

Abstract: This last decade, main Spanish urban areas have received large amounts of international immigrants, modifying (sub)urban dynamics. The paper specifically explores the Metropolitan Region of Barcelona (RMB), where, between 1998 and 2009, foreign nationality residents rose from 1.8 to 14.9% of total population. Research focuses on the impact of foreign immigration on three specific dynamics: population growth and distribution/segregation of both Spanish and foreign populations within the metropolitan area; their respective residential mobility patterns; and consequences on their age and sex structure. Results show that there are remarkable differences between the two populations: foreign immigrants have preferably settled in the core city's least affluent neighbourhoods and, in a second phase, in inner ring municipalities, while the Spanish population continues to move to suburban municipalities.

Key words: Foreign nationality population, international immigration, residential mobility, suburbanisation, Barcelona Metropolitan Area.

INTRODUCTION

In the late 20th and early 21st centuries, Spanish population size and composition, as well as that of other Mediterranean countries, have been deeply transformed due to the arrival of millions of foreign immigrants. Over the last years, Spain, previously one of the EU countries with the lowest foreigner share (1.6% in 1998, Eurostat data), has received the biggest immigration flows within Europe (Ribas-Mateos, 2004; Domingo & Gil-Alonso, 2007), and is presently leading this indicator. According to the most recent *padrón* (local register) data, on January the 1st 2010, foreign residents represented a 12.2%¹ of the total population or, in other words, there were 5,747,734 foreign citizens. This phenomenon has had a strong impact on many demographic parameters, as the Spanish population, previously facing stagnation or even diminution, has substantially increased and been rejuvenated.

It has not had the same effect throughout the territory. Previous work shows that in historic urban centres (Valero, 2008) and certain rural areas (Bayona & Gil-Alonso, 2010) it has slowed ageing and depopulation down. However, its major impact has probably been on Spanish large metropolitan areas, where some of its specificities make it, in our opinion, a particularly interesting case to study. Large foreigner flows have arrived in little time, and migrants' diffusion throughout the metropolitan area practically commenced from the beginning. At the same time, the registration system has also been improved. The *Padrón continuo* –existing since 1998– allows to follow local and foreign population growth, distribution and mobility patterns at the municipality level, thus, permitting to annually analyse settlement dynamics in both populations. Our initial hypothesis is that residential mobility plays an essential role in foreign population's initial settlement throughout Spanish metropolitan regions, which, in turn, complements Spaniards' intra-metropolitan moves, intensifying and making suburbanisation trends spatially more complex.

This paper analyses foreigner residential mobility patterns in the Metropolitan Region of Barcelona (RMB from now on) between 1998 and 2009, when there was a massive inflow of foreign migrants due to the prevailing economic boom –lasting up to 2007. Geographically speaking, the RMB is a densely populated area which holds the city of Barcelona (1.62 million inhabitants living in 100 km²) and the surrounding municipalities, functionally dependant on the core city, particularly in economic and in

labour market terms. It is made up of 164 municipalities extending 3,236 km² and holding 5.01 million inhabitants (2010 *Padrón continuo* data), 744.514 of which are foreigners, with a mean of more than 140,000 residential moves per year.

The paper will develop as follows: once the theoretical framework and data are presented, it will firstly focus on population growth and distribution within the RMB. It will then analyse foreigners' residential mobility patterns and their impact on the general trends. And finally, it will concentrate on its effects on the age and sex structure, taking territorial aspects into account. These three dimensions will be examined from both a demographical and geographical perspective, that is to say, autochthonous and foreign populations will be separately studied and the central city (Barcelona) differentiated from its suburbs.

Yet, as the RMB is not a homogeneous space, we consider that the central city/periphery dichotomy is not enough to explain population and mobility differences. Though diverse metropolitan suburb typologies have been identified for the US on the basis of socioeconomic, demographic or racial factors (Hanlon *et al.*, 2006; Mikelbank, 2004; Katz & Lang, 2003), we do not believe them to be appropriate for Spanish cities. Instead, distance between suburban municipalities and the main city centre has been used as the main criterion, grouping municipalities in seven categories (Barcelona plus six 10-km wide concentric rings). Consequently, one of our aims will be observing whether distance to the urban core influences the proportion of foreigners, as it seems to do in the US, where the racial composition of metropolitan fringe suburbs is less heterogeneous than that of those located closer-in (Hall and Lee, 2010; Frey, 2005) or if dynamics are more similar to that of European metropolitan areas. In the following paragraphs differences between European and US regarding suburbanisation-foreign immigration relationship trends will be highlighted.

FOREIGN IMMIGRATION AND SUBURBANISATION: THE EUROPEAN CONTEXT

Main Spanish cities have followed classic European metropolitan patterns (Nel-lo, 2004; Cheshire, 1995; Champion, 2001) and, as their city centres are gaining population once again, are apparently entering the last recentralisation phase. Nevertheless, former suburban inhabitants are not returning to the city centre, as the 'recentralisation' concept

usually suggests. Growth is more directly related to the arrival of foreign immigrants, while local population maintains its de-concentration trends. The novelty would be foreigners' incorporation to this process (Bayona & Gil-Alonso, 2008; Pozo & García, 2009).

Relationships between international immigration and urban population changes have been widely explored by many Western Europe and US researchers from many perspectives, including the native foreign-born household homeownership gap (Bonvalet *et al.*, 1995; Borjas, 2000; Carter *et al.*, 2007; Bolt *et al.*; 2008; Hamnett & Butler, 2010), differences between immigrant and native residential mobility behaviour (López-Gay, 2008; Zorlu & Latten, 2009) and its impact on foreign population segregation (Bolt & van Kempen, 2010), or –within the urban sprawl *versus* the compact city debate– the impact of foreign immigrants on urban compactness and density changes (Fulton *et al.*, 2001, Myers, 2001; Bae, 2004). This last author argues that, in large American metropolitan areas, immigration and urban density are strongly positively associated as new (mainly poor) immigrants crowd into the existing central cities' housing stocks instead of generating a new demand for new (sub)urban developments, providing a significant offset to suburbanisation and exurbanisation (Bae, 2004, p. 291). However, in the longer run, when immigrants experience upward social mobility, some of them often replicate the behaviour of the native born and move towards the suburbs. Seemingly, in Western Europe the phenomenon would behave differently and there would essentially be two main types of suburban areas. High standard residential areas are receiving medium to high purchasing power families – including immigrant ones experiencing upward social mobility– while post-war low quality neighbourhoods, with increasing problems, may potentially be receiving large numbers of low income foreign immigrants (Kempen & Murie, 2009). Great Britain, where the Asiatic origin population is being incorporated to general British suburbanisation trends, in a similar way as the rest of the same social category British people (Peach, 1998), can be cited as an example of the former type. The second could be exemplified by the Netherlands, where foreigners form a substantial part of suburbanisation flows, even representing 40% of Rotterdam's migrants and 50% of those moving to Amsterdam (Bolt *et al.* 2008). Former authors point to housing availability as its main driving force. Similarly, Bonvalet (1995) exposed the same

motives for France, where there are significant suburbanisation flows towards suburban social housing.

Due to the characteristic lack of social housing, South European cities should be considered apart. Malheiros (2002) argues that as medium and low social classes are becoming intensively suburbanised, foreigner suburbanisation flows towards these areas are also substantial. Arbaci (2008) brings the argument further by claiming that foreigner suburbanisation does not, as in the American case, mean an improvement in their living conditions. On the contrary, in areas like southern European cities, where the main tenancy regime is property, suburbanisation is frequently linked to worse housing conditions (Arbaci & Malheiros, 2010).

In this line, recent RMB foreigner suburbanisation –as that at other Spanish cities (Bayona *et al.*, 2011)– would, at least in this first phase, only represent an expansion of Barcelona’s housing market to inner ring suburbs (adjacent municipalities placed less than 10km away from Barcelona’s city centre) forming a contiguous built-up area with it. These well connected areas, built in the 1950’s and 1960’s for Spanish immigrants, offer low price housing –to rent or buy– in bad quality neighbourhoods which are emptying for life cycle and biological reasons (López-Gay, 2008; Bayona and Gil-Alonso, 2008). Foreigners, on their side, are gradually gaining access to property and are progressively occupying them (Pareja-Eastaway, 2009; Vono & Bayona, 2010).

STATISTICAL SOURCES

Three statistical data sources, collected and published by the Spanish National Statistical Institute (INE), have been used: the *Padrón continuo* or the local continuous register –referenced to January the 1st of each year– collecting stock data on the Spanish and foreign nationality population; the *Movimiento Natural de la Población* (MNP) or the natural population movement statistics, gathering natural growth flows (births and deaths); and finally the *Estadística de Variaciones Residenciales* (EVR) or the residential change statistics, covering variations of municipality of residence, and therefore supplying migratory growth flows (immigration and emigration).

The INE’s *Padrón continuo* results from coordinating and crosschecking municipal administrative registers called *padrones*. It is updated each year on January the 1st, giving, since 1998 (year when our research starts), the official population figure for

each of Spanish municipalities and the country as a whole. It crosses the population's age and sex by their place of residence and nationality. According to Spanish law (*Ley de Bases de Régimen Local*), everyone residing in the country, independently from their legal situation, has the right and the duty to be registered in their local *padrón*. Foreigners, including recent and irregular immigrants, usually do it, as this gives them access to free public health and education. Therefore, its figures are considered to be a good estimate of the actual number of foreigners living in Spain.

The *Movimiento Natural de la Población* (MNP), produced by the INE with the birth, marriage and death bulletins it receives from the local *Registros Civiles* (Civil Registers), collects births, marriages and deaths having taken place in Spain. Overall birth and death figures are used by the paper to obtain RMB migratory growth through the so-called compensatory equation method², where natural growth (births minus deaths) is subtracted from total population growth between two successive years (obtained from *Padrón* data). Both MNP and *Padrón* microdata have been provided by the *Institut d'Estadística de Catalunya* (Idescat).

The *Estadística de Variaciones Residenciales* (EVR) collects migratory flows between Spanish municipalities or between one of these and another country, by nationality. It is annually elaborated by the INE by exploiting data from local *padrones* on new registrations and deletions due changes in the municipality of residence. Even though data on dwelling moves between Spanish municipalities are reasonably reliable (Recaño, 2002), new registrations of people arriving from abroad and deletions of those residents moving to another country are rather poorly compiled (Gil-Alonso, 2010). Therefore, while the EVR will be used to estimate internal flows between RMB municipalities, the aforementioned compensatory equation will be employed to calculate external migratory flows³, that is to say, those between the RMB and other areas.

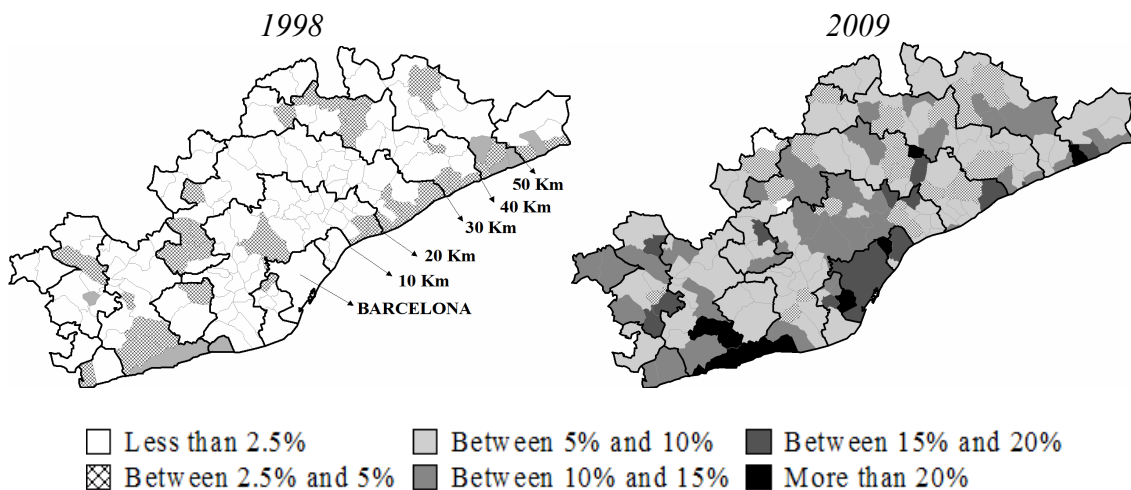
FOREIGN IMMIGRATION'S IMPACT ON RMB'S DEMOGRAPHIC GROWTH

As Cabré & Modenes (1997) confirm, between 1981 and 1996, the RMB's population size did practically not vary, remaining with around 4.25 million inhabitants throughout the period. Yet, its population was redistributed. While the city of Barcelona –as other

large Spanish cities (Nel-lo, 2004)– and its continuous urban area (large metropolitan inner-ring towns) lost population (about 250 thousand inhabitants) due to initial suburbanisation processes, the most external suburban municipalities and the rest of Catalonia became destination points (Mendizábal, 1992; Módenes, 1998; Módenes & Pascual, 1998; Miret, 1998; Pujadas, 2005 and 2009). However, when, in the late 1990s, international migration irrupted, trends changed becoming a turning point. From then on Barcelona and the RMB as a whole started gaining population once again.

The arrival of foreign immigrants and their impact on the metropolitan population: a strong growth between 1998 and 2009 - Before immigrants’ explosive increase in the late 1990s, the number of foreigners living in the RMB was relatively small. In 1991 they were only 47,591 (census data) and five years later they were 66,758 (1996 *padrón*), respectively representing a 1.1% and 1.6% of the total population. However, in the late 1990s and early 2000s, their numbers quickly started to rise: from 214,028 in 2001-the equivalent to 4.9% of the population- to above half a million in 2005, and 741.561 in January 2009 -representing a 14.9% of the RMB population⁴.

Figure 1. Proportion of foreigners in the RMB municipalities, 1998 and 2009.



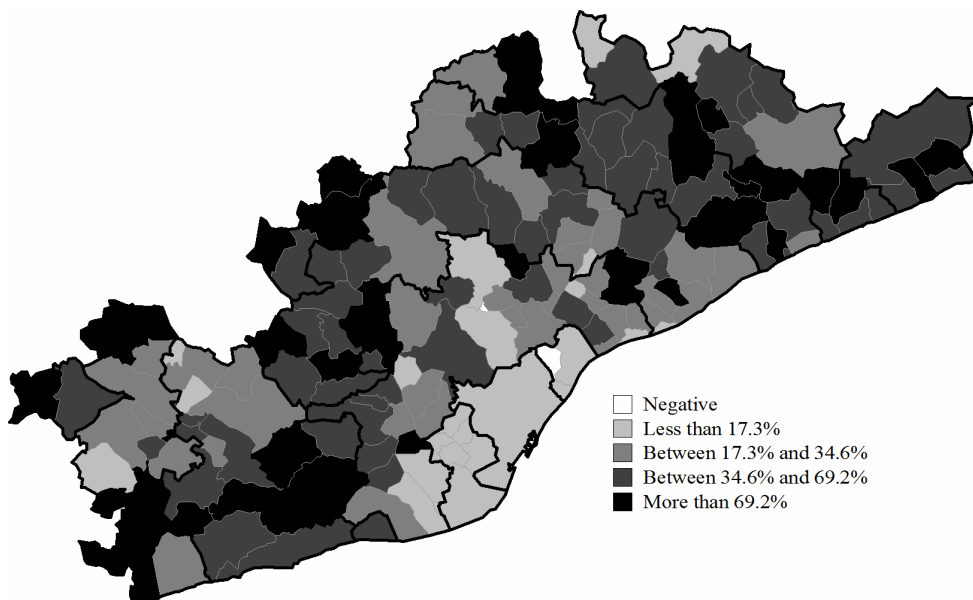
Source: 1st January 1998 and 2009 Padrón, data provided by Idescat.

As observed in figure 1, local level impact is particularly strong and differences in municipality shares have considerably grown. While, in 1998, foreigners were only significant in some coastal municipalities (with a maximum share of 6.6%), in most of them proportions remained around 1%. Yet, in 2009, the percentage of foreigners rose throughout the metropolitan area and local levels fluctuated from a minimum of 2.1%

and a maximum of 25.3%. As for the situation in the city of Barcelona itself, percentages also increased –especially in years when immigration flows were at their highest–, acting as immigrant’s main gateway into Catalonia (Bayona, 2007).

Consequently, immigration has once more become, as during the 1950’s and 1960’s, the main driving force of demographic growth. However, in contrast with those dates, the key role is presently played by foreign citizens (Domingo *et al.* 2004). Despite disparities in numbers, almost all RMB municipalities have grown. While Barcelona itself and its neighbouring municipalities have done it more moderately, growth rates have been higher in those situated further away (Figure 2).

Figure 2. Population growth rate in RMB municipalities, 1998-2009



Source: 1st January 1998 and 2009 Padrón data, provided by Idescat.

Table 1 shows demographic dynamics for metropolitan municipalities grouped by distance to Barcelona (10 Km rings, considering distance between the two municipality centres). Between 1998 and 2009 the central city recovered about 120,000 residents (+8.2%). In other words, after 20 years of losses, it recuperated positive growth. As for the metropolitan region as a whole, the impact of foreign immigration is equally relevant: according to the *padrón*, in that period, the RMB gained 736,300 inhabitants (Table 1), or, what is the same, population increased by 17.3%. This was mainly due to net migration, as only 123,515 of these new residents can be attributed to natural growth (the result of 545,225 births minus 421,710 deaths) and, therefore, 612,785 of them are due to migratory growth, meaning that, net migration is responsible for 83.2% of the rise.

Table 1. Natural change, total and migratory growth in the city of Barcelona and in the RMB municipalities grouped by distance to Barcelona, 1998-2009

	<i>Natural</i>		<i>Total</i>		<i>Net</i>		<i>Internal Net</i>		<i>External Net</i>	
	<i>Change</i>	<i>(%)</i>	<i>Growth</i>	<i>(%)</i>	<i>Migration</i>	<i>(%)</i>	<i>(RMB)</i>	<i>(%)</i>	<i>(to RMB)</i>	<i>(%)</i>
Barcelona	-25,734	-1.7	122,201	8.2	147,935	9.9	-186,611	-12.4	334,546	22.3
Less than 10 km	23,667	2.8	32,617	3.9	8,950	1.1	-69,339	-8.2	78,289	9.3
Between 10-20 km	62,872	6.9	200,627	22.2	137,755	15.2	73,623	8.1	64,132	7.1
Between 20-30 km	42,960	6.9	195,618	31.2	152,658	24.4	75,229	12.0	77,429	12.4
Between 30-40 km	11,652	6.6	91,964	51.7	80,312	45.2	56,871	32.0	23,441	13.2
Between 40-50 km	5,574	3.6	66,562	43.1	60,988	39.5	33,654	21.8	27,334	17.7
More than 50 km	2,524	5.0	26,711	53.0	24,187	48.0	16,573	32.9	7,614	15.1
TOTAL	123,515	2.9	736,300	17.3	612,785	14.4	0	0.0	612,785	14.4

Source: Idescat data on flows (1998-2008, MNP and EVR) and stocks (1998-2009, Padrón continuo).

Turning to the nationality perspective but leaving the effect of Spanish citizenship acquisition aside, we can observe that the number of foreigners increased in 663,667 newcomers. In other words, 90% of the total population growth was due to the increase of aliens (table 2).

Table 2. Relative and absolute population size change in the city of Barcelona and in the RMB municipalities, by nationality, 1998-2009, grouped distance to Barcelona.

	<i>TOTAL</i>		<i>SPANIARDS</i>		<i>FOREIGNERS</i>	
	<i>Absolute Change</i>	<i>Relative Change</i>	<i>Absolute Change</i>	<i>Relative Change</i>	<i>Absolute Change</i>	<i>Relative Change</i>
Barcelona	122,201	8.2	-130,077	-8.9	252,278	785.7
Less than 10 km	32,617	3.9	-109,786	-13.2	142,403	1371.2
Between 10 and 20 km	200,627	22.2	91,126	10.2	109,501	933.3
Between 20 and 30 km	195,618	31.2	98,277	16.1	97,341	688.4
Between 30 and 40 km	91,964	51.7	66,051	38.1	25,913	556.1
Between 40 and 50 km	66,562	43.1	38,835	25.7	27,727	810.5
More than 50 km	26,711	53.0	18,207	37.2	8,504	587.7
RMB	736,300	17.3	72,633	1.7	663,667	852.0

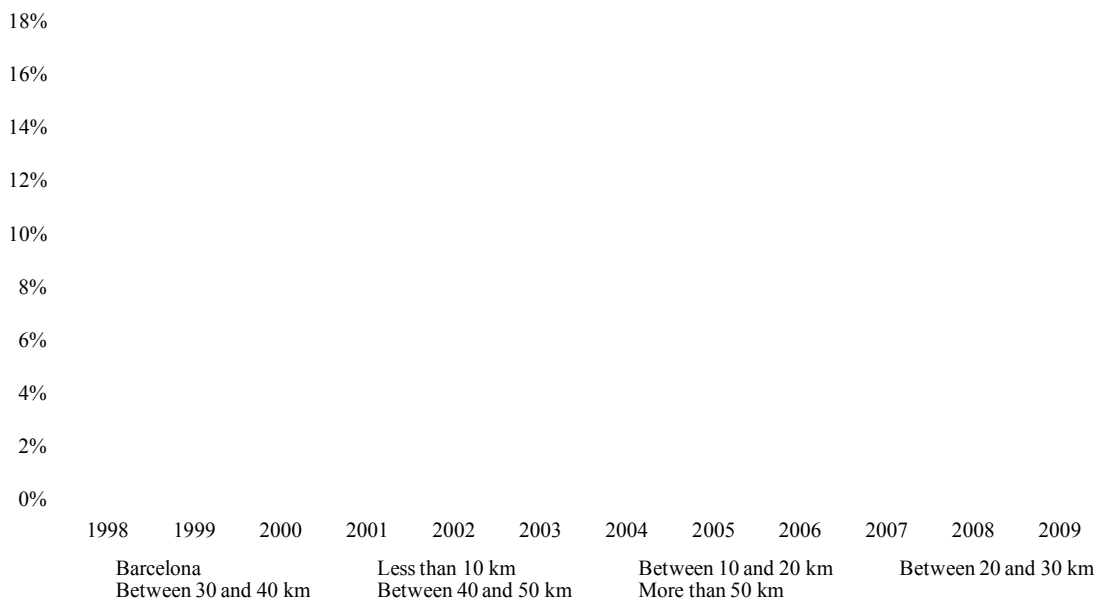
Source: 1st January 1998 and 2009 Padrón, data provided by Idescat.

MIGRATION'S IMPACT ON RMB SETTLEMENT AND SEGREGATION PATTERNS

Spatial distribution changes: distance to Barcelona as a key factor - Table 2 shows Spanish and foreign population distribution by distance to Barcelona. While the central city and its nearest municipalities have lost autochthonous population, those placed further away have gained it. Barcelona's Spanish dwellers have fallen by 8.9% and

those in municipalities nearest to it (situated at less than 10km from it) by a 13.2%. Therefore, among them, in eleven years, they have lost 239,863 Spanish residents. Meanwhile, the rest of the RMB has won 312,496 Spaniards. Even though the foreign population living in municipalities situated at more than 20 km from the central city has risen, the growth of Spanish nationals have been even larger. Municipalities located at more than 30 km from the central city, which have grown a 48.4%, offer a clear example, as Spanish citizens increase have nearly doubled those of foreigners (+123,093 compared to +62,144 foreign citizens).

Figure 3. Changes in the proportion of foreigners in the RMB municipalities by distance to Barcelona, 1998-2009



Source: 1st January 1998- 2009 Padrón, data provided by Idescat.

Regarding foreign population, they increased throughout the RMB, and particularly in the core city and the inner ring municipalities (less than 10 km away from it). While the former added 252,278 new foreign residents, the latter 142,403 (the most important increase in relative terms). Therefore, the highest relative increases were observed in this type of municipalities and those situated between 10 km and 20 km from Barcelona followed them. As for locations above 20 km from the core city, they received relatively few foreigners even though numbers significantly grew.

In sum, between 1998 and 2009, the previous de-concentration and suburbanisation trends continued. Barcelona and municipalities nearest to it –those within the first metropolitan ring (less than 10 km)– lost share within the RMB total population while

those furthest away, gained it. Nevertheless, differences by nationality are large. Indeed, de-concentration particularly concerns Spanish nationals. Foreigners however followed their own or even the opposite trend, strongly growing in the core city and municipalities closest to it. As López 2008 argues, foreign immigrants, to a certain extent, attenuated and disguised the central city's de-concentration process, and the city of Barcelona even gained population, underlining Barcelona's role as immigrants' main gateway into the RMB and Catalonia in general. Presently, the highest proportions of foreigners are found in Barcelona and inner ring municipalities. Oddly enough, the latter were also those containing less foreign population before 1998 (figure 3), but the situation has been reversed by the departure of 110,000 Spaniards and the net arrival of 142,000 foreigners.

RMB's population distribution and segregation by nationality – In comparison to 1998, the 2009 RMB population was not only, in general, less concentrated, but both its components, Spanish and foreign citizens, also were (table 3). While the share of the former has progressively diminished, that of the latter has not followed a uniform trend. The first years, during the immigration boom, the share of foreigners living in Barcelona augmented. Yet, from then on, the proportion of those residing in the core city fell and that of those doing it in municipalities situated at less than 10km significantly increased. When the two areas are analysed together, it becomes clear that foreigners concentrate in the continuous urban central area. In 1998, 54.5% of foreigners living in the RBM were in Barcelona or in municipalities situated at less than 10km from it. In 2004, the proportion reaches 62%, moderately decreasing in 2009 to 58.9%. This concentration has been fuelled by three factors: geographical proximity to Barcelona; good connections, in terms of public transport, with it; and a common housing market. For foreigners, de-concentration, has only generally mean concentrating in municipalities near the central city, while for Spanish people it has involved moving to the municipalities furthest away from the centre.

Focusing on foreigners' distribution by continental origin, EU citizens and their exceptional situation should be the first to be highlighted, as, between 1998 and 2009, their share was the only one to increase in the city of Barcelona. This would be related to several factors: recent flow growth, to the power of attraction that the city has on young Europeans (for working or studying reasons), and to a possible over-registration⁵. De-concentration is also particularly relevant for Americans (mostly Latin-Americans,

55.7% of them living in the city of Barcelona in 1998, but only 39.6% in 2009) and Asians (from 67.9% to 53.9%), which have mainly settled in nearby municipalities. As observed in table 3, the suburbanisation process can be divided into two phases. In the first one, between 1998 and 2004, that is to say, when the immigration boom accelerated, there is less de-concentration and therefore the share of foreigners living in Barcelona (and municipalities nearest to it) even increases due to its role as main gateway into Catalonia. However, in the second phase, from 2004 onwards, the share of foreigners residing in Barcelona dwindles while, as foreign population gradually extends throughout the metropolitan area, that of those doing it in the rest of municipalities grows.

Table 3. Population by nationality and distance to Barcelona, 1998, 2004 and 2009

		<i>Other</i>							
		<i>EU-15</i>	<i>European</i>	<i>African</i>	<i>American</i>	<i>Asian</i>	<i>Foreigners</i>	<i>Spaniards</i>	<i>All</i>
Barcelona	1998	42,8	44,1	19,1	55,7	67,9	41,2	35,1	35,2
	2004	50,8	44,5	18,0	48,8	59,1	43,0	32,8	33,8
	2009	55,2	35,6	14,1	39,6	53,9	38,3	31,5	32,5
Less than 10 km	1998	9,0	7,4	16,9	13,8	13,3	13,3	19,9	19,8
	2004	7,5	14,7	19,5	20,6	27,5	19,0	18,2	18,2
	2009	8,0	17,7	17,8	24,2	30,8	20,6	17,0	17,5
Between 10 and 20 km	1998	17,5	14,1	17,9	12,2	8,1	15,1	21,4	21,3
	2004	14,4	15,5	18,9	14,2	5,6	14,4	22,6	21,8
	2009	12,8	19,2	22,4	16,9	7,2	16,3	23,2	22,2
Between 20 and 30 km	1998	15,1	14,5	30,5	11,2	5,9	18,2	14,7	14,7
	2004	12,8	11,9	29,1	10,2	5,1	14,3	15,9	15,8
	2009	10,9	13,8	31,0	12,2	5,5	15,0	16,7	16,5
Between 30 and 40 km	1998	9,2	8,0	6,3	3,8	2,1	6,0	4,1	4,2
	2004	8,7	4,2	5,4	2,9	1,1	4,0	5,0	4,9
	2009	8,0	4,7	4,9	3,1	0,9	4,1	5,6	5,4
Between 40 and 50 km	1998	4,1	9,2	6,7	2,4	1,9	4,4	3,6	3,6
	2004	3,9	7,0	6,8	2,8	1,1	4,0	4,1	4,1
	2009	3,6	6,9	7,3	3,2	1,3	4,2	4,5	4,4
More than 50 km	1998	2,3	2,8	2,6	0,9	0,8	1,9	1,2	1,2
	2004	1,8	2,1	2,3	0,7	0,5	1,3	1,4	1,4
	2009	1,4	2,1	2,5	0,8	0,4	1,3	1,6	1,5

Source: 1998, 2004 and 2009 Padrón , data provided by the Idescat.

As a consequence on this redistribution process, present foreigner and local population's residential patterns are more similar than what they were in 1998. This conclusion has been reached by applying the index of dissimilarity⁶ to the 164 municipalities belonging to the RMB. Despite general similarities, there continues to be differences by nationality. EU citizens are presently more segregated, as they are increasingly concentrated in Barcelona. A similar trend, though mainly restricted to the period

between 1998 and 2004, can be observed among Asians. However, these would rather be converging in inner ring municipalities while becoming less present in Barcelona. Even though it is quite clear that Asians are undergoing a sub-urbanisation process, their concentrated settlement trends are similar to those they followed in Barcelona (Martori & Hoberg, 2004; Bayona, 2007; Musterd & Fullaondo, 2008; Martori & Apparicio, 2011). As for Africans, a slight diminution in their segregation figures can be observed between 1998 and 2009, although their unclear pattern would however mainly be explained by the small number of Africans living in Barcelona (only 14.1% while Spanish population represents 31.5%). In Americans and other Europeans, the index of dissimilarity would particularly fall. This would therefore indicate that they are increasingly less segregated and that their distribution throughout the RMB would be more similar to that of Spanish people.

Table 4. Index of dissimilarity between RMB Spaniards and foreigners by continental origin, 1998-2004-2009.

	<i>1998</i>	<i>2004</i>	<i>2009</i>	<i>1998- 2004</i>	<i>2004- 2009</i>	<i>1998- 2009</i>
EU_15	0.311	0.331	0.346	0.020	0.015	0.035
Other European	0.326	0.208	0.147	-0.118	-0.061	-0.179
African	0.307	0.279	0.304	-0.028	0.025	-0.003
American	0.264	0.242	0.195	-0.022	-0.047	-0.069
Asian	0.358	0.398	0.396	0.040	-0.002	0.038
Foreigners	0.186	0.165	0.149	-0.021	-0.016	-0.037

Source: 1998, 2004 and 2009 Padrón (Idescat).

R.M.B. EXTERNAL MIGRATION *VERSUS* INTRA-METROPOLITAN FLOWS

Internal and external residential mobility: Barcelona's essential role - An idea of the RMB's external migratory growth can be obtained by subtracting internal RMB migration from total net migration. 55% of the RMB's positive external net migration is already attracted by the city of Barcelona itself, confirming its seductive force (table 1). It draws foreign immigrants towards it and then distributes them throughout the RMB. Hence, its internal net migration is negative. Municipalities at less than 10 km from Barcelona also have negative internal migratory growth, which is though compensated by the arrival of migrants from outside the RMB.

Residential mobility within the RMB should also be highlighted, as, for example, in municipalities at more than 30 km from the core city, more than 50% of the total growth

is due to internal net migration (basically moves from Barcelona and the inner ring municipalities). As a means of extending our knowledge on how territorial patterns are being re-configured by immigration and given that we suspect that foreigner and Spanish people's migratory patterns are different, former flows have been examined separately (Table 5). Analysis focuses on the period between 2005 and 2008, that is to say, on the years when mobility, and particularly that of foreigners, attained its maximum level.

Table 5. Emigration, immigration and net migration rates for RMB municipalities by distance to Barcelona, 2005 to 2008

	<i>TOTAL POPULATION</i>			<i>SPANIARDS</i>			<i>FOREIGNERS</i>		
	<i>Emig. Rates</i>	<i>Immig. Rates</i>	<i>Net Mig. Rates</i>	<i>Emig. Rates</i>	<i>Immig. Rates</i>	<i>Net Mig. Rates</i>	<i>Emig. Rates</i>	<i>Immig. Rates</i>	<i>Net Mig. Rates</i>
Barcelona	24.8	15.7	-9.1	16.5	10.0	-6.6	70.0	46.9	-23.1
Less than 10 km	43.6	38.5	-5.1	28.6	19.1	-9.5	130.5	150.5	20.0
Between 10 and 20 km	30.3	34.8	4.5	24.7	28.0	3.2	86.3	103.6	17.3
Between 20 and 30 km	30.0	36.6	6.6	24.9	31.5	6.5	68.4	75.5	7.2
Between 30 and 40 km	37.9	55.9	18.0	32.9	51.1	18.1	82.3	99.1	16.8
Between 40 and 50 km	33.1	46.8	13.7	27.5	41.8	14.2	72.2	82.1	9.9
More than 50 km	35.0	54.4	19.4	30.6	50.5	19.9	70.0	85.4	15.4
TOTAL	31.4	31.4	0.0	23.5	23.5	0.0	85.2	85.2	0.0

Source: 2005 to 2008 EVR data (INE).

Moving on to emigration rates and as results point out, municipalities at less than 10 km from Barcelona show the highest emigration rates both for population as a whole and for foreigners in particular. By contrast, the central city itself expels the lowest percentage of population. That is to say, Barcelona's negative net migration rate with the rest of the RMB, is more related to of its weak power of attraction (in relative terms, as we are working with rates referring migrants to the total population) than to population expulsion. This general trend can also be observed among Spaniards. Yet, both foreigner entry and exit rates to and from Barcelona are more than four times higher than those of Spanish people. From this migratory intensity point of view, reflecting higher foreigner mobility in the core city and in the neighbouring municipalities than in the rest of the RMB, it can be deduced that foreigners are still at their early insertion stages and that they have higher residential instability. Two main characteristics would differentiate foreigners' mobility from that of autochthonous people: 1) the former are particularly mobile in the municipalities situated at less than

10 km from Barcelona, and 2) show lower net migration rates than Spanish people in those situated at more than 30 km from the central city.

The same results appear in figure 4, where Spanish people's and foreigners' emigration rates by age are compared. The latter move more at all ages, as their flows are relatively recent and their residential mobility is therefore linked to the first stages of the migratory process, when residential and labour instability is high at all ages. However, ranking by distance to Barcelona is quite similar for both populations. In the two cases, and despite certain small differences in order, municipalities with the highest emigration figures are always the same. As for the outstandingly low emigration rates for young people residing in Barcelona, they could have two possible explanations. On one hand, students or qualified workers are drawn towards the core city by Barcelona's international power of attraction, but they are also less ready to move elsewhere. On the other, these people, mainly from the EU, do not delete themselves from the local register (*padrón*) when they return home or move to a third country. Therefore, young foreign population is maybe over-represented in Barcelona and subsequently, as the equation's denominator is exaggerated, resulting mobility rates are lower. The actual cause would probably be a combination of the two.

Figure 4. Emigration rates by age, nationality and municipality of residence, grouped by distance to Barcelona, 2005 to 2008

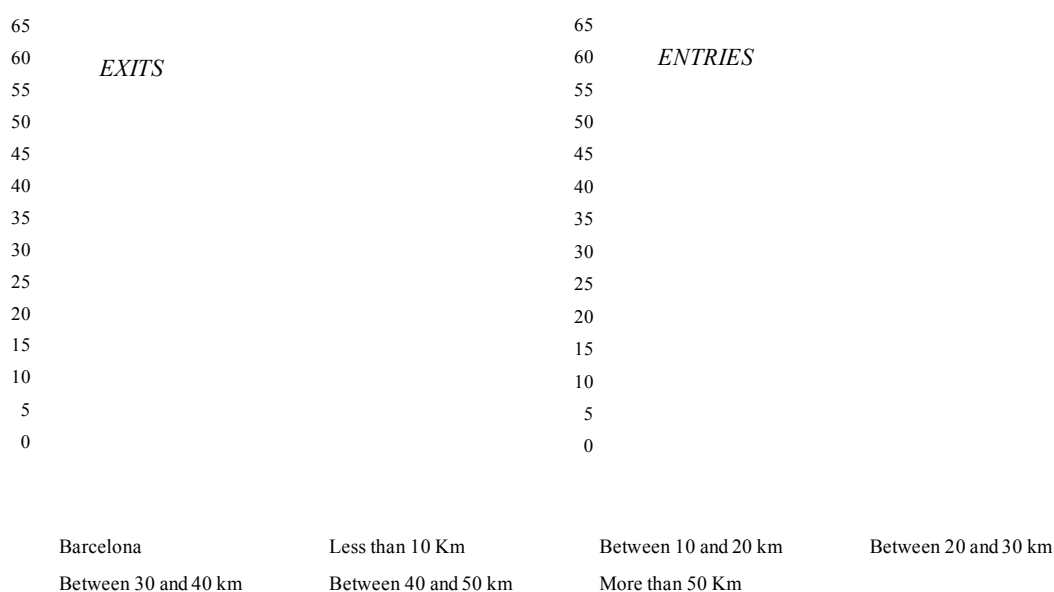


Source: 2005-2008 data from the *Estadística de Variaciones Residenciales (INE)*.

Foreigners' increasing share in metropolitan residential mobility - As recent studies underline, foreigners have a growing relevance in Spain's residential mobility, both between regions (Recaño, 2002; Pumares, 2005; Pumares *et al.* 2006; Recaño & Domingo, 2006) and within the large metropolitan areas (Bayona & López, 2009;

Bueno *et al.*, 2007). Due to their demographic characteristics (younger mean age) and recent arrival, foreigners do indeed generally have higher mobility (Trovato, 1988; Bélanger, 1993; Newbold, 1996; Rogers & Henning, 1999; Zorlu & Latten, 2009) as they still have not completely stabilised their place of residence. Their spatial patterns are also different (Frey, 1996; Kempen & Weesep, 1998; Musterd, 2005) from those of autochthonous people. This general trend can also be observed in the RMB. According to the *Estadística de Variaciones Residenciales* (EVR), 333,289 out of the 1,447,815 inter-RMB moves carried out between January the 1st 1998 and January the 1st 2009, were carried out by foreigners. Though they presently represent one fifth of total moves, in 1998 they only meant 4.5% and their numbers did not start to be significant until 2002 when figures reached an 18%. Their share has not stopped to grow since then, attaining in 2008 a 41.3%. In other words, that year, four in ten metropolitan changes of address was carried out by a foreigner. During this eleven year period, annual residential moves increased from 100,115 in 1998 to a maximum of 159,811 in 2006 (a 60% growth in only eight years), reducing, in 2008, to 142.695. However, while those carried out by Spanish people grew from 95,622 to a 2003 maximum of 113,869, then progressively decreasing to 83,784 in 2008, those performed by foreigners multiplied by 13, rising from 4,493 to 58,911.

Figure 5. Foreigner's share (%) in intra-metropolitan entries and exits into and from RMB municipalities, grouped by distance to Barcelona, 1998-2008



Source: 1998-2008 *Estadística de Variaciones Residenciales* data (INE).

Figure 5 clearly highlights this trend. Above 50% of the 2008 intra-RMB exits from and entries to Barcelona and nearby municipalities (less than 10 Km) –compared to less than 10% of the 1998 ones– were accomplished by foreigners. Shares for the rest of the metropolitan territory are much smaller. In conclusion, foreigners’ moves have become extremely important for metropolitan residential mobility as a whole.

Taking only internal mobility into account and calculating migratory growth by distance to the central city (table 6), it can be observed that both Barcelona and cities at less than 10 km from it, have lost population (around 255,000 inhabitants) due to intra-metropolitan net emigration. While net migration between Barcelona and the rest of the RMB is negative for both Spanish and foreign people, inner metropolitan ring net migration is positive, in the case of foreigners, but negative, in that of natives. Foreigner arrivals are however not enough to counteract the loss of Spaniards moving to other RMB municipalities. In the rest (above 10 km from Barcelona), it is positive for both Spanish and foreign people, though Spanish flows are larger.

Table 6. Internal net migration by nationality in RMB municipalities grouped by distance to Barcelona, 1998-2008

	<i>Spanish Nationality</i>	<i>Foreign Nationality</i>	<i>Total Growth</i>
Barcelona	-142,920	-43,691	-186,611
Less than 10 km	-90,489	21,150	-69,339
Between 10 and 20 km	61,741	11,882	73,623
Between 20 and 30 km	69,936	5,293	75,229
Between 30 and 40 km	54,496	2,375	56,871
Between 40 and 50 km	31,598	2,056	33,654
More than 50 km	15,638	935	16,573

Source: 1998-2008 Estadística de Variaciones Residenciales data (INE).

In short, data not only confirm that the city of Barcelona is the gateway for international migrants, but that it is also the main de-concentration and suburbanisation point, as it expels both Spanish and foreign people to other areas in the metropolitan region. Foreigners mainly move to the nearest municipalities, especially those situated at less than 10 km from Barcelona, which are also those receiving most of the foreigners “expelled” from the central city. These foreign migrants, and those coming directly from outside the RMB, are compensating the large volume of Spanish people leaving inner metropolitan ring municipalities. The latter, together with those moving from Barcelona itself mainly settle in municipalities at more than 10 km from it. Through

intra RMB migration, during the entire period, they have gained more than 230,000 Spanish-nationality inhabitants but only 23,000 foreigners.

INTERNATIONAL MIGRATION'S IMPACT ON THE AGE STRUCTURE: SLOWING AGEING DOWN

As most of the foreign population recently arriving is young, it has had a strong impact on the general population's age structure, slowing down the dominant ageing process. Moreover, this trend has even locally been reversed. This centre-periphery centrifugal residential mobility pattern, particularly prevalent for young Spanish people forming a new home, has notably affected the age structure of municipalities situated furthest away from the core city.

Figure 6. Age and gender structure of the Spanish and foreign population living in the RMB in 1998 and 2009



Source: January the 1st 1998 and 2009 Padrón data provided by Idescat.

Figure 6 shows RMB Spaniards' and foreigners' age and gender structure in 1998 and 2009. Comparing the two graphs, it immediately becomes apparent that the share of foreigners has increased, particularly between the ages of 25 and 34, which precisely are the central migration ages. The largest age group moves from 20-24 to 30-34, as most immigrants precisely incorporate to the already voluminous age group of Spanish baby boomers (born during the first half of the 1970's). It should also be noted that, as the number of both Spanish and foreign nationality births has increased, the base of the 2009 pyramid is somewhat wider.

More than 25% of the young and young-adults are foreigners -26.7% of the men and 25.1% of the women aged 25-29, being non-Spanish. However, in 1998, the former percentage did not attain 4%. The proportion of RMB foreigners over 50 is well lower and that of those over the age of 65 is only 1.5%.

Despite the incorporation of young and young-adult foreigners –consequently lowering down the mean age– in 2009, it was still somewhat higher than in 1998; i.e. 40.0 and 40.8 respectively. Therefore, foreigners have helped to dilute an even higher rise which can only be perceived by focusing on Spanish figures: 40.1 to 42.5, respectively. By contrast, RMB foreign population has been rejuvenated, from a mean age of 33.0 to that of 31.1, both through the arrival of young immigrants and a growing number of births due to their progressive settlement.

At a local level, however, changes have not developed the same pace everywhere. From that perspective, differences in ageing can mainly be attributed to Spanish people's residential mobility, while international migration has only played a minor role in them. Consequently, the share of the eldest group has strongly declined in municipalities furthest away from Barcelona. Despite receiving large international migration flows, those situated at less than 10 km from the central city have however continued ageing as local population continued becoming progressively older and young Spanish nationals departed from them—rapidly increasing foreign population flows have only partially compensated this trend.

From a global perspective, the city of Barcelona itself has the oldest population structure. However, on a closer look, trends by nationality can be observed. Focusing on Spanish population, municipalities situated at less than 10 km from the core city have also a relatively elderly Spanish population (figure 7), while those situated between 30 km and 40 km from Barcelona have the highest proportion of Spanish children and young adults. These age groups migrated to them in search of better and cheaper housing. The rejuvenation effect of residential mobility is nevertheless weaker over 40 km from the central city as suburbanisation at this distance is still a recent phenomenon. Subsequently, there does not seem to be a straight forward correlation between ageing and distance to Barcelona.

Foreigners however diverge from the former trend (figure 7). Barcelona, once again, strands out as a particular case. Foreigners' age structure there, is especially

concentrated at the migration central ages (25-34 particularly) and children's figures are really low. As these migrants have recently arrived, they have not probably had time for family regrouping. Therefore, it would once more be reflecting Barcelona's role as the central city, acting as the immigrant's gateway, while "expelling" young Spanish adults, and would explain why the comparison between Barcelona's Spanish and foreigner pyramids show more differences than that between others.

Figure 7: Age and gender population structure by nationality for RMB municipalities, grouped by distance to Barcelona, 2009

SPANIARDS

FOREIGNERS

Source: January the 1st 2009 Padrón data provided by Idescat.

CONCLUSIONS

From 1998 to 2009, RMB's population rose a 17%, or in other words, it gained 736 thousand new residents, mainly as a consequence of the arrival of foreign immigrants, presently 14.9% of the population and therefore ending approximately 20 years of population stagnation.

Driven by this international migration's force, Barcelona itself, which had been losing population since the mid-1970s, also started regaining it, partly disguising the pre-existent residential dynamics i.e. suburbanisation and de-concentration. The former

have however continued, and, in the case of Spanish nationals, they have even been reinforced, reaching municipalities further away and becoming the RMB's main internal population redistribution agent.

While the Spanish population has mainly been inclined to de-concentrate and move to sub-urban locations at more than 20 km from the core city, most Latin-American, Asian or central-eastern European immigrants have tended to move from Barcelona (their main arrival point) to neighbouring municipalities in the inner metropolitan ring –less than 10 km from the central city, where they usually live in low quality dwelling developed during the 1950's and 1960's Spanish internal migration boom. As this autochthonous population is becoming elderly and young Spanish couples are moving to better housing in outer ring suburban municipalities (placed more than 10 km from Barcelona), they are emptying relatively cheap accommodation which is becoming abundant. As it can be concluded from former paragraphs, the thesis that foreign immigrant's inner ring suburbanisation is related to social progression, applicable to the US but rejected by Arbaci (2008) for southern European counties, can also be discarded in our case. On the contrary, RMB foreign migrants search cheap housing –to rent or buy. Western European or other developed country foreigners, dwelling in medium to high class suburbs, would be the only exception.

Though Spanish families are the main contributors to suburbanisation, their mobility is fuelled by the arrival of foreign immigrants to the RMB's central core. This new dwelling demand has allow locals to rent or sell their homes in Barcelona itself or nearby municipalities and, with the money obtained, search for a new flat or a house at a further, maybe more affluent, location. Therefore, both internal and external RMB migratory flows reinforce each other, developing deep spatial and demographic consequences.

As opposed to what it could be expected from rapid migratory flow growth, but in accordance with index of dissimilarity results, foreigner and Spanish spatial settlement patterns have, in general, become more similar and less segregated than they were in 1998. EU members, who tend to settle in Barcelona and are more segregated in 2009 than in 1998, would be the main exception. Asians, on their side, reproduce, at a metropolitan scale, the higher degree of segregation they had at Barcelona.

Population structure by nationality reflects the above mentioned mobility trends. From this perspective, Barcelona and small or medium-size municipalities situated between 30 km and 40 km from it, would be situated at opposite extremes. While, in the former, Spanish population is rapidly ageing (partly compensated by the arrival of young immigrants), in the latter, the arrival of young Spanish families from Barcelona and the inner metropolitan ring, has allowed the reversal of the process.

In conclusion, growth of Barcelona –and, similarly other Spanish large cities– has not therefore recommenced as a consequence of a new recentralisation process, which would imply that people are returning from the periphery towards urban centres. Instead, there are two really intense but complementary migratory flows providing a mutual feedback: international immigrants reaching metropolitan centres and inner rings, and Spanish people moving towards the (more external) periphery. All these RMB population composition changes are extremely relevant and, in our view, have deep policy, administrative and urban planning implications.

Authors would like to make a final remark on the impact of the current economic crisis on RMB internal and external migrations. One of the most affected sectors, construction, fuelled both the massive arrival of foreign immigrants and metropolitan residential mobility trends through jobs and dwelling construction. Therefore, as a consequence of present poorer economic conditions and less job availability, both types of mobility have started to fall. While seriously hampering Spanish people's residential moves, the crisis will probably particularly affect foreigners' mobility. However, consequences for them are still unknown, as this severe crisis might either expel immigrants to their home countries or fix them to the territory. We anyhow consider that it is still too early to evaluate its impact on suburbanisation dynamics.

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¹ These numbers mean that foreign population growth has practically stopped as a consequence of the world economic crisis, which has strongly stricken Spain. Provisional 2011 *padrón* data indicate that the number of foreigners in it has, for the first time, fallen.

$$^2 \text{Net migration} = \text{Population}_{2009} - \text{Population}_{1998} + \text{Births}_{1998-2008} - \text{Deaths}_{1998-2008}$$

$$^3 \text{External Net Migration} = \text{Net Migration}_{1998-2008} - \text{Internal Net Migration}_{1998-2008}$$

⁴ In the last 2010 *Padron* foreigners increased by 0.4 %. Therefore their numbers reached 744, 514 and their percentage over the total population did not change, maintaining itself at 14.9%

⁵ Foreign population leaving the country does not usually communicate their departure to the Padrón. To overcome this problem and correct foreign population ‘overestimation’, the Spanish government presently demands foreigners with temporary residence permit to reregister in the Padrón every two years. However, EU citizens are exempted for it and therefore there continues to be doubts on their real numbers. This would particularly affect the city of Barcelona itself, where young EU member figures (university students among others) are high.

⁶ The index of dissimilarity created by Duncan and Duncan (1955) is calculated as follows $ID = \frac{1}{2} \sum_{i=1}^n \left| \frac{x_i}{X} - \frac{y_i}{Y} \right|$,

where x_i = group X in the population at the i spatial unit; X = group X within the population of the RMB as a whole ; y_i = Spanish population at the i spatial unit; Y = Spanish population within the RMB as a whole ; and n = number of municipalities.