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Spatial assessment of migration flows in Italy to enhance urban and regional policies.

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Introduction

Literature on migration expresses a number of different viewpoints. In fact, as observed by Roseman [1], there are a variety of disciplinary analyses providing different conclusions at different scales. The research on migrations has assumed a multidisciplinary framework involving different disciplines such as geography, economy and social science. Migrations are key factors in population evolution dynamics at different scales and they represent a relevant component of demography.

From an economic point of view migrations are forms of human capital [2]. In the simplest model of wealth maximization fixed travel costs are balanced by the net actual value of earning streams available in an alternative location [3].

Great part of researches on migrations adopt a static framework, basing their assumptions on the link between migration and the "search for better economic conditions" (wealth maximization). This structural concept in migration analysis strongly relies on individual perceptions of wealth maximization.

Mincer [4] assumes that the location of an individual maximum may not coincide with the location of joint maximum.

In this paper we investigate the spatial dimension of the phenomenon comparing results of traditional indicators for estimating migrations (location quotient and segregation index) and outputs achieved by geostatistical techniques based on spatial autocorrelation applied in order to detect spatial clusters, defining preferential destination areas of migrants.

Such destinations can provide preferential elements for the characterization of migrants' joint maximum. Identified clusters become target areas of sectoral policies aimed at overcoming problems of social integration, security and job opportunities (an actual political debate in Europe both at national and community scales).

Modern migrations are mainly characterized by two components, comparable in terms of absolute value: internal migration where part of the population moves within the country and external migration where part of the population reaches the study area (in our case Italy) coming from another country or vice versa. This work does not distinguish between these two components but the analysis considers both of them as a whole.

The Italian case is particularly significant in terms of consistency of phenomenon because of recent years trends. It is also interesting because, unlike other European countries, Italy has experienced a reversal in migration trends. While in 1960s and '70s Italy was essentially the origin of migration flows mainly oriented to other European countries, in recent decades it has become a destination of migration flows from South Mediterranean countries and, with increasing dimensions, from Eastern EU Countries and Balkans.

Methodological framework

The research has been developed throughout the Country (Italy), considering municipalities as minimal independent statistical/geographical units. Such a choice reflects the need to represent in detail the phenomenon traditionally described for macro aggregate regions.

Several indicators have been selected in order to measure the impact of foreign population resident in Italy. These indicators have been constructed on the basis of available data for the case study, but also considering that the same information can be easily found in great part of national contexts.

The dataset was provided by the National Institute of Statistics (ISTAT, deputy state body for statistical analysis of territorial dynamics in Italy). Variables are: resident population, present foreign population, members (people who have moved their residence to specific municipalities), erased (people who have removed their residence from specific municipalities). For each variable historical series have been considered. In this paper elaborations concern the period from 1999 to 2007 as representative of the

latest trends.

Traditional approaches for the analysis of migration flows

Techniques adopted in the first phase of analysis provided an evaluation of migrations in global terms. The analysis was based on traditional statistical indicators. More particularly, after referring to the presence of foreigners and the percentage of foreigners in resident population, we calculated the efficacy index of migration (Ie) in order to obtain information on movement dynamics.

Following traditional approaches, we developed measures of segregation using Location Quotient (LQ) and index of Spatial Segregation. Segregation phenomenon can be analyzed from the social and spatial points of view. This paper mainly focuses on spatial point of view, assessing two indicators: index of dissimilarity (D), and location quotient (LQ).

These indices allow us to assess levels of territorial differentiation of a group (foreigners) relative to another group (resident population). The measures highlighted heterogeneity of the structure of foreign population in relation to the considered study areas. Separating resident population in two groups, Italians and foreigners, the degree of coexistence between them has been measured.

Segregation index focuses on the analysis of phenomena related to residential segregation at urban and regional levels. This kind of approach concerns the evaluation of the risk of social segregation where too high concentration of a single immigrant group is present if compared to local residents (ghetto or 'ethnic islands' effect) [6].

Segregation index generally is the most used indicator in international research concerning geographical mobility. Especially, dissimilarity index (D) developed by Duncan and Duncan [7] is widely used.

Its applications generally deal with the comparison of the distribution of national groups in the intra-metropolitan area processing data at a very detailed scale (census blocks). In this work, D index had been used to investigate macro regions segregation using municipality data as statistic units for the analysis.

Spatial Analysis Techniques applied to migratory phenomena

The identification of representative clusters of territorial concentration of migration was based on the application of spatial analysis techniques. In particular, measures of spatial autocorrelation have been applied on the dataset.

The concept of spatial autocorrelation is one of the most important issues of spatial statistics and it derives directly from the first law of geography by Tobler [8]: "All Things Are Related, But Nearby Things Are More Related Than Distant Things".

In this study, Moran Index (I), corresponding Moran scatter plots and Local Indicator of Spatial Association (LISA) have been calculated.

Moran I provides an overall measure of Spatial Auto-

correlation [9], Moran scatter plot [10] allows to achieve a graphic representation of spatial relationships and enables us to investigate possible local agglomerations, whilst LISA allows us to take into account local effects of the phenomenon [11] [12].

Spatial distribution of migrants: the Italian case

The case study concerns the analysis of foreign presence in Italy throughout the whole national territory. In particular the application of the indicators described in previous paragraphs has been carried using "municipality" as a statistical minimum unit. Elaborations presented are only a small part of the result obtained. In a general view we compare the traditional indexes with spatial ones in order to describe the structure of the foreign presence in details.

The Efficacy Index of Migrations defined a heterogeneous behaviour of the system that does not allow to identify clustering of origin and destination choices of migration flows.

Mountain municipalities have a marked tendency to generate migration confirming depopulation trends. Regarding the degree of specialization of each municipality to accommodate foreign population, it is possible to state, using Location Quotient, that the greater specialization is localized in central and north-eastern areas of the country.

The index of dissimilarity allowed to measure the heterogeneity of the structure of foreign population. Segregation indices do not provide guidance on the spatial distribution of the phenomenon, in particular they do not allow to develop assessment of segregation degree within the study area [13].

In order to better identify spatial clusters representative of the concentration of migrants we applied spatial autocorrelation analysis techniques.

In this work, Moran's I coefficient represents the difference between weighted variance of ratio of foreign and local resident population and generalized variance of the same ratio expressed as weighted variance.

It expresses the correlation between the ratio of foreigners/population in a given place and the ratio of foreigners/population in neighbouring spatial units.

In order to take into account connections and their intensity we defined a matrix of contiguity W, where $w_{ij} = 1$ if the i area shares boundaries with the j area, i.e. two neighbouring municipalities, and $w_{ij} = 0$ if otherwise. It is possible to consider two main kinds of contiguity "Rook contiguity" which accounts only for the shared side of the boundaries, and "Queen contiguity" where contiguity has been considered also for a shared corner. In this application "Queen contiguity" has been adopted.

Moran's I values (and Z-score) obtained by repeated measures on data for different territorial aggregations using the two basic variables considered in this work: foreign residents and the ratio between foreign residents and total population demonstrated that spatial correlation is significant for the second variable considered. Therefore it is representative of the phenomenon.

To check whether the positive spatial dependence generates territorial clusters with high or low level of specialization we adopted Moran Scatter plot. It allowed us to investigate possible local clusters. The results of Moran Scatter plot were plotted on a map in order to characterize geographic areas with different types of correlation (High-High, Low-Low, High-Low, Low-High). Through this representation we verified the geographical contiguity of regions sharing the same correlation: first identification of homogeneous clusters. Moran scatter plots allowed us to assess type of correlation scaled on the municipality relative to the ratio of foreign residents and total population. Moran Scatter plot allowed us to identify extreme cases (outliers). Map representation has the advantage to pinpoint abnormal municipalities and to evaluate if their behaviour depends on geographical location. This is most likely, for example, if outliers are close to each other or are isolated, or if they are border municipalities or islands.

In the following Figure we reported GIS maps distinguishing individual municipalities in relation to the degrees of correlation 'High High' and 'Low-Low' (I and III quadrants of Moran scatter plots). The result is a representation of a geographic clustering, structured on two main clusters: one including municipalities of central and north-eastern Italy (correlation 'High High') and one comprising municipalities of Southern Italy and islands (correlation 'Low-Low'). We also compare the "LISA cluster map"

Since Moran Scatter plot gives no information on the significance of spatial clusters we used Local Indicators of Spatial Association (LISA). LISA allows measurement of the interdependence for each of the regions concerned.

In order to calculate LISA we used the same matrix of weights (W) used to build Moran scatter plot. LISA shows the results obtained in a GIS environment (Figure 6 maps). "LISA cluster map" highlights the type of spatial concentration of foreigners in clusters.

Nevertheless, three agglomerations emerged [14] with different levels of significance:

- The first cluster included values for positive auto-correlation-type high-high increasing over the years, geographically concentrated in north-eastern areas. Such areas are characterized by increasing levels of welfare and therefore they express strong attraction for foreigners linked with employment opportunities.
- The second cluster, always of high-high type affected the central part of the national territory and it is explained once again in high levels of income and employment.
- The third cluster, of Low-Low type, included the towns of Southern Italy and islands, notoriously characterized by low incomes and few employment opportunities.

The comparison of different LISA areas from 1999 to 2007 with correlation of High, Low and High-Low type highlighted the trend of the phenomenon. Such clusters are going towards expansion, including other neighbouring municipalities.

An extension of this analysis could be done using Bivariate Moran and LISA. Considering the ratio of foreigner to whole resident population in 1999 and 2004, Moran Index $I = 0.4889$ highlights a good level of autocorrelation and Moran scatter plot represents a degree of correlation of the value at the location of x-variable (foreigner to whole population in 2004) with another variable (foreigner to whole population in 1999) considered as the average of its neighbours.

Conclusions

In recent years the focus on the phenomenon of migration has become more and more important in political and social debates. In Italy, and generally in European Union, it coincides with the size increase of the phenomenon due to the intensification of migration flows.

Regional science is paying increasingly attention to migration phenomena considered as a component of regional development. It is still an interesting issue, especially if we consider region's population as a complex system interacting with the economic system, with positive and negative feedbacks [15].

The purpose of this study was to investigate the spatial structure of the presence of foreigners in Italy in order to identify, among different interpretations, the geographical demarcation line of foreign presence. In order to define territorial clusters among Italian municipalities, Spatial Autocorrelation Techniques have been adopted.

Clusters have to be intended as target areas for specific policies aimed at overcoming problems of social integration, security and job opportunities.

In the preparation of dataset and indicators, we considered only the component of legal immigrants. Illegal immigrants alien from the analysis because they are difficult to quantify and every hypothesis brings high uncertainty to the whole study.

Considering results of the analysis it seems that interpretations of a state of balance in regional disparities of migration should consider performance of each individual area: areas characterized by the same performance (high presence of foreigners or low presence of foreigners) tend to aggregate and to expand including neighbouring municipalities. Therefore an internal movement of foreigners exists but it has not long hauled: this characteristic element fits well with historical spatial distribution of foreigners in Italy (north-south demarcation line).

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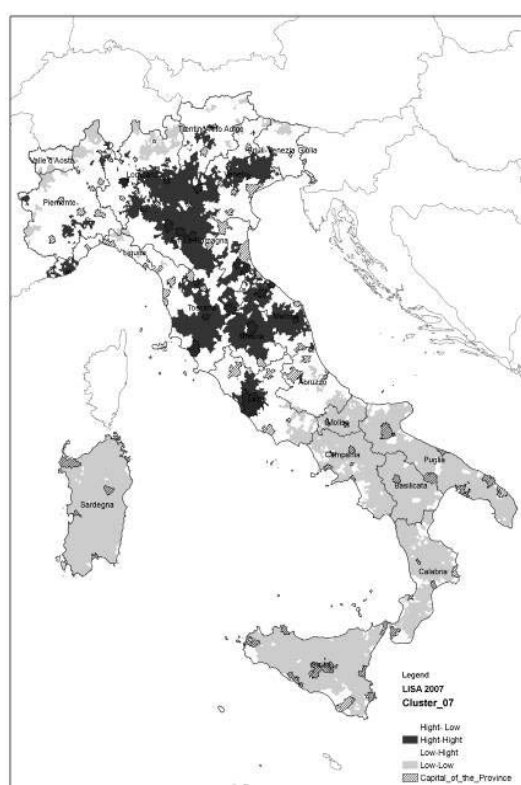
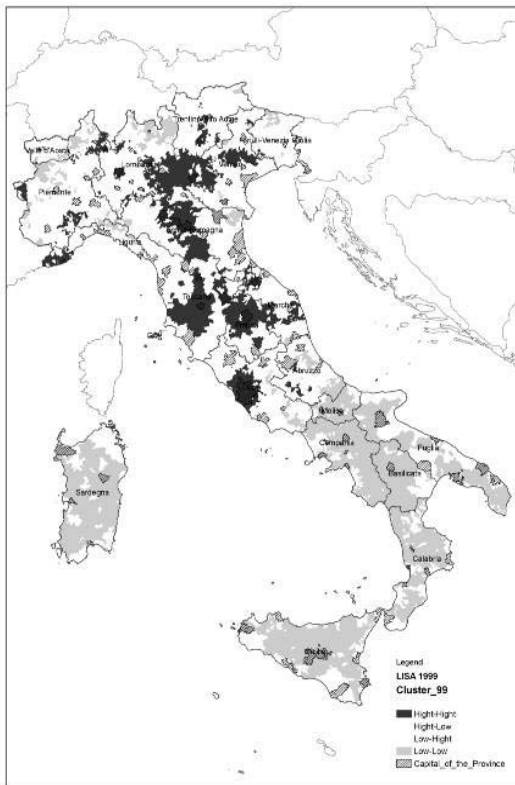
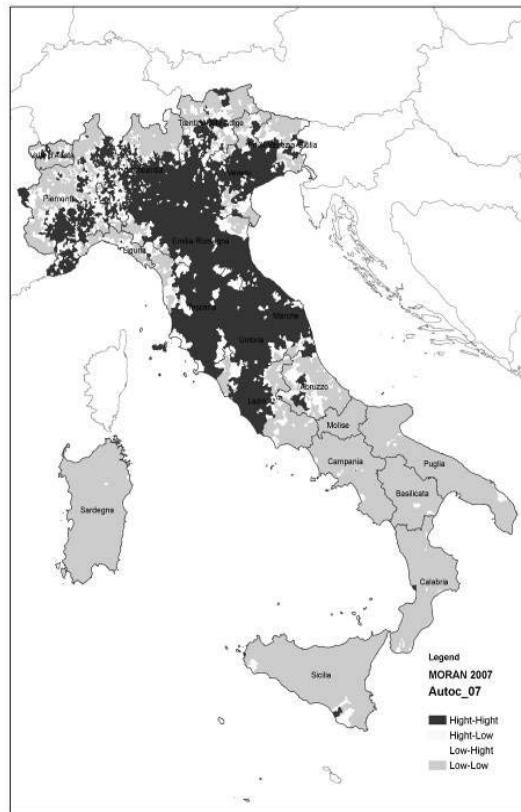
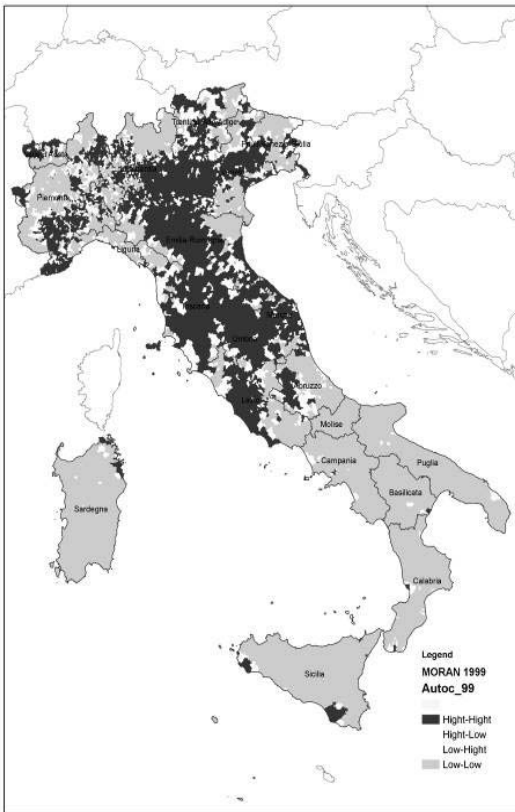


Figure 1 – Moran Scatter plot distribution a) in 1999 and b) in 2007 (our elaboration with GeoDa on ISTAT data) “LISA cluster map” c) 1999, d) 2007 (our elaboration with GeoDa on ISTAT data).

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Immigrati in contesti fragili, tra conflitti latenti e limiti delle politiche locali di accoglienza¹

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Introduzione

Da circa trent'anni la Sicilia è tra le regioni del Sud Europa maggiormente interessate dal fenomeno migratorio, assumendo di fatto il ruolo di via preferenziale di accesso all'Europa attraverso i flussi prevalentemente provenienti dall'Africa.

Per le diverse modalità con le quali spesso si presenta

(scala territoriale del fenomeno, aumento considerevole dei flussi, diversi gruppi etnici presenti, conflitti emergenti e latenti, inadeguatezza delle politiche sociali etc.) e in relazione alle problematiche connesse ai processi di inclusione/esclusione, tale fenomeno negli ultimi anni tuttavia tende sempre più spesso a generare gravi condizioni di criticità sul piano spaziale, oltre che su quello prettamente sociale, ponendo nuovi impegni per la pianificazione.

In riferimento alle suddette problematiche, la questione dei nuovi abitanti ha tradizionalmente interessato prevalentemente i grandi centri urbani, considerati "attrattori" dei flussi di migranti, reclamando nuovi diritti di cittadinanza, spesso non-riconosciuti dalle istituzioni e dalle politiche ufficiali.

Tuttavia, la presenza di immigrati non è esclusivamente una questione "urbana". In relazione soprattutto ai contesti territoriali tradizionalmente considerati marginali, quali la Sicilia, la questione assume sempre più spesso una dimensione extraurbana, riguardando direttamente i territori rurali, interessati da modelli di sviluppo opposti a quelli tipicamente urbani/metropolitani. In tali contesti la concentrazione di percentuali significative di popolazione straniera contribuisce a delineare nuove ed eterogenee realtà post-metropolitane (Soja, 2000) che pongono non pochi problemi, sotto il profilo sociale, economico e spaziale, alla pianificazione urbana e territoriale.

Il fenomeno dei flussi migratori in Europa e in Italia Negli ultimi cinquant'anni molti dei paesi europei considerati nel corso del Novecento zone di origine di flussi migratori internazionali si sono trasformati in luoghi di accoglienza (King, 2000).

Più di recente, i processi di globalizzazione e le profonde trasformazioni socio-economiche, nonché l'allargamento dell'Unione Europea ai paesi dell'Est, sono alla base della convergenza di un articolato e complesso sistema di fattori interdipendenti che determinano il continuo mutare dei rapporti tra paesi di origine e paesi di destinazione dei flussi migratori (King, 2000; Ghelfi, Pirazzoli, Rivaroli, 2006).

Considerando in termini di valori assoluti la presenza di popolazione straniera residente in Europa, i valori maggiori al 1° gennaio 2011 si registrano in Germania (7,2 milioni), Spagna (5,6 milioni), Italia (4,6 milioni), Regno Unito (4,5 milioni) e Francia (3,8 milioni). Secondo le rilevazioni Eurostat (2012) la popolazione straniera residente in questi cinque paesi costituisce il 77,3 % del totale degli immigrati presenti in Europa (UE-27), mentre la popolazione complessiva degli stessi paesi rappresenta il 62,9 % della popolazione europea totale.

Le variazioni percentuali più significative dell'ultimo decennio si registrano in particolare nell'Europa meridionale e, in riferimento a tale contesto, nonostante la crisi, Italia e Spagna sono i paesi in cui sono stati rilevati maggiori livelli di crescita delle presenze².

In Italia, in particolare, le rilevazioni ISTAT effettuate nel corso dell'ultimo decennio intercensuario (2001-2011)³ registrano una crescita della popolazione