our outcomes of interest. The unemployment rate and GDP per worker are the covariates traditionally used in the literature as main determinants of the migrations flows. They measure the job opportunities in a region and clearly affect the expected income. The cost of houses is introduced since it reasonably "deflates" the income prospect in a region. See Table 5 (panel *A*) for descriptive statistics.

The equation to be estimated is:

[8] See Mocetti and Porello (2009) for a detailed description of recent internal migration in Italy.

[9] Residence permits refer only to regular immigrants. To find some evidence on irregular immigrants we use data from regularization acts. They provide snapshot on the irregular component of immigration since these acts provide a clear incentive to report one's status. We find that irregularity rate varies by regions and by years; however, when we include regions and years fixed effects, regular and irregular immigrants tend to vary one-to-one. Therefore, regular immigrants are a reliable proxy of total immigrants in our empirical framework (see section 4.2).

$$m_{ijkt} = \beta_1 IMM_{ijt} + \beta_2 UNR_{ijkt} + \beta_3 GDP_{ijt} + \beta_4 HOUSE_{ijt} + FE_{ijk} + D_t + \mu_{ijkt} \qquad (1)$$

where the dependent variable represents the net migration rate between regions *i* and *j*, of individuals with characteristics *k* at time *t*.[10] IMM_{ijt} is the incidence of immigration; UNR_{ijkt} is the unemployment rate of individuals with characteristics *k*; GDP_{ijt} is the GDP per worker; and $HOUSE_{ijt}$ is the house price. All the covariates are expressed as differences between region *i* and *j*. To avoid simultaneity effect and to account for information on which natives base their decisions to moves, we relate *current* migration flows to *lagged* values for all the explanatory variables. Panel analysis allows us to control for fixed effects varying by origin-destination pairs and characteristics *k*. Finally, we include year dummies (D_t) to take out the effects of economy-wide conditions on internal mobility.

4.2 Endogeneity

Research on the impact of immigration on location decisions of natives presents several challenges. First, there are a number of possible omitted variables that makes it difficult to isolate the effect of immigration on natives from other related phenomena. Expectations of future economic growth and occupational opportunities, and improved available amenities might attract both immigrants and natives. If this was the case, the estimates of the relation between immigrants' and natives' inflows are *upward* biased. However, local demand shocks not observed by the researcher could work in opposite directions for immigrants and natives. There might be an increase in the demand for jobs that attract immigrants and are avoided by natives (e.g. domestic services, construction) and, together, economic slowdown in sectors traditionally filled by natives. In this case the estimated impact of immigration on native mobility is *downward* biased. Moreover, the bias should be more severe for natives whose degree of substitutability is lower, i.e. who work in sectors markedly different from those of immigrants. Finally, it is also possible, although less likely, that a reverse relationship is at work. That is, immigrants go where natives' outflows are larger.

[10] Net migration is the difference between inflows and outflows of natives with characteristics *k* between regions *i* and *j*. Characteristics *k* include educational level, age and gender. Net migration rate is calculated by dividing net migration by half the combined populations (with the corresponding characteristics) of the sending and destination region, and multiplying the resulting figure by 1,000.

To address the endogeneity issue we should use variation in immigration inflows that is plausibly exogenous to the evolution of native internal migration. To this scope we rely on two instrumental variables.

The first instrument exploits the supply-push component of the immigrant inflows and the tendency of newly arriving immigrants to settle in places where previous immigrants from the same country already live (Card and DiNardo, 2000; Card, 2001).[11] For each source country of immigration, we calculate the fraction of immigrants living in region *i* in 1990, the first year for which this information is available. We apply these weights to "distribute" new immigrant inflows from each country into regions for our period of interest. Formally:

$$\overline{IMM}_{it} = \sum_{n=1}^{N} \delta_{ni} \cdot IMM_{nt} \qquad (2)$$

where δ_{ni} measures the fraction of immigrants from country *n* that are settled in region *i* in 1990, and IMM_{nt} represents the number of immigrants from country *n* at time *t* in Italy.[12] The validity of this instrument relies on the assumption that first settlements are observed with a sufficient lag and local economic shocks are not too persistent over time.

A further approach is to exploit the geographical exposure of Italy to international migration flows in order to build an alternative instrumental variable. Specifically, we use the distance between each province and the gateway through which immigrants enter Italy. Angrist and Kugler (2003) and Ottaviano and Peri (2005 and 2006) use a similar approach. Unlike these papers, we consider all the main countries of immigration to Italy and we differentiate them by entry. Assumptions on migration trajectories and the gateways used to enter Italy are based on: *i*) geographical reasons, especially for those countries that are close to the Italian borders; *ii*) a survey among immigrants in which they declare the frontier used to

[11] The instrument is motivated by a study of Bartel (1989) who first shows that settlement patterns of previous immigrants are a main determinant of immigrants' location choices. Existing networks of previous migrants might ease the arrival of newcomers in several ways: they provide information about the job opportunities; they may help them in finding jobs and/or an apartment; they also provide an existing social network, with individuals sharing the same cultural and linguistic background.

[12] We consider the first 30 countries in terms of residence permits (excluding countries from Western Europe and North America). They are in alphabetical order: Albania, Algeria, Argentina, Bangladesh, Bosnia, Brazil, Bulgaria, China, Colombia, Croatia, Dominican Republic, Ecuador, Egypt, Philippines, Ghana, India, Macedonia, Morocco, Moldavia, Nigeria, Pakistan, Peru, Poland, Romania, Russia, Senegal, Serbia, Sri Lanka, Tunisia, and Ukraine. Notice that data for Bosnia, Croatia and Ukraine are available starting from 1992, for Macedonia from 1993. In 2005, immigrants coming from these 30 countries represent about 82 percent of Italian residence permits.

enter Italy (ISMU); *iii*) information on migration routes gathered from official reports by the Ministry of the Interior and field studies like Monzini *et al.* (2004) and European Migration Network (2005). To avoid making the section any longer, we will refer to the box "Migrants' trajectories and gateways to Italy" in the Appendix for a complete description. In the following we describe how the second instrument is obtained:

$$\overline{\overline{IMM}}_{it} = \sum_{n=1}^{N} dist_{ni}\lambda_{nt} \qquad (3)$$

where $dist_{ni}$ is the distance between locality i and the gateway through which immigrants from country n enter Italy; λ_{nt} is a weight varying by source country of immigration and year, used as aggregating rule for distances.[13] In Table 6 we examine the strength of this instrument. We have regressed the (log of the) number of immigrants by country n in province i at time t on a full set of fixed effects and the distance between that province and the port of entry of those immigrants and we find that the coefficient of distance is highly significant. As far as the validity of the instrument is concerned, we are confident to have isolated the "exogenous" component of immigrants' location choices since distance from the gateways is clearly unrelated to current economic conditions.

We use two instrumental variables because «getting similar results from alternative instruments enhances the credibility of instrumental variable estimates» (Murray, 2006). Besides, the joint use of more instruments reduces the loss of efficiency (of IV estimates with respect to OLS estimates) and allows testing their validity.

4.3 Results

As a general strategy, we run the regressions on all, low- and high-educated natives to consider overall and differential effects of immigration on natives, depending on the skill group they belong to. In Table 7 panel *A*, we report OLS estimates; in panel *B*, *C* and *D* we report IV estimates.

[13] Distance between each province and each gateway is in (log of) kilometres. When immigrants from country n are assumed to enter Italy from more than one gateway, the minimum distance between the province and each gateway is considered. Again, we consider the first 30 countries in terms of residence permits. The weight are built on the basis of population size of immigrants from country n at time t.

Most of the control variables are "correctly" signed. More employment opportunities (i.e., a lower unemployment rate in the home region with respect to a rival one) are positively associated with net-flows. High-educated natives seem to be more responsive to employment prospects than low-educated ones. *GDP* has the expected positive sign for low-educated while enters with a negative sign for high-educated; probably this variable does not take into account of different wage prospects for individual with different educational level. *HOUSE* enters with a negative sign in all the specifications thus confirming that housing costs hamper labour mobility and deflate income prospects in a region.

Turning to our key variable, a larger incidence of immigrants is associated to lower net-flows of natives. The displacement effect concerns both low- and high-educated natives. However, some caution is needed because there might be several sources of endogeneity that can bias the OLS estimates. As discussed before, also the direction of the bias is not clear a priori. We rely on an instrumental variable strategy to address these potential biases.

In panel *B* and *C* we report IV estimates based on the existence of previous enclaves and distance from the gateways, respectively; in panel *D* we run the same regressions using simultaneously the two instruments.[14] IV estimates are partly reversed with respect to OLS estimates. Broadly speaking, the displacement effect on low-educated native is partially confirmed whereas immigration and high-educated native net-flows are positively associated. Results are fairly similar with different instrumental variables. According to the estimates reported in panel *D*, a 1 standard deviation in *IMM* leads to a decrease of low-educated native net-flows equal to 40 percent of its standard deviation; for high-educated native net-flows we record an increase by 70 percent.

We also explore whether the impact of immigration is through the push- or pull-side, and whether it varies for some subgroups of population. To simplify the presentation, only the coefficients obtained with the joint use of the instrumental variables are provided (both here and in the remaining tables).[15]

[14] The instruments proposed are strongly correlated with our endogenous variables. The first stage F-statistics are well above the rule-of-thumb benchmark of 10 in all the specifications adopted. The joint use of both instruments reduces the loss of efficiency of IV estimates. We also exploit the additional over-identifying restriction to test the validity of the instruments. The result of the Sargan test suggest that we cannot reject the null hypothesis that the instruments are uncorrelated with the error term; this result means that our instruments are affecting native mobility but only through immigration.

[15] In unreported evidence, we run the same regressions omitting each of the instruments in turn. Coefficient estimates were qualitatively similar and statistically indistinguishable.

Immigrant inflows negatively affect low-educated native flows in both destination and home regions (Table 8). Thus, low-educated natives leave areas of immigrant destinations and they do not move to places of immigrant concentration. According to these estimates, a 1 percent increase of immigration incidence leads to 0.2 percent increase of low-educated native outflows and to 0.2 percent decrease of their inflows. For high-educated natives we find a positive and significant association with immigrant inflows. The impact is of a higher order of magnitude with respect to low-educated natives: a 1 percent increase of immigration incidence leads to 0.8 percent increase of high-educated native inflows.

The impact of immigration is concentrated on the young adults and is not significant for natives with 45 years old or more (Table 9). This is an expected result since older workers have a smaller expected lifetime gain from moving and are less responsive to differentials across regions. Younger natives are also expected to interact more in the labour market with foreign workers. No detectable differences arise between males and females. The impact of immigration on both low- and high-educated natives is stronger if we consider only South-North net flows. It is likely that immigrants have met the demand for low-skilled workers of firms located in the Northern regions, a labour demand that in the past was partly met by the workers of South. As far as high-skilled is concerned, it is likely that gains from agglomeration and diversity are more evident in the northern regions.

5. Analysis of the demographic evolution of LLMs

The empirical analysis presented in the previous section has several advantages: we can control for origin-destination region pairs fixed effects; moreover, we take account of individual heterogeneity controlling for education, age and gender. However, immigrants tend to be highly geographically concentrated and to examine the effect on the local labour market one may need to look at a finer partition of the territory.[16] In this section we will test the robustness of our previous results and we will examine the native population growth in response to the immigration growth at the LLM level.

[16] Immigrants are strongly concentrated in the major cities. In 1991, the 29 percent of all foreign born individuals lived in cities with more 500,000 inhabitants (Rome, Milan, Turin, Genoa, Naples and Palermo). Fifteen years later, the respective figure was 17 percent.

When a finer partition of the territory is used there is the risk of obtaining confounded results because of commuting: in practice, people might move from a municipality to another to avoid immigrant concentration, even if they continue to work in the same labour market. However, the definition of LLM adopted by Istat nearly annuls this risk since LLMs are clusters of municipalities defined on the basis of the degree of work-day commuting by the residents. Therefore they can be considered as self-contained labour markets.

5.1 Data and empirical approach

Our empirical strategy is similar to the one adopted by Card and DiNardo (2000), Card (2001) and Card (2007), based on US metropolitan areas. Formally, we run the following regression:

$$ITA\_GR_{le} = \beta_1 IMM\_GR_l + \beta_2 X_l + \beta_3 X_{le} + \mu_{le} \qquad (4)$$

where *ITA_GR* is population growth of Italians in LLM *l*. We consider the overall population growth, and that referred to low- and high-educated natives (subscript *e*). *IMM_GR* represent the immigrant growth in the same LLM. X_l and X_{le} are covariates that vary by LLM and by LLM and educational level, respectively. Data on population growth by educational level of the LLMs are available only through census data (1991 and 2001). See Table 5 (panel *B*) for descriptive statistics of the covariates.

As in the previous section, unobserved determinants of population are likely to be correlated with immigrant inflows, leading to a biased estimate of β_1. To isolate the causal effect of immigrant on native population growth, we have to find an instrumental variable that induces more immigrants to move to a certain LLM but is not directly related to its population growth. We rely again on the two instrumental variables described in the previous section. They are built in a slightly different way due to data availability and the new territorial partition.[17]

5.2 Results

[17] Unlike section 4, at the LLM level we only know the distribution of immigrants by geographical area (Western Europe, Middle and East Europe, North Africa, Other countries of Africa, Asia, Oceania, North America and South America). As far as the second instrument is concerned, we use distance between LLMs and gateways in place of the distance between provinces and gateways.

For each dependent variable (overall, low- and high-educated native population growth) we present two econometric specifications: in the first we consider only demographic controls; in the second we add variables capturing the economic features of the LLMs. Table 10 reports both OLS and IV estimates.

Population size (*LNPOP*) and the share of low- and high-educated natives (*SHARE_EDUC*) are introduced to account for heterogeneity in initial conditions. The population growth in the previous decade (*PAST_TREND*) controls for trend effects in the growth pattern; again we distinguish between overall, low- and high-educated growth rates in the previous period, according to the dependent variable. The share of older people in 1991 (*SHARE_65+*) is, as expected, negatively associated to population growth because of the lower natality and the higher risk of mortality. The population density of LLMs in 1991 (*DENSITY*) enters positively, thus suggesting that agglomeration effects prevails on potential congestion effects. As far as the economic features of the LLMs, the unemployment rate (*UNR*) is negatively associated with overall population growth, thus suggesting that LLMs with better employment prospects are those who experienced a positive demographic evolution. However, *UNR* enters positively for high-educated population growth. To explain this apparently striking result one may argue that youngsters living in a depressed area would be more inclined to acquire further education rather than quit school and endure a spell of unemployment. The occupation growth in the service sector (*SER_EMP_GR*) is positively linked to the population growth and the impact is stronger for high-educated natives. Finally, we include dummies for the productive specialization of the LLM.

According to the OLS estimates, immigration growth is positively associated to native population growth. The positive correlation is only partially confirmed when we distinguish between low- and high-educated natives. However, due to paucity of data at the LLM level, we cannot exclude that the relationship we find is driven by some unobserved omitted variables (e.g. LLMs with thriving economies). Again, we rely on IV estimates to try to take account for endogeneity issues.

The IV estimates strengthen the composition effect of the demographic evolution of LLMs.[18] The effect on overall native population growth is (if any) negative. This result is driven by that on low-educated natives. On the contrary, the impact of immigration growth is positive when high-educated natives are considered.

[18] First-stage F-statistics is above the lower bound of 10 suggested by the literature on the strength of instruments.

The coefficients vary between 0.6 and 0.8. Taken literally, estimates of this magnitude imply that an increase by 10 percent in immigrant population growth in a LLM lead to an increase between 6 and 8 percent in the Italian graduated growth in that LLM. If we restrict the sample to the larger LLMs (those with more than 100,000 inhabitants) the impact is of a higher order of magnitude.

6. Conclusion

This paper has investigated the link between immigrant inflows and natives' location choices. From a labour marker point of view the analysis is interesting since internal mobility is one possible mechanism through which local labour markets adjust in response to immigration shocks. Natives may attenuate any negative impacts of immigration by, say, leaving the area of immigrant impact. Or alternatively, where immigrants and natives complement one another in the labor force, destination areas of immigrants might attract the natives. An equally important impact, which is given much less emphasis, involves the social and demographic effects of immigration on the national geographic landscape.

Our findings show that there is (if any) a modest displacement effect of immigration on less skilled natives; in particular, immigrants concentration in the northern regions seems to have displaced the South-North mobility flows of low-educated natives. In contrast, immigrant inflows are positively associated to high-educated native inflows; the impact is somewhat stronger in more urbanized areas thus suggesting that gains from complementarities and diversity are higher in those areas. The impact is also concentrated on young population; therefore immigration not only contrasts ageing of the population of the destination region per se but it also contributes to attract younger natives from other regions.

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Appendix – Tables

Table 1: Migration balance into the EU

	1950-1960	1961-1970	1971-1980	1981-1990	1991-2000	2001-2005
France	973 (2.1)	2,033 (4.2)	605 (1.2)	494 (0.9)	227 (0.4)	718 (2.4)
Germany	1.011 (1.4)	1,488 (2.0)	1,505 (1.9)	2,022 (2.6)	3,347 (4.1)	799 (2.0)
Italy	-1,014 (-2.0)	-972 (-1.9)	-84 (-0.2)	-132 (-0.2)	410 (0.7)	1,889 (6.6)
Spain	-796 (-2.6)	-608 (-1.9)	144 (0.4)	-227 (-0.6)	1,302 (3.3)	2,967 (14.2)
Sweden	85 (1.1)	223 (2.9)	84 (1.0)	172 (2.1)	200 (2.3)	140 (3.2)
UK	-539 (-1.0)	-49 (-0.1)	-235 (-0.4)	-2 (0.0)	634 (1.2)	906 (3.0)
EU 25	-2,284 (-0.6)	148 (0.0)	3,078 (0.7)	2,926 (0.7)	7,343 (1.7)	8,786 (3.8)

Cumulative net flows (inflows – outflow) in thousands; annual rate ‰ in parenthesis.
Source: Münz (2007).

Table 2: Demographic evolution by areas

	Population growth rate 1995-2005	Contributions to population growth *		Incidence of immigration	
		Native internal mobility	Immigration	1995	2005
North West	4,5	0,8	5,0	1,6	6,3
North East	7,0	2,7	5,6	1,4	6,6
Centre	3,9	1,9	3,8	2,1	5,7
South	0,4	-3,0	0,9	0,6	1,6

* The two columns identify the contributions of native internal mobility and immigration to overall population growth. Namely, they represent the cumulative net migration of natives and the change of foreign-born resident, each divided by the initial population stock. The residual component of population growth includes the natural balance and the outflows of both natives and immigrants from Italy to other countries.
Source: authors' elaborations on data from Istat

Table 3: Immigrants by source country

1991			**2001**			**2006**		
Morocco	63,806	11.6	Morocco	162,254	11.8	Romania	271,491	11.9
Tunisia	31,881	5.8	Albania	146,321	10.6	Albania	256,916	11.2
Philippines	26,166	4.8	Romania	69,999	5.1	Morocco	239,728	10.5
Yugoslavia	22,335	4.1	Philippines	65,073	4.7	Ukraine	115,087	5.0
Senegal	21,073	3.8	China	60,143	4.4	China	114,165	5.0
Q5		*30.1*			*36.5*			*43,6*
Q10		*40.4*			*50.3*			*57,4*

Residence permits by source country. Q5 (Q10) represents the share of the first 5 (10) countries with respect to the total number of the residence permits.
Source: Ministry of Interior.

Table 4: Occupation and sector distribution of natives and immigrants by educational level

	Natives			Immigrants	
	All sample	**Low-educated**	**High-educated**	**All sample**	**Low-educated**
Percentage:	*100,0*	*39,7*	*15,2*	*100,0*	*48,5*
Occupation:					
Executive employee	7,9	0,8	31,0	1,5	0,1
White collar	31,8	12,3	37,5	5,6	2,5
Blue collar	32,1	55,7	1,6	76,5	81,3
Self-employee	22,9	26,1	24,1	12,5	12,0
Other	5,4	5,0	5,8	4,0	4,1
of which:					
Unskilled jobs	16,4	29,4	0,7	42,8	48,4
Sector of activity:					
Agriculture	4,3	7,9	0,8	3,9	5,0
Industry	21,8	26,3	9,8	23,7	24,5
Construction	7,7	13,1	1,1	17,2	21,2
Commerce, restaurants, etc.	25,7	29,7	9,7	22,4	22,1
Other private services	13,9	6,0	27,3	8,0	5,1
Public administration	21,1	9,6	47,6	4,3	2,0
Other social & family services	5,6	7,3	3,9	20,5	20,2

Source: authors' elaborations on data from Istat (LFS, year 2006).

Table 5: Definition and descriptive statistics of the explanatory variables

***A* – Empirical exercise on natives interregional mobility**

Name	*Description [source]*	*Mean*	*St.dev.*
IMM	Difference of the incidence of immigration between region pairs; incidence of immigration is defined as the (log of the) ratio between the number of residence permits and population [Ministry of Interior].	0.49	0.716
UNR	Difference of unemployment rate between region pairs; unemployment rate varies by region, educational level, age bracket and gender [ISTAT].	-0.04	0.083
GDP	Difference of the (log of) GDP per employee between region pairs [ISTAT].	0.07	0.107
HOUSE	Difference of the (log of) house price between region pairs [Bank of Italy].	0.14	0.355

***B* – Empirical exercise on LLMs' demographic evolution**

Name	*Description [source]*	*Mean*	*St.dev.*
IMM_GR	Immigrant growth rate between 1991 and 2001 [ISTAT].	3.53	2.632
LNPOP	Log of population in 1991 [ISTAT].	10.5	1.147
SHARE_65+	Share of population aged 65 or more in 1991 [ISTAT].	0.15	0.036
DENSITY	Log of density (inhabitants per squared kilometre) in 1991 [ISTAT].	5.84	1.144
PAST_TREND	Overall (low-educated and high-educated) population growth rate between 1981 and 1991 [ISTAT]. We report here mean (and standard deviation) for overall population growth.	0.01	0.046
SHARE_EDUC	For low-educated: share of Italians with at most compulsory school in 1991. For high-educated: share of Italians with a university degree in 1991 [ISTAT]. We report here mean (and standard deviation) for high-educated.	0.02	0.011
UNR	Unemployment rate in 1991 [ISTAT].	0.19	0.123
SER_EMP_GR	Employment growth in the service sector between 1991 and 2001 [ISTAT].	0.02	0.088
LLM TYPE:			
NO_SPEC	Dummy equal to 1 if the LLM has not a prevailing specialization (reference category) [ISTAT].	0.32	0.467
NON_MANIF	Dummy equal to 1 if the LLM is mainly non-manufacture [ISTAT].	0.19	0.394
MADE_ITALY	Dummy equal to 1 if the LLM is specialized in made-in-Italy production [ISTAT].	0.34	0.473
HEAVY_IND	Dummy equal to 1 if the LLM is specialized in heavy-industry production [ISTAT].	0.08	0.274
URBAN	Dummy equal to 1 if the LLM is urbanized [ISTAT].	0.07	0.250

Table 6: Residence permits and distance from the gateways

	All sample	By source area:				
		Africa	South America	Asia	East Europe	Balkans
DISTANCE $_{(i,n)}$	-0.257***	-0.338***	-0.069***	-0.066***	-0.146***	-0.524***
	(0.008)	*(0.024)*	*(0.020)*	*(0.022)*	*(0.014)*	*(0.022)*
IMM $_{(n,t)}$	0.334***	0.903***	0.761***	0.752***	0.746***	0.965***
	(0.011)	*(0.254)*	*(0.078)*	*(0.165)*	*(0.024)*	*(0.102)*
PROVINCE $_{(i)}$	YES	YES	YES	YES	YES	YES
YEAR $_{(t)}$	YES	YES	YES	YES	YES	YES
COUNTRY $_{(n)}$	YES	YES	YES	YES	YES	YES
PROVINCE $_{(i)}$ x YEAR $_{(t)}$	YES	YES	YES	YES	YES	YES
Observations	21,630	4,814	4,211	4,139	4,004	3,605
R-squared	0.74	0.77	0.82	0.73	0.89	0.85

The dependent variable is IMM(i,n,t) and it is the log of the residence permits in province *i* of nationality *n* in year *t*; the key explanatory variables are IMM(n,t) that measures the log of the residence permits in Italy of nationality *n* in year *t*, and DISTANCE(i,n) that measures the log of kilometres between capital province *i* and the gateway used by immigrants of nationality *n* to enter Italy. The specification includes fixed effect at the province level (PROVINCE), year dummies (YEAR), dummies for the source country of immigration (COUNTRY) and interaction between PROVINCE and YEAR to capture any province-year effects. The sample contains the residence permits in the 103 Italian provinces distinguished by nationality, for the period 1996-2002. We consider only the 30 most important nationalities in terms of number of residence permits. Standard errors in parentheses; *, **, *** significantly different from zero at the 10, 5 and 1 percent level, respectively.

Table 7: Natives interregional net flows

	Panel *A*: OLS estimates					
	All sample		**Low-educated**		**High-educated**	
IMM	-0.076***	-0.067***	-0.071***	-0.082***	-0.129***	-0.087***
	(0.010)	*(0.008)*	*(0.007)*	*(0.008)*	*(0.029)*	*(0.023)*
UNR	-0.715***	-0.663***	-0.412***	-0.450***	-1.367***	-1.092***
	(0.069)	*(0.059)*	*(0.039)*	*(0.038)*	*(0.222)*	*(0.179)*
GDP		-0.489***		0.610***		-2.123***
		(0.117)		*(0.058)*		*(0.324)*
HOUSE		-0.126***		-0.042***		-0.287***
		(0.022)		*(0.012)*		*(0.064)*
Fixed effect *ijk*	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
Obs.	50,160	50,160	16,720	16,720	16,720	16,720
	Panel *B*: IV estimates					
	All sample		**Low-educated**		**High-educated**	
IMM	0.043***	0.095***	0.007	-0.041***	0.100***	0.309***
	(0.014)	*(0.015)*	*(0.010)*	*(0.011)*	*(0.038)*	*(0.042)*
Controls	YES	YES	YES	YES	YES	YES
Instrumental variable:	Enclaves	Enclaves	Enclaves	Enclaves	Enclaves	Enclaves
Obs.	50,160	50,160	16,720	16,720	16,720	16,720
	Panel *C*: IV estimates					
	All sample		**Low-educated**		**High-educated**	
IMM	0.013	0.004	-0.251***	-0.238***	0.335***	0.318***
	(0.023)	*(0.022)*	*(0.018)*	*(0.017)*	*(0.067)*	*(0.065)*
Controls	YES	YES	YES	YES	YES	YES
Instrumental variable:	Distance	Distance	Distance	Distance	Distance	Distance
Obs.	50,160	50,160	16,720	16,720	16,720	16,720
	Panel *D*: IV estimates					
	All sample		**Low-educated**		**High-educated**	
IMM	0.035***	0.069***	-0.055***	-0.096***	0.155***	0.311***
	(0.012)	*(0.013)*	*(0.009)*	*(0.009)*	*(0.034)*	*(0.037)*
Controls	YES	YES	YES	YES	YES	YES
Instrumental variable:	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance
Obs.	50,160	50,160	16,720	16,720	16,720	16,720

The dependent variable is the natives' interregional migration net flow. The explanatory variables are: the incidence of immigrants (IMM), the unemployment rate (UNR), the GDP per worker (GDP), the house prices (HOUSE). All the explanatory variables are expressed in difference between destination and source region, and they are lagged by one year. Panel analysis with fixed effects destination-source region pairs × educational level × cohort × gender (20×20×3×2×2) and YEAR dummies (period 1995-2005). The set of controls in panel *B*, *C* and *D* is similar, for each column, to the one presented in panel *A*. We consider total, low- and high-educated net flows, respectively. Instrumental variables are built using enclaves of previous immigrants and distance from gateways. Clustered standard errors in parenthesis. *, **, *** significantly different from zero at the 10, 5 and 1 percent level, respectively.

Table 8: Natives interregional gross inflows and outflows

	Inflows			Outflows		
	All sample	**Low-educated**	**High-educated**	**All sample**	**Low-educated**	**High-educated**
IMM	0.189**	-0.279***	0.899***	-0.015	0.229***	-0.168
	(0.080)	*(0.080)*	*(0.209)*	*(0.068)*	*(0.071)*	*(0.132)*
Controls	YES	YES	YES	YES	YES	YES
Fixed effect *ik*	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
Instrumental variables:	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance
Obs.	2,640	880	880	2,640	880	880

The dependent variables are the natives' inflows and outflows from region *i*. The key explanatory variable is the incidence of immigrants (IMM). Control variables include the unemployment rate, the GDP per worker and the house prices. All the explanatory variables refer to the source region in case of outflows and in the destination region in case of inflows; they are lagged by one year. Panel analysis with fixed effects source (or destination) region × educational level × cohort × gender (20×3×2×2) and YEAR dummies (period 1995-2005). We consider total, low- and high-educated inflows and outflows. Instrumental variables are built using enclaves of previous immigrants and distance from gateways. Clustered standard errors in parenthesis. *, **, *** significantly different from zero at the 10, 5 and 1 percent level, respectively.

Table 9: Natives interregional net flows

	Net flows by age		Net flows by gender		Net flows South-North	
	Age 15-44	**Age 45+**	**Male**	**Female**	**Low-educated**	**High-educated**
IMM	0.133***	0.004	0.064***	0.075***	-0.171***	0.530***
	(0.025)	*(0.008)*	*(0.019)*	*(0.018)*	*(0.016)*	*(0.065)*
Controls	YES	YES	YES	YES	YES	YES
Fixed effect *ijk*	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES
Instrumental variables:	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance
Obs.	25,080	25,080	25,080	25,080	8,448	8,448

The dependent variable is the natives' interregional migration net flow. The key explanatory variable is the incidence of immigrants (IMM). Control variables include the unemployment rate, the GDP per worker and the house prices. All the explanatory variables are expressed in difference between destination and source region, and they are lagged by one year. Panel analysis with fixed effects destination-source region pairs × educational level × cohort × gender (20×20×3×2×2) and YEAR dummies (period 1995-2005). We split the sample by age in the first two columns and by gender in the second two columns; in the last two columns we consider only net-flows between South and Centre-North, distinguished by educational level. Instrumental variables are built using enclaves of previous immigrants and distance from gateways. Clustered standard errors in parenthesis. *, **, *** significantly different from zero at the 10, 5 and 1 percent level, respectively.

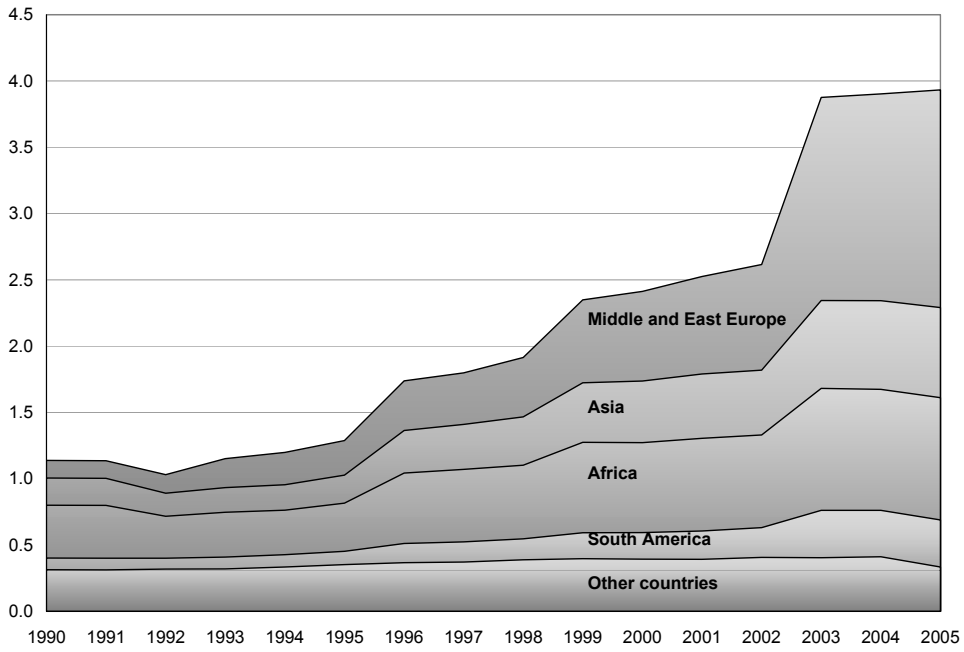
Table 10: Native population growth in LLMs

	Panel *A*: OLS estimates					
	Overall		**Low-educated**		**High-educated**	
IMM_GR	0.001***	0.001***	0.001**	0.001*	-0.003	-0.001
	(0.000)	*(0.000)*	*(0.000)*	*(0.000)*	*(0.005)*	*(0.005)*
Demographic controls:						
LNPOP	-0.002	-0.001	-0.005**	-0.002	-0.000	0.016
	(0.002)	*(0.002)*	*(0.002)*	*(0.002)*	*(0.023)*	*(0.025)*
SHARE_65+	-0.241***	-0.250***	-0.344***	-0.344***	-1.827***	-1.130
	(0.054)	*(0.052)*	*(0.062)*	*(0.059)*	*(0.639)*	*(0.722)*
DENSITY	0.005**	0.005**	0.008***	0.009***	0.050**	0.031
	(0.003)	*(0.002)*	*(0.002)*	*(0.002)*	*(0.022)*	*(0.021)*
PAST_TREND	YES	YES	YES	YES	YES	YES
SHARE_EDUC			YES	YES	YES	YES
Economic controls:						
UNR		-0.080***		-0.124***		0.499**
		(0.028)		*(0.032)*		*(0.219)*
SER_EMP_GR		0.108***		0.067***		0.706***
		(0.017)		*(0.017)*		*(0.152)*
LLM TYPE		YES		YES		YES
Obs.	686	686	686	686	686	686
	Panel *B*: IV estimates					
	Overall		**Low-educated**		**High-educated**	
IMM_GR	-0.001	-0.006**	-0.005**	-0.012***	0.060***	0.082***
	(0.002)	*(0.003)*	*(0.002)*	*(0.003)*	*(0.019)*	*(0.026)*
Demographic controls	YES	YES	YES	YES	YES	YES
Economic controls		YES		YES		YES
Instrumental variables:	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance
Obs.	686	686	686	686	686	686
	Panel *C*: IV estimates (larger LLMs)					
	Overall		**Low-educated**		**High-educated**	
IMM_GR	-0.003	-0.002	-0.005	-0.005	0.098**	0.118***
	(0.003)	*(0.004)*	*(0.005)*	*(0.006)*	*(0.042)*	*(0.040)*
Demographic controls	YES	YES	YES	YES	YES	YES
Economic controls		YES		YES		YES
Instrumental variables:	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance	Enclaves Distance
Obs.	125	125	125	125	125	125

The dependent variables are overall, low- and high-educated population growth. The key explanatory variable is immigrant population growth (IMM_GR). See Table 5 (panel B) and the text for a description of other covariates. We also include area fixed effects (dummy variables for Centre-North and South). The set of economic and demographic controls in panel *B* and *C* is similar to the one presented in panel *A*. Larger LLMs are those with more than 100,000 inhabitants in 1991. Robust standard errors in parenthesis. *, **, *** significantly different from zero at the 10, 5 and 1 percent level, respectively.

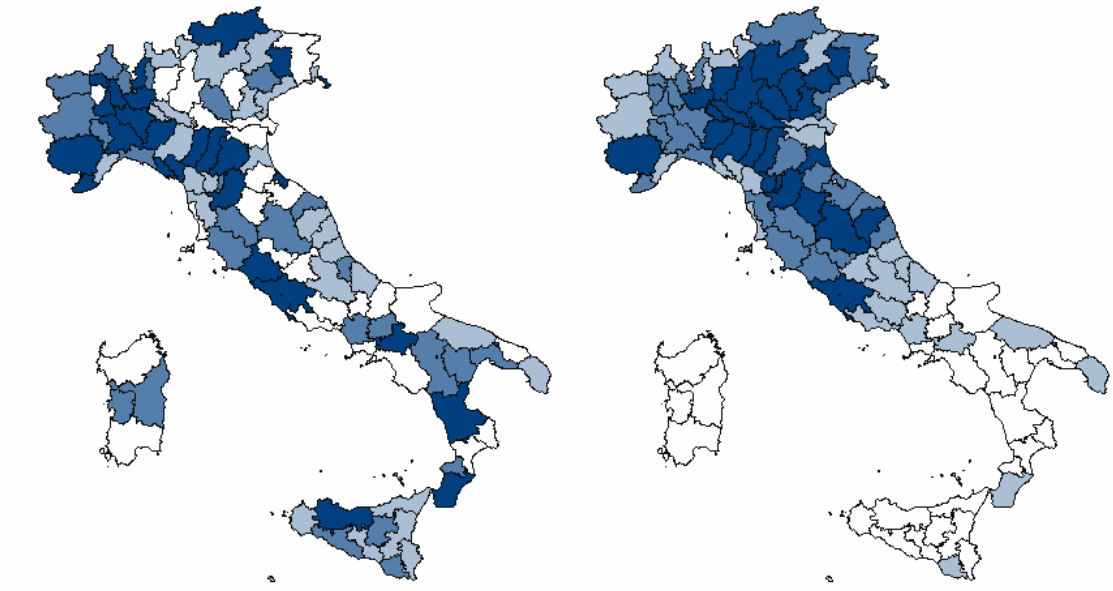
Appendix – Figures

Figure 1: Immigrants by area of origin



Immigrants over population by area of origin.
Source: authors' elaborations on data drawn from Istat.

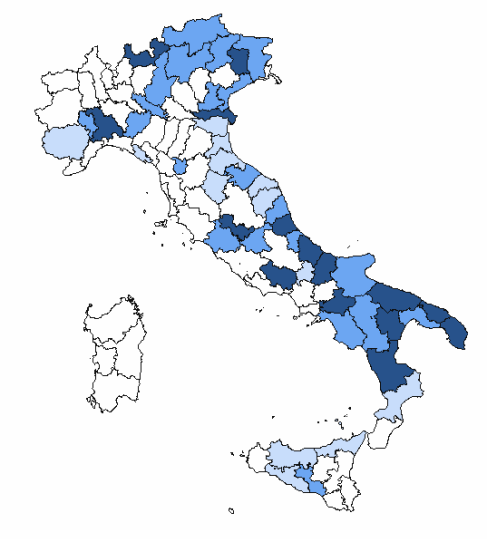
Figure 2: Distribution of immigrants across provinces



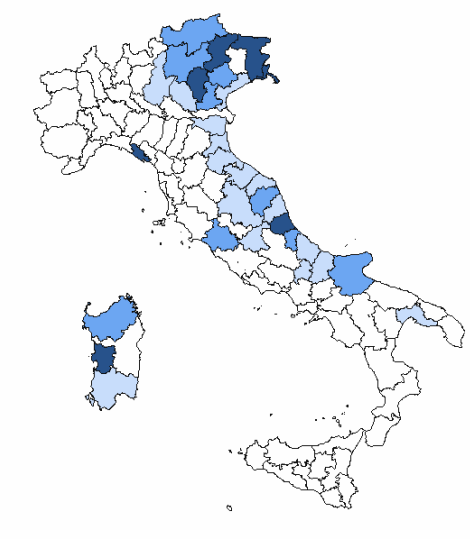
1991 2005

Italian provinces are divided in quartiles according to the incidence of immigrants (those with a darker blue have higher incidence)
Source: authors' elaborations on data drawn from Istat.

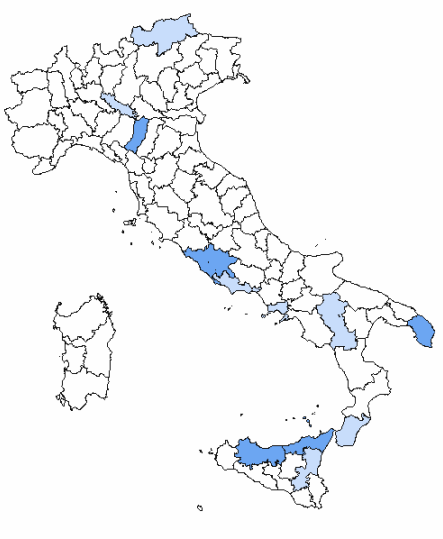
Figure 3: Distribution of immigrant across Italian provinces



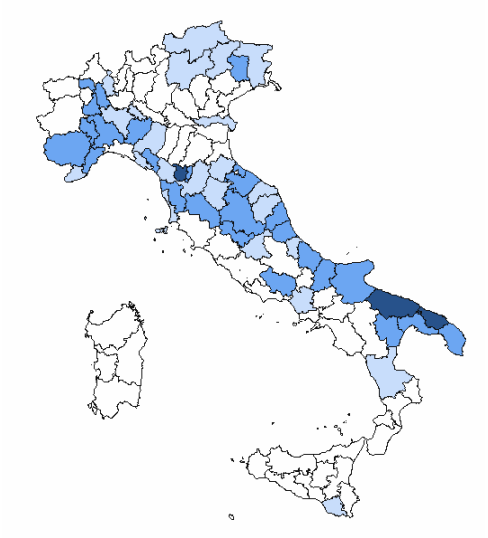
Albania 1990



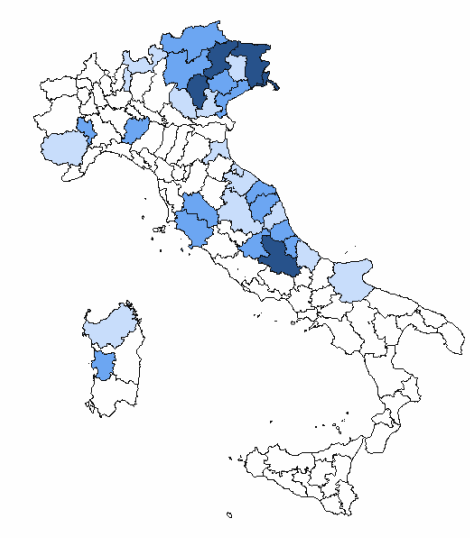
Former Yugoslavia 1990



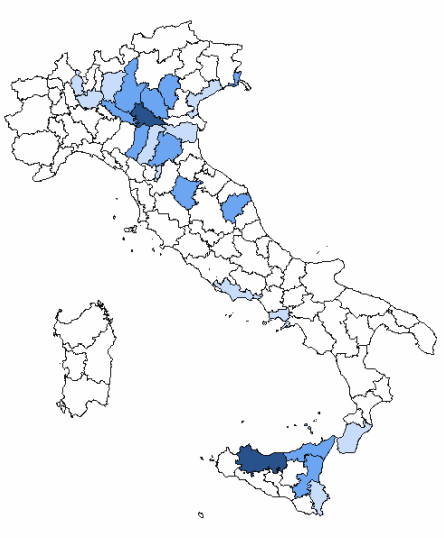
Indian Subcontinent 1990



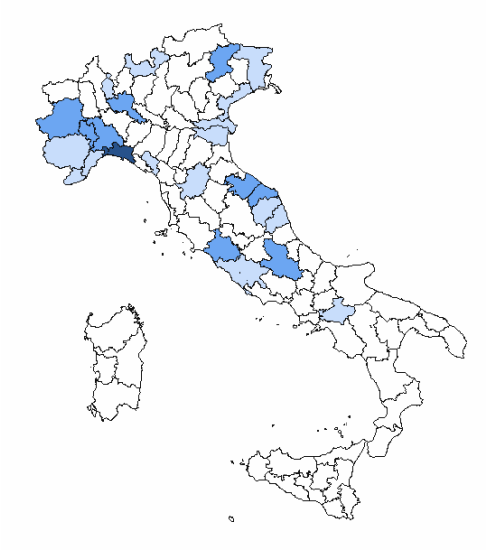
Albania 2005



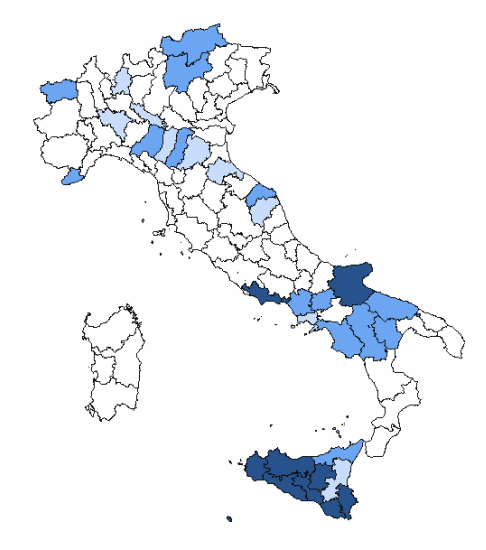
Former Yugoslavia 2005



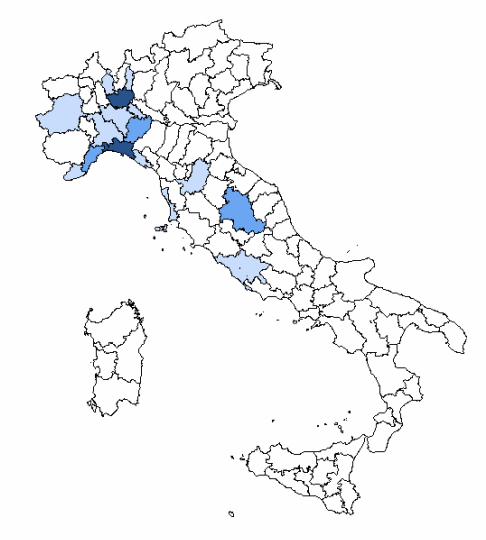
Indian Subcontinent 2005



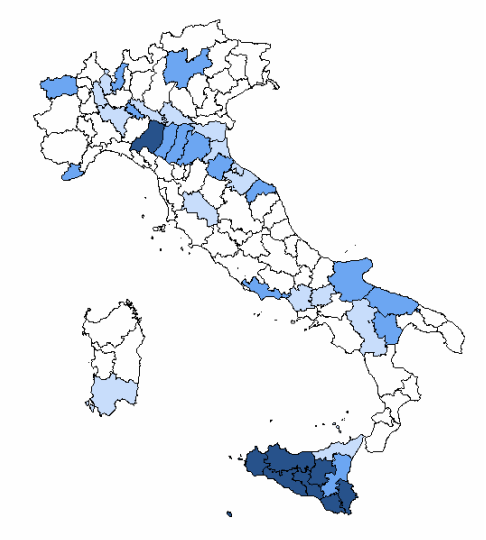
Ecuador and Peru 1990



Tunisia 1990



Ecuador and Peru 2005



Tunisia 2005

Source: Authors' elaborations on residence permits provided by Ministry of Interior.

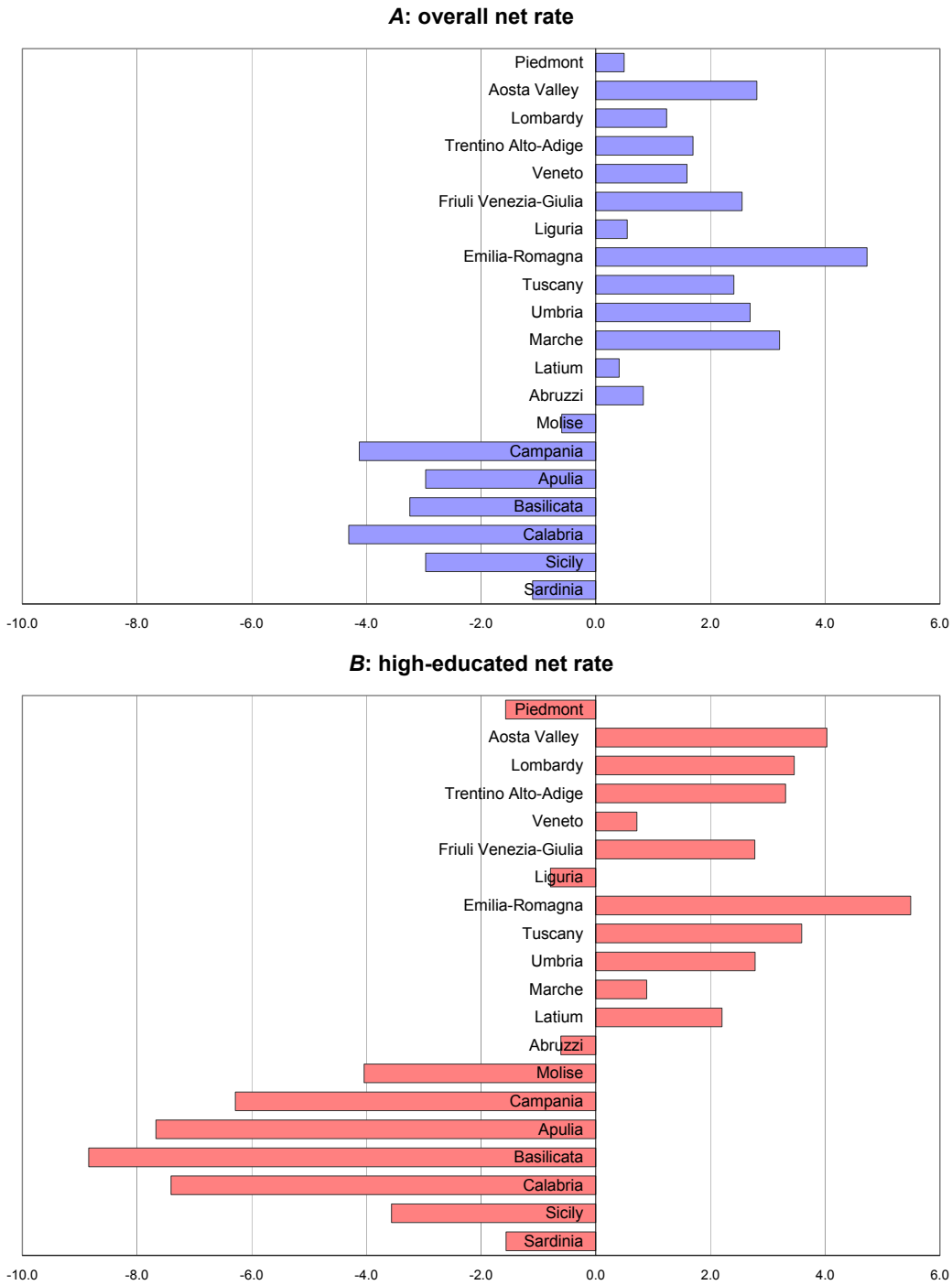
The figures represent the geographical concentration index, obtained as the ratio between the fraction of immigrants of nationality *n* who live in province *i* and the fraction of all immigrants living in that province, in a given year. Formally:

$$I_{in} = \frac{IMM_{in} \Big/ \sum_i IMM_{in}}{\sum_n IMM_{in} \Big/ \sum_i \sum_n IMM_{in}}$$

- $I \leq 1$
- $1 < I \leq 1.5$
- $1.5 < I \leq 3$
- $I > 3$

Note: Former Yugoslavia includes Bosnia, Croatia, Macedonia, Serbia and Slovenia; Indian subcontinent includes Bangladesh, India, Pakistan and Sri Lanka.

Figure 4: Native internal mobility: net rates by region



Net migration is the difference between inflows and outflows between each region and all the other regions. Net migration rate is calculated by dividing net migration by population and multiplying the resulting figure by 1,000. Net migration rate of high-educated natives refer to migration flows of native with a university degree and it is normalized by the population with the corresponding level of education. The figures refers to annual average for the period 1995-2005.
Source: authors' elaborations from ISTAT.

Appendix – Migrants' trajectories and gateways to Italy

The scope of this box is twofold. First, we identify the main gateways through which immigrants enter Italy. Second, we associate to each gateway one (or more) country of immigration, replicating the migrants' trajectories.

Italy is geographically located at the crossroads of the main international migration flows that have interested Europe in the last decades. The main gateways are the northern-east border (in particular, Friuli Venezia-Giulia), the northern-west border (Piedmont and Liguria), the two most important international airports Rome and Milan, and the coastline in the southern regions (especially Apulia and Sicily). The prominence of these gateways is confirmed by the results of a survey conducted among immigrants living in Lombardy (ISMU) and by data of the Ministry of Interior.

In the 2002 ISMU survey there was a question in which immigrants were asked to declare the region of entry in Italy.[19] The information drawn from ISMU has to be interpreted with some caution since they refer to a selected sample of immigrants, those living in Lombardy; therefore there is plausibly a "northern bias" in the declaration of the region of entry. As expected, Lombardy represent the first region of entry for 42 percent of the interviewed. The other main region of entry are Latium (14 percent), Liguria (11), Apulia (9) and Sicily (6). The northern-east border appears relatively less important whereas the role of other regions is almost negligible. Further evidence on the geographical patterns of immigrant inflows can be drawn from data by the Ministry of Interior on immigration recorded at the border. According to these data, the main gateways are Lombardy, Friuli Venezia-Giulia, Latium and Piedmont. More precisely, in 2005 the terrestrial frontiers with the highest number of immigrants were Malpensa and Fiumicino – the airports of Milan and Rome, respectively – and the frontier of Trieste (in the North-East) and Verbania-Domodossola (in Piedmont). In the same year, the CPTs (centres of temporary detection) with the larger number of immigrants were in Rome and in Lampedusa (in the Sicily Canal).

The next step consists in assigning to each gateway one (or more) country, depending on the typical trajectories used by immigrants to enter Italy. All the countries close to the Italian border are assigned to the gateways in terms of geographical proximity: the Albanians are assumed to enter from Apulia (through the Otranto Canal); immigrants from the Balkans and from other East-Europe countries are assumed to enter from the Italian-Slovenian border (Trieste); Tunisians are assumed to enter from West-Sicily. For countries that are far away Italians border, we rely on information on main migration trajectories from other sources: the survey by ISMU in which immigrants self-

[19] ISMU is an autonomous and independent organization promoting studies, research and projects on multi-ethnic and multi-cultural society, and focusing in particular on the phenomenon of international migrations. It conducts a survey every year on a sample of immigrants living in Lombardy. In 2002 there was a question in which immigrants were asked to declare the region of entry in Italy.

declare their region of entry and to field studies (Monzini *et al.*, 2004; European Migration Network, 2005) that analyze international migration. In particular, ISMU data have been used to build a specialization index in order to identify the main gateway used to enter in Italy. The index is defined as the ratio between the fraction of immigrants coming from country *n* entering in region *i* and the corresponding fraction calculated for all immigrants. The available evidence supports the following assumptions. The northern-west border is crossed by immigrants coming from the Maghreb and the Latin America. Foreigners from the Maghreb cross the Strait of Gibraltar that represents the first gateway to the EU, and then continue by land to Ventimiglia (in Liguria). On the other side, Portugal and Spain are the preferred destinations for migrants from the Latin America, and Liguria is the closer region to the Iberian Peninsula both by land (again Ventimiglia) and by sea (Genoa). Milan and Rome are the first destination for all immigrants coming from more distant countries (e.g., South America and Asia) due to the presence of the two main international airports. The Mediterranean coastline (Sicily, Calabria and Apulia) is the first destinations of immigrants coming from North Africa and the Indian subcontinent (through the Suez Canal). Finally, in some cases, the relationship between a gateway and a source country of immigration is dictated by other "exogenous" reasons like, for example, the historical linkage between the seaports of Naples and Odessa (Ukraine).