

Using spatial econometrics to analyse migration in metropolitan areas in Spain (1988-2010)

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Abstract:

The purpose of this paper is to describe the more contemporary evolution of the migration in different Metropolitan areas of Spain during the last two decades. We study migration trends of Metropolitan areas of Madrid, Barcelona, Valencia, Sevilla and Bilbao. The territorial units of analysis are the Spanish municipalities and a classification of these municipality areas based on the Spanish Census of 1991 and 2001. The data come from three data sources elaborated by the National Institute of Statistics: 1) the Residential Variation Statistics that offers the migratory annual flows between the different Spanish municipalities 2) the Municipal Register which records municipality residents and it's the Official Population since 1996 3) and the Spanish Population Census. Our analysis covers the period from 1988 to 2010. We analyse the internal migratory flows using spatial econometrics to identify significant spatial clusters and to provide a new approach of the migration in Metropolitan areas in Spain. According to this, we propose two spatial models to describe the trends of migration from Metropolitan areas to other municipalities and the trends of migration to these Metropolitan areas.

Background

The situation of metropolitan areas is characterised by the stability of the spatial migration patterns from the fifties up to the middle of the seventies of XXth Century. Two types of regions are distinguished in this period: the sending ones that correspond to rural large centre areas, Northwest and South of the peninsula and the receiving ones, located in industrial and urban sectors. On the contrary, the seventies mean a rupture of the prevailing pattern in the internal migrations and a redistribution of the roles played by the different Spanish regions.

Some important points of the contemporary evolution of internal migration in Spain are the decrease of migratory movements from rural areas to industrial and urban areas (the decrease of interregional migration and the long-distance migration) and the increase of intraregional and interurban migration (the increase of short-distance migration). During the last decades, there is a significant dispersion of destinations and a key role of secondary migratory poles, located in the new areas of economic development. In this sense, there is a geographical dispersion of migration flows.

The study we present here aims to clarify the more contemporary evolution of the origin and destination of migrants in 5 metropolitan areas of Spain. We intend to provide a vision of the whole of urban areas in Spain as a dynamic system where the internal migrations create spaces that fluctuate, expand and contract depending on the relevant factors that are to be identify and that will constitute the object of analysis in this work.

Data and methods:

The data derived from the micro-data files of the Residential Variation Statistics, the Municipal Register and the Spanish Population Census. There are three important territorial units of analysis in Spain. The first is the municipalities, with more than eight thousand units. In this case there are two important problems. On the one hand, there is a territorial heterogeneity of these units. And on the other hand, some of these units are not significant because they have low population or sometimes there is no migration and we cannot calculate the migration rates. The second units of analysis are the Provinces and Autonomous Communities. In this case there are few units for a spatial analysis. The last case is a classification of areas based on the 1991 and 2001 Spanish Censuses. This classification allows us to use spatial analysis because it is a classification with 910 units (the Spanish Capitals, the most important cities and the union of the small municipalities) and brings a more territorial homogeneity. Our proposal is to analyse the migration flows of Metropolitan areas through spatial econometric analysis. The main objective is to study the evolution of migration trends in the Metropolitan areas by type of migration and to identify significant spatial clusters. We will make two spatial models. The first model focuses on the emigration from the Metropolitan areas to the rest of Spain. And the second model estimates the migration to the Metropolitan areas from other areas, using as a reference the population of each area of emigration.

Summary of preliminary findings:

An initial analysis of the data was undertaken based on the calculation of Total Migration Rates in the case of Barcelona and Madrid, the most important Metropolitan areas of Spain. Then we analysed these migration rates using Exploratory Spatial Data Analysis. Some preliminary findings and conclusions can be detailed. We have examined the evolution of internal migration of Barcelona and Madrid during two periods: 1990-1993 and 2002-2005. We show here the results of two spatial models for these periods (see Map of Spatial Model 1 and Map of Spatial Model 2). At first, in the Spatial Model 1 it can be seen that areas with low migration rates are located in different parts of the territory and change significantly over these years. We see that the clusters of low migration rates are more extensive in the case of the migration from Barcelona to other municipalities and these clusters increased over time. According to the second spatial model, the clusters of high migration rates are more extensive in the case of migration to Madrid but there is an important decrease of the extension of these clusters during the last period. Amongst these results, an important conclusion is that during these years there are several well-differentiated phases and there are differences between the internal migration of the Metropolitan area of Barcelona and the Metropolitan area of Madrid. Our objective is to explore these preliminary results. For example, we want to study the effect of other demographic and economic variables to explain these different types of migration in Barcelona or Madrid and in other important Metropolitan areas of Spain.

Selected references:

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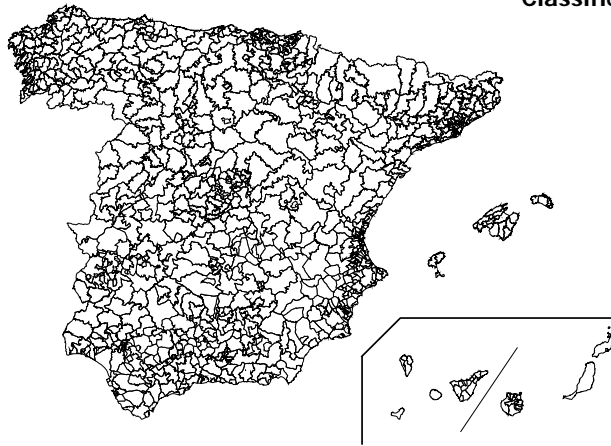
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Preliminary Results

TERRITORIAL UNITS OF ANALYSIS

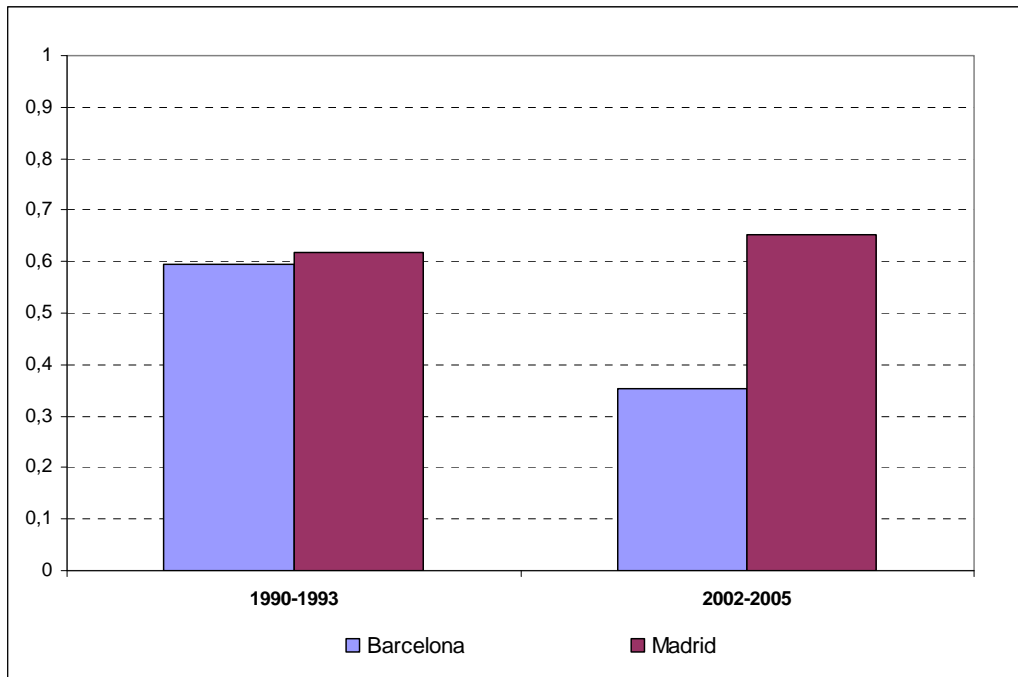


Classification of areas based on the Spanish Census:

910 territorial units

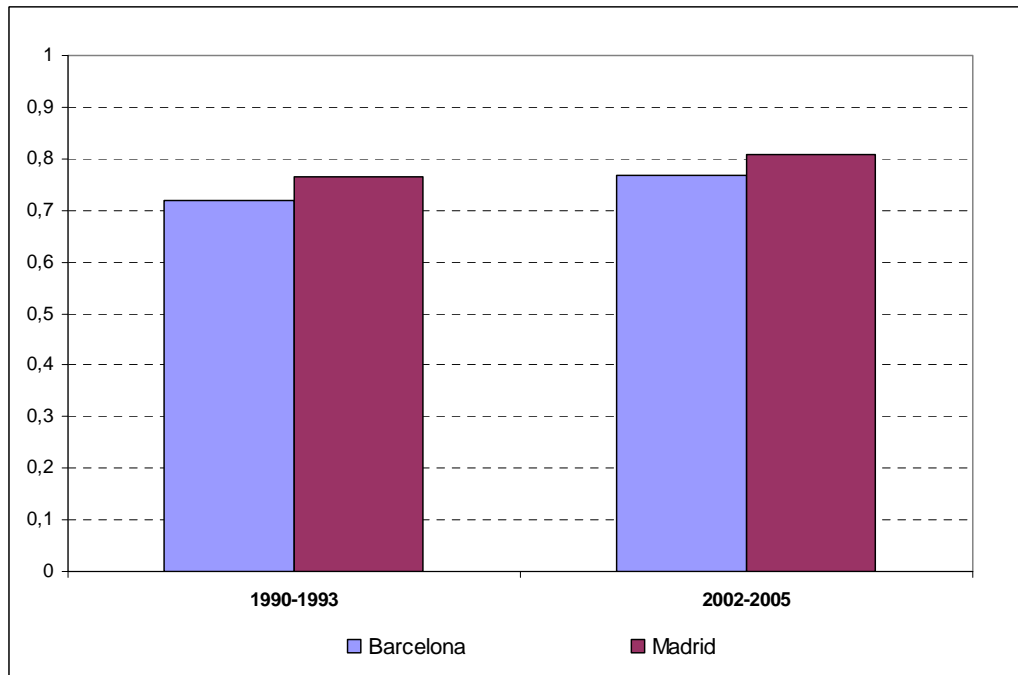
- Territorial homogeneity
- Capitals and union of small municipalities
- All units are significant (population / migration)

Spatial Model 1: Evolution of Global Moran I of Migration Rates from Barcelona or Madrid to other municipalities. Spain, 1990-1993 and 2002-2005



Data Source: National Statistics Institute; Census microdata, Municipal Register, Residential Variation Statistics

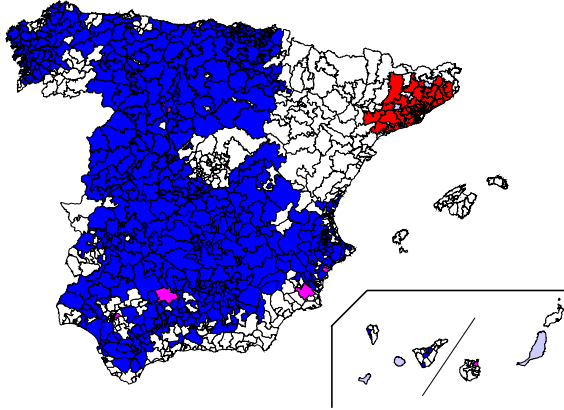
Spatial Model 2: Evolution of Global Moran I of Migration Rates to Barcelona or Madrid. Spain, 1990-1993 and 2002-2005



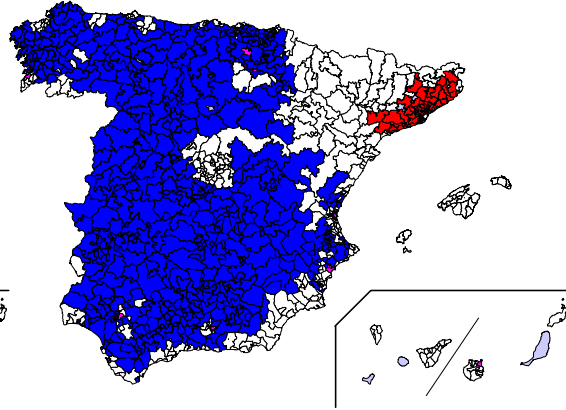
Data Source: National Statistics Institute; Census microdata, Municipal Register, Residential Variation Statistics

Map Spatial Model 1: Local Indicator of Spatial Association (Moran I) of Migration Rates from Barcelona or Madrid to other municipalities. Spain, 1990-1993 and 2002-2005

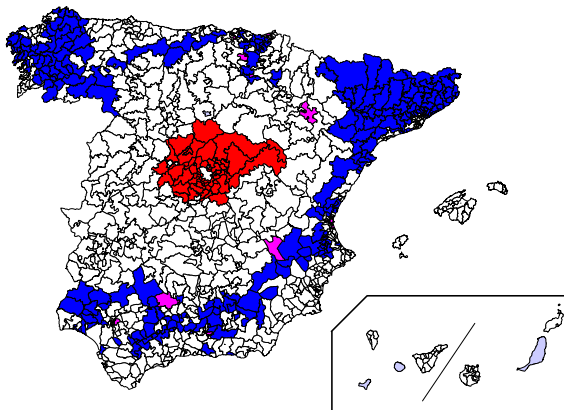
Migration Rates from Barcelona, 1990-1993



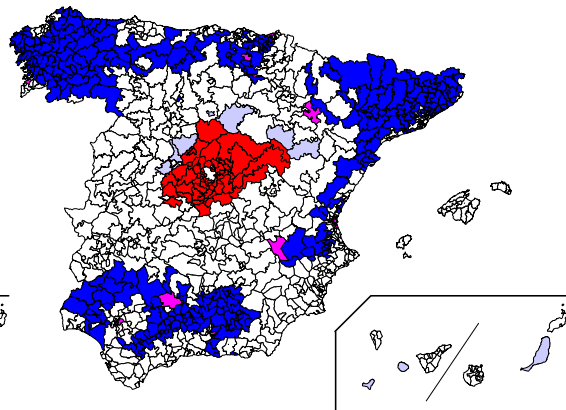
Migration Rates from Barcelona, 2002-2005



Migration Rates from Madrid, 1990-1993



Migration Rates from Madrid, 2002-2005

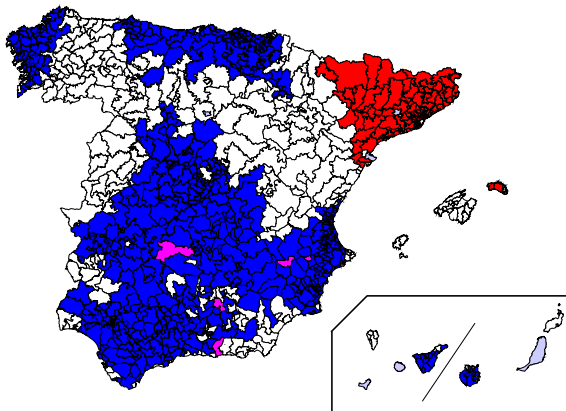


- Not significant
- High - High
- Low - Low
- Low - High
- High - Low

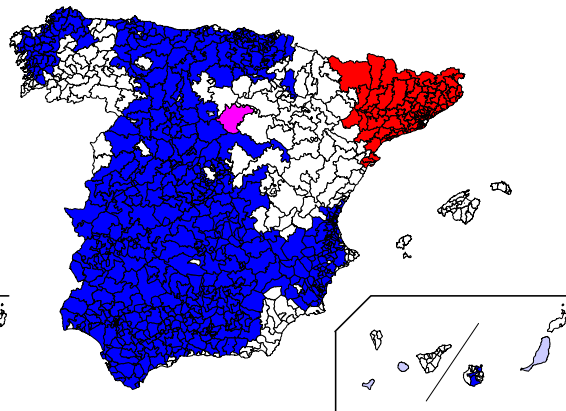
Data Source: National Statistics Institute; Census microdata, Municipal Register, Residential Variation Statistics

Map Spatial Model 2: Local Indicator of Spatial Association (Moran I) of Migration Rates to Barcelona or Madrid. Spain, 1990-1993 and 2002-2005

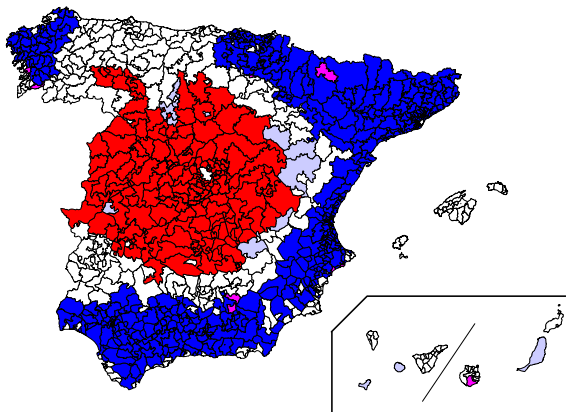
Migration Rates to Barcelona, 1990-1993



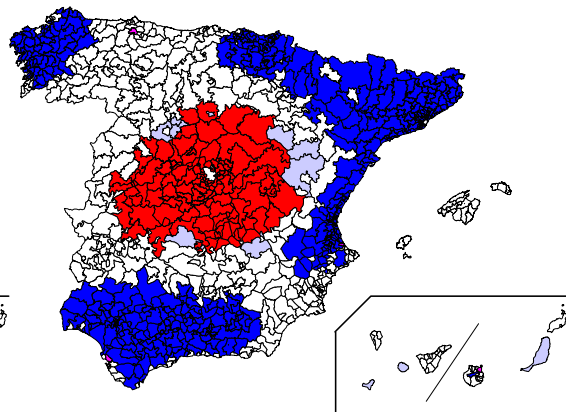
Migration Rates to Barcelona, 2002-2005



Migration Rates to Madrid, 1990-1993



Migration Rates to Madrid, 2002-2005



- Not significant
- High - High
- Low - Low
- Low - High
- High - Low

Data Source: National Statistics Institute; Census microdata, Municipal Register, Residential Variation Statistics