

Measuring foreigners migration flows: traditional methods and social network analysis

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Abstract: The aim of the paper is to compare the conventional methods to measure and represent the migration flows with those based on network analysis. We apply network analysis to see whether it reproduces the main results of the traditional techniques and whether it can yield any new insights. The data we use, in two different kinds of analysis, regard the changes of residence of foreign population; they are individual data collected by Istat through the Municipal Registers. In the first step we consider inflows from abroad (average 2005-2006). The countries of origin are identified as “sending nodes” and the local labour market areas are identified as “receiving nodes”. In the second step we examine the internal flows of immigrants between local labour market areas. The analysis is focused on specific citizenships.

Keywords: Migrations, Network analysis

1. Aims

The present study exploits network analysis techniques to describe the existing ties between geographical areas of origin and destination.

In a first step international mobility is taken into account. Over recent years the map of migratory flows has radically transformed. In the case of the foreigners’ international migration flows the countries of citizenship are identified as “sending nodes” and the local labour market areas (LLMAs) are identified as “receiving nodes”.

In a second step the local labour market areas are considered as both sending and receiving nodes to study the internal mobility of the most important foreign communities. The territorial dimension plays a crucial role in studying migration trends. For the different communities, network analysis allows to show the strongest ties between local labour market areas.

2. Changes of residence to study mobility

Until 1995 internal migration in Italy followed a decreasing trend over the years. Since the second half of the last decade, the mobility within Italy has been on the increase again. In a large part this increase is due to the high internal mobility of foreigners in Italy. At the same time, though, the internal migration model underwent another important change. The long-distance transfers, that are between different regions, progressively decreased while the percentage of short-distance ones, within one same region, on the total of transfers significantly increased: while the short-distance transfers

accounted for 65 percent of the total at the beginning of the 1960s', they now exceed and even remain stably over 70 percent (in 2006, they accounted for 75.3% of the total). The measurement of internal and international migratory flows is based on the survey of changes of residence between Italian municipalities and between these with other countries; the survey is based on individual data and has been extensively restructured in recent years. The quality of the data produced has been considerably improved, its prompt distribution guaranteed and there are a greater number of ad hoc indicators for analysing residential mobility. There are numerous statistical information about the individual features of migrants, in particular their distribution by age, gender and nationality, currently an extremely interesting variable both in international and internal flows, increasingly characterised by the presence of foreigners.

3. Methods of analysis

The method of social network analysis (SNA) is applied. It is a technique for visualizing, describing and analyzing a system of relations. Both a basic form of SNA displaying the network visually and a statistical approach calculating some indicators to describe the network and its characteristics are used. The visualization by itself can enhance the understanding of some relationships between the nodes. SNA has developed a number of indicators that focus on the relationships between the nodes considering for example the number of direct relations a node has with other nodes in the network, the centrality of the node in the network, the distance between nodes.

To study both international and internal mobility we use local labour market areas. The 686 "Local labour market areas" were created on the basis of daily work transfers deducted from the last census data. They correspond to aggregations of local administrative units ("comuni") contiguous one to the other and constitute areas of self-containment, considering the inflows and outflows. The strong relationship between labour market and foreign people distribution suggests using local labour market areas in order to draw the geography of this population across Italy.

The analysis of the changes of residence, carried out considering the LLMAAs as a privileged framework to show the migrants' behaviours, highlights the role of citizenship in shaping the net among the different territories.

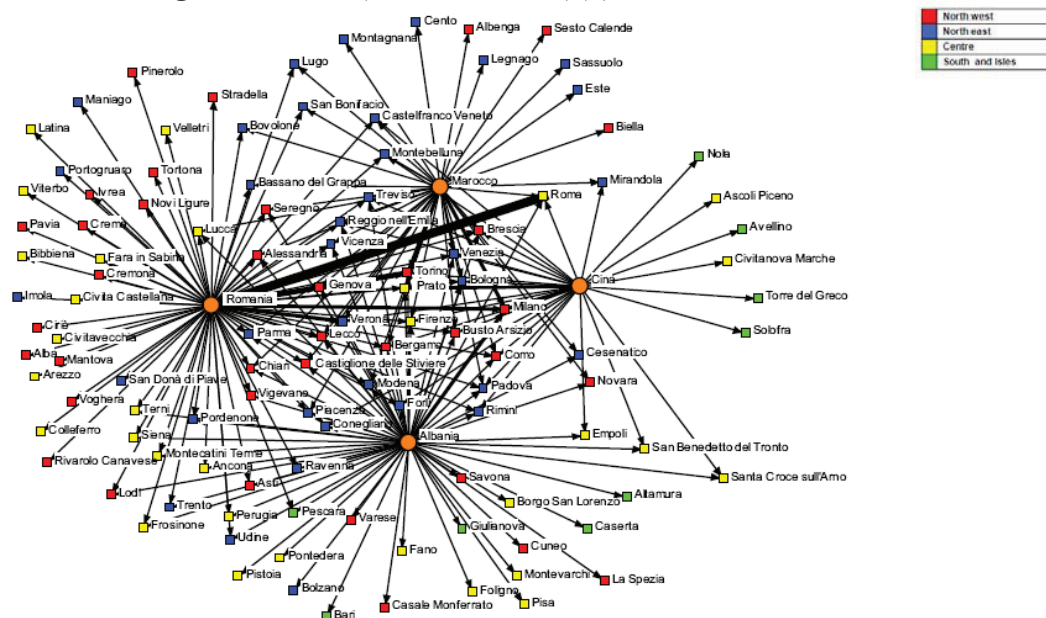
4. Main results

The traditional methods of analysis show that the big cities are the most attractive destinations for the flows from abroad. Using network analysis representations it is possible to draw the flows by main citizenships and destinations (Figure 1). In this way smaller LLMAAs also appear as important points of arrival and settling. So the advantages of this technique in this field are substantial.

Considering the internal mobility, the plot of the networks of the foreigners' changes of residence shows some important aspects such as the high mobility in the North of Italy, the new role of some territories in attracting immigrants and the differences according to citizenship (Figures 2a and 2b). In the North of the country the net seems to be particularly strong and the foreign population very dynamic. The big cities, such as

Rome and Milan, seem to play a core role in the network not only as areas of destination but also as sending nodes.

Figure 1 – Networks of foreign population changes of residence from abroad towards Italian Local labour market areas by main citizenships, Albania, China, Morocco and Romania – Average 2005-2006 (absolute values)(a)



Source: Istat data

(a) Flows above 120 changes of residence are considered.

Figure 2 – Networks of foreign population changes of residence between Italian Local labour market areas for Moroccans and Chinese – Average 2005-2006 (absolute values) (a)

Figure 2a - Moroccans

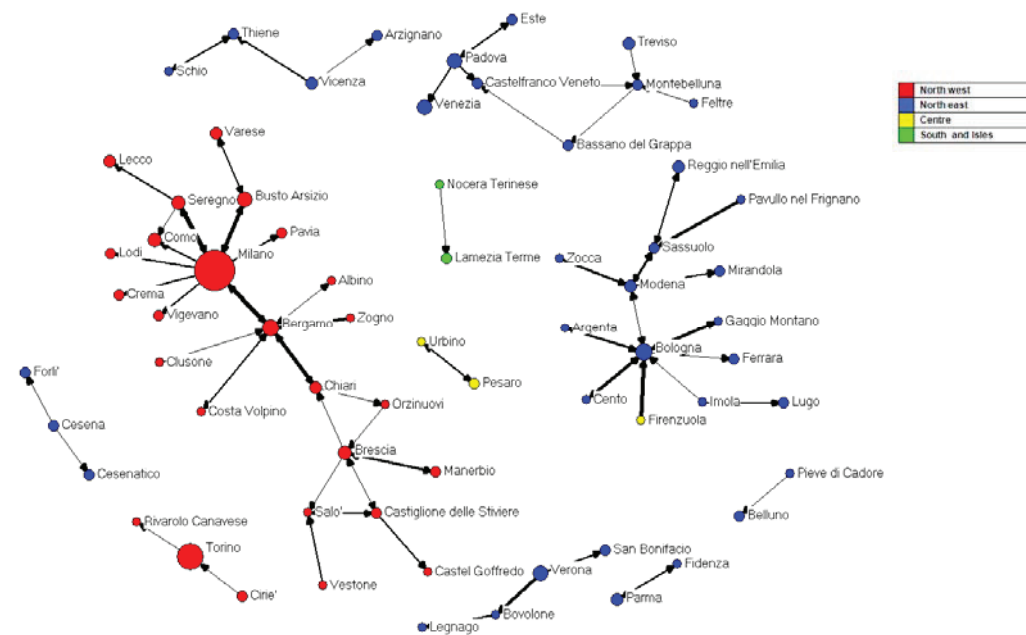
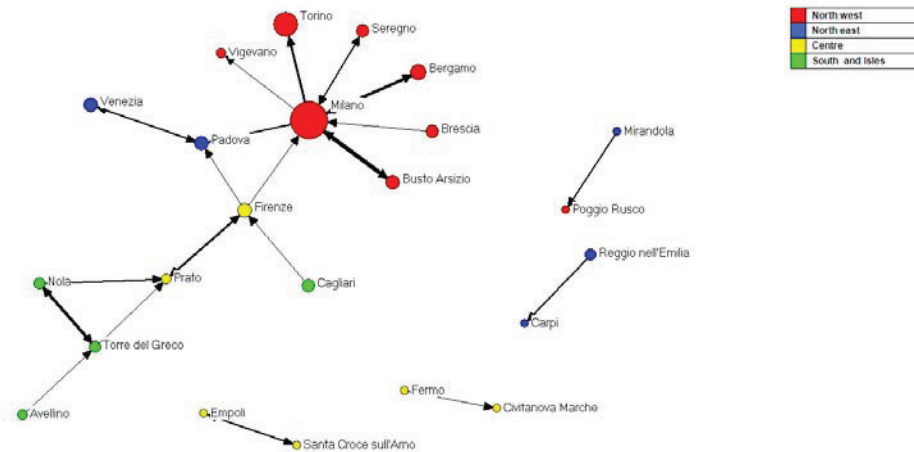


Figure 2b - Chinese



Source: Istat data

(a) Flows above 20 changes of residence are considered.

Furthermore, many small centres, located in the North of the country, are connected in dense networks. The analysis underlines the difference in the networks of the various communities. For example for Moroccans it is possible to individuate three different interesting networks. The first involving the LLMA of Lombardy, another shaped by some nodes of Emilia-Romagna and the last one formed by nodes belonging to Veneto (Figure 2a). The Chinese network is very peculiar because it involves also some nodes of the South of Italy (Figure 2b).

Migration trends seem to be deeply determined by the presence and the functioning of a variety of networks at different levels of aggregation. Migration networks can be defined as “groups of social ties formed on the basis of kinship, friendship and common origin” [Massey, 1990]. This is true both for international migrations and for internal migrations.

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