SPAIN’S URBAN AREA GROWTH PHASES: SPATIAL PATTERNS AND CAUSAL ANALYSIS

Fernando GIL-ALONSO*, Jordi BAYONA-i-CARRASCO*, Miguel RUBIALES*, Isabel PUJADAS* and Antonio LOPEZ-GAY**
*Human Geography Department, Universitat de Barcelona, **Centre d’Estudis Demogràfics
fgil@ub.edu, jordibayona@ub.edu, mrubiale@gmail.com, ipujadas@ub.edu, tlopez@ced.uab.es

Paper for the IUSSP International Population Conference – Busan (Korea)

1. Introduction

From a geographical perspective, these last decades, Spanish urban areas have constantly expanded. This urban sprawl has broken the traditional compact city model (Pujadas, 2009). However, from a demographic point of view, the picture is not as simple. Spanish urban areas have been through a series of growth and stagnation periods reflecting significant spatial differences based on the urban area’s size, its geographical position, its suburbanization stage and the degree to which international migration flows have influenced it.

Subsequently, they would have become more or less complex depending on their dimensions and their metropolitan development maturity (Feria, 2010). Moreover, from the late 1990s to the beginning of the crisis in 2008, international migration introduced yet another element of complexity to this already intricate picture. Apart from settling in seaside tourist and intensive agriculture towns, foreign immigrants mainly concentrated in urban areas, where they became one of the real estate bubble’s key elements. Not only were they cheap labor for the building sector, but also created their own proper dwellings demand. At the same time, their settlement patterns also contributed to suburbanization flows, as Spaniards accelerated their preceding trends and foreigners also ended up adding to them (Bayona y Gil-Alonso, 2011; Bayona y López-Gay, 2011, Pozo y García, 2009). As a result of this extraordinary migratory period, in 2011 –last available data– in Spain there were 5,751,487 foreigners. In other words, 12.2% of its population did not have Spanish nationality.

The present crisis has complicated matters even more, as it suddenly interrupted the demographically expansive period which cities were undergoing since mid-1990s due to large foreign immigration inflows. However, as authors have recently shown in their papers on Spain’s 15 urban areas above 500,000 inhabitants (Bayona et al. 2012; Gil-Alonso et al., 2011), when the economic crisis started, they were neither all growing at the same pace nor was their growth speed affected in the same way throughout the country. In this paper, we intend to expand the analysis to cover 64 Spanish urban areas from 1970 to 2011, where two thirds of Spain’s population live. With this we expect to obtain longer and more precise spatial trends and gain further knowledge on the causes which determine them.

2. Paper’s aim

This paper intends to describe how Spain’s urban population has increased this last forty years (1970-2011) and then, through cluster analysis, build a spatial typology grouping urban areas showing similar growth trends. Research is based on 64 urban areas. To enable the construction of an urban growth typology, in each of the cases, core city and periphery growth are analyzed separately. Descriptive results would point to suburbanization and foreign immigration as the main elements defining recent urban growth transformations. They would
have become the main drivers of a clearly defined spatial pattern opposing highly-growing eastern urban areas to lower growing western ones. Preliminary analytical results indicate that the deep economic/labor market structure differences between these two regions would be the main cause of this east-west divide.

3. Theoretical framework

3.1. The stages of urban development model

The classical cyclical urbanization model, that is to say, the ‘stages of urban development’ model built by Van den Berg et al. (1982) has widely been used by many urban geographers and other urban researchers to explain past and present population changes in functional urban regions (FUR) and to compare contemporary European urban trends (Cheshire and Hay, 1989; Lever, 1993; Cheshire, 1995; Champion, 1995; Haase et al., 2005; Buzar et al., 2007; Turok and Mikhnenko, 2007; Kabisch and Haase, 2011). The model’s main strength is that it does not merely analyze cities’ demographic growth as a whole, but differentiates between cores and the surrounding fringe areas. More specifically, it describes four European sequential urban growth and decline stages: urbanization, suburbanization, desurbanization and reurbanization, each being sub-divided into two relative or absolute population increase (centralization) or decrease (decentralization) periods.

Van den Berg et al. (1982) considered that the fourth stage, reurbanization, was purely hypothetical and unlikely. Nevertheless, population data collected in the 1990s and the early 21st century shows that many European core cities are once again gaining population and thus, that some kind of reurbanization is in fact taking place (Lever, 1993; Cheshire, 1995; Ogden and Hall, 2000; Hugo et al., 2003; Haase et al., 2005; Buzar et al., 2007; López-Gay, 2011). However, it should also be noted that, as this latter concept is still under-theorized (Buzar et al., 2005) it is used with very different meanings (Rérat, 2011) Unlike what Van den Berg had suggested would occur in the reurbanization stage, core city recovery is presently not being accompanied by suburb decline, but by urban sprawl and counterurbanization. Therefore, the ‘stages of urban development’ model has been heavily criticized (Champion, 1995; Cheshire, 1995; Antrop, 2004; Storper and Manville, 2006; Buzar et al., 2007; Kabisch and Haase, 2011; Rérat, 2011). However, we do consider it can still be used as conceptual framework to analyze early 21st century urban developments in Spain and find their spatial patterns. This analytical framework has been used to build a core city and periphery population growth cluster to classify Spanish urban areas according to their urbanization stage.

3.2. Spanish urban development

Between 1959 and 1975, there was a first rapid growth and absolute concentration stage, urbanization. Then, the second, suburbanization, starting in 1975 and ending in 1996, had strong urban dispersion and large urban center population loss, as its main characteristics. A sudden foreign immigration boom changed trends once again. In the mid 1990s, Spanish cities enter a new third development stage (Nel·lo, 2007 and 2010) in which, due to foreign immigration, they start recovering population despite suburbanization flows towards metropolitan peripheries continue and even increase. This third stage, would have ended in 2008 when the present economic crisis begun. It would be a particularly noteworthy phase, as, it would, in part, break the classical urban development logic. According to Van den Berg et al. (1982) urbanization has four consecutive phases, urbanisation, suburbanisation, desurbanisation and reurbanisation, each one being sub-divided into two periods of relative or absolute population increase (centralisation) or decrease (decentralisation). Therefore, in the mid 1990s, after the “suburbanisation phase with absolute decentralisation” should have come the “de-urbanisation stage with absolute decentralisation” one. However, this last decade, most large Spanish metropolitan areas seem to have undergone “suburbanisation with relative
decentralisation”. Would this change of cycle be normal? Kabisch and Haase (2011) have verified the classical model by applying it to recent European developments and claim that, since 2001, this continent’s urban areas are undergoing several stages at a time, and that therefore, phases would not be succeeding one another anymore. Moreover, regional trends would have appeared. De-urbanisation would dominate Eastern Europe, while suburbanisation would still be the most important phenomenon in the rest of the continent, where re-urbanisation processes would also be increasingly relevant.

However, the Spanish case has certain specificities which need to be examined. New metropolitan core trends, population recovery, would not be due to former local inhabitants returning to the central city (Cheshire, 1995; Champion, 2001a; Buzar et al., 2007) –in fact, they continue to move to peripheries— but a result of a new key element, the massive arrival of foreign immigrants. Without them, large Spanish urban areas would have probably entered desurbanisation, or at least, the suburbanization with absolute decentralization stage would have been reinforced.

Yet, not all areas received the same amount of foreign immigrants nor have they been affected by them in the same way. Moreover, if different urban development stages coexist in European urban areas, in Spain they might also be doing so. In fact, one of the paper’s aims is to show that Spain has diverse spatial urban growth and expansion models.

4. Data and Urban Area Definition

This paper uses the urban areas defined at the Atlas de las áreas urbanas en España (Ministerio de la Vivienda, 2006). Definitions are based on population size criteria –areas had a minimum of 50,000 inhabitants in 2006 and were made up by municipalities over 1,000 inhabitants. The 2001 census (housing, commuter and other data) and the 2006 Padrón continuo (local register) are, on the other side, used to design the geographical boundaries. Out of the 83 urban areas defined by the Atlas, only those which include more than one municipality, that is to say, 64 are analyzed here. The only exception to this selection criterion was Madrid. In this specific case, all the Autonomous Community has been incorporated to the analysis, as we consider that the Altas’ definition of the Madrid metropolitan area is too restrictive. In sum, the paper studies 851 municipalities. This means a 10.8% of the total 8,117 Spanish municipalities which occupy 44,689 km² or 8.9% of the Spanish territory. According to the 2011 Padrón, the last available when this research was started, on January the 1st of that year they held 30,626,125 inhabitants, that is to say, 65% of the Spanish population. Therefore, it is a spatially highly concentrated population.

1970, 1981, 1991 census and 2001 and 2011 Padrón data have been used to analyze population changes. The main difference between the two data sources for this paper’s purposes is that the census does not distinguish data by nationality while the padrón does. Therefore, the latter was used to analyse population growth by nationality (Spanish/foreign), and by their place of residence within the urban area (core city/periphery) and to study the effect of foreign immigration on this last decade’s population changes. In fact, it is the only period in which –despite magnitude differences between urban areas– these flows can be considered as the main demographic element. Moreover, as it can be observed in figure 1, there are two clearly defined areas. The highest proportions of foreigners can presently be found in Madrid, Barcelona and other large cities in the Mediterranean coast, the Ebro Valley (North-East Spain) and the two archipelagos. In other words, foreign immigrants are mainly situated in the Eastern half of Spain. By contrast, as, this last decade, the Atlantic coast, Castilla y León, Extremadura and Western Andalusia urban areas –all of them in Western Spain– received smaller numbers of foreigners, so they presently have the smallest proportions of them.
5. Results

5.1 1970 to 2011 Spanish urban area demographic changes

As it can be observed in figure 2, maximum growth levels were attained in 1070, when most analyzed urban areas underwent strong demographic growth, due to both rural exodus and high fertility rates. Cumulative annual growth rates reached 2.76%, which meant they had a total of 4,616 million net new inhabitants. Meanwhile, non urban areas were having huge population loses, falling a maximum of -0.77%. Spain’s strong population concentration period continued during the 1970s in which urban areas had 4,121 new dwellers. In other words, though they continued to grow, the pace at which they did had slowed down to 1.77%. From 1981 to the end of the century, it diminishes even more, dropping to an annual minimum of 0.44% during the last decade. However, in the early 21st Century, figures stated to pick up once again, mainly as a consequence of the effects of a massive foreign immigrant arrival to urban areas. Subsequently, analyzed urban areas’ cumulative annual growth rate achieves 1.52%, so, in the first decade of the 21st century, four more million new metropolitan residents –4.296 million to be more precise –were added.

Figure 2. Spain’s urban and non-urban population growth and Cumulative annual growth rates, 1900 to 2011

Source: 1900 to 1991 Spanish Censuses and 2001 to 2011 Padrón (local registers, INE).
As it can be observed in map 3, these phases were not at all spatially homogenous. Even though, between 1970 and 1981, all large urban areas grew considerably –from 0.06% annually in Vélez-Málaga to 5.2% in Guadalajara and Gran Canaria-Sur– in the following decade, growth was more spatially unevenly distributed. In general terms, it slowed down, and four areas –El Ferrol, Bilbao, San Sebastián and Cartagena– even lose population. However, others –Tenerife-Sur, Blanes-Lloret and the south eastern urban areas of Torrevieja and Costa Blanca– gain even more population that they had done the previous decade. In the 1990s, the most dynamic urban areas are mainly found in the south east. The Costa del Sol ones and certain nuclei pertaining to Castilla la Mancha, which grow due to suburbanization flows coming from Madrid, should be also added to the latter. The rest, gain meager amounts of dwellers and 19 even lose them. Salamanca should be underlined as the one which lost more (a 0.94% annually).

This last decade, however, all urban areas have again won population, though intensity differences should also be taken into account. In fact, high growth municipalities would be situated to the east of an imaginary line going from Marbella to Pamplona, including Talavera de la Reina and therefore all the large Madrid metropolitan region nuclei. To the west of this line would therefore by those which have grown less. As it will be explained in the following paragraph, growth geographical distribution differences are mainly due the massive arrival of foreign immigrants and their heterogeneous settlement patterns.
5.2. How did international immigration affect recent large urban area growth?

This last decade, Spain has recovered its demographic growth. Indeed, both absolute and relative figures underwent a dramatic increase. The first increased by more than 6,073 million people, while in the 1970s they had only risen by 3,733 million. As for the latter, they grew by 1.39%, more than the 1.07% they had augmented in the 1960s or the 1.04% they did in the 1930s. These figures were mainly the result of the massive arrival of foreigners, as 4,381 million new residents came into the country. In other words, 72% of the population growth was due to them. In fact, if we focus on people born abroad, numbers are even higher, as percentages grow to 77.5% and absolute figures to 4,708 million. With a cumulative annual growth rate of 1.52%, urban areas have undergone an even more spectacular growth (figure 2). However, their numbers hide huge growth differences. While El Ferrol and Bilbao practically has the same population in 2001 than in 2011—the former increasing by 0.01% and the latter by 0.06%—, Torrevieja and Tenerife Sur annually grew 5.6% and 6.6% respectively.

![Figure 4. Correlation between 2001 to 2011 Spain’s urban population growth and foreign population shares in 2011.](source)

These demographic growth differences can be clearly observed in figure 4, which shows how this indicator and foreign population percentages are related. The latter vary from less than 3% (El Ferrol, 2.6%; Cádiz, 2.8% or Cáceres, 2.9%) to more than 40% (Tenerife Sur, 40%; Denia, 46.9% or Torrevieja, 50.7%). As the correlation coefficient was quite significant ($R^2=0.75$), despite the few exceptions, it can be claimed that the urban areas which grew more were also those which had received more foreign immigrants.

5.3. Large urban area population internal redistribution

These last decades, many metropolitan areas under study are de-concentrating, that is to say, increasingly higher percentages of their dwellers are moving from their centers to their peripheries. This suburbanization process starts in the 1960s in the two largest metropolitan areas, Madrid and Barcelona, where it intensifies in the 1970s while it extends to other urban areas.

This section analyzes centre and periphery population growth differences. 11 municipalities have been eliminated from the analysis as they were either formed by only two central municipalities (Elda-Petrer), by only two municipalities (Torrevieja, Sagunt, Ciudad Real, Cartagena or Burgos) or by several ones though none did really act as a core (Gran Canaria...
Sur, Tenerife Sur, Valle de Orotava or Sant Feliu de Guíxols). Finally, as the geographical limits of Girona have changed several times, it has also been excluded. This last four decade changes in the 53 urban area center and periphery cumulative annual growth rates can be observed in Figure 5. Madrid (in black) and Barcelona (in grey) have been differentiated as their urban development is more mature than that of the rest, and certain behaviors which later expanded to other metropolitan areas, begun there.

In the 1970s, most cores’ population strongly increased. In fact, in many urban areas, peripheries still continued to lose inhabitants. The only exception was Vélez-Málaga, as its centre’s population slightly diminished, while that living in the periphery grew. Leaving this exception aside, Barcelona and Madrid would already be the centers which gained less population and Madrid’s periphery the one which received more. In the 1980s, most metropolitan centers reduce their growth and Madrid and Barcelona even have negative rates. The following decade, this latter trend intensifies (Madrid falls 0.43% and Barcelona 1.13%) and other urban areas add to it. However, at the end of the decade and as a consequence of the arrival of large foreign immigration flows, Madrid and Barcelona begin to grow once again. When, in the early 21st century, immigrants start also settling in other urban areas, general growth trends change once again. Both urban centers and peripheries grow. Between 2001 and 2011, only El Ferrol, Granada and León urban centers lose population, while most peripheries annually grow more than 2% and those of Guadalajara and Logroño even attain 7%. The only periphery which had negative growth was that of the Área central de Asturias, while both Bilbao’s centre and periphery population remained stagnant.

**Figure 5. 1970 to 2011 core and periphery cumulative annual growth rates in Spanish urban areas.**

![Graph showing core and periphery cumulative annual growth rates in Spanish urban areas.](image)


Generally speaking, it can be confirmed that after urbanization most large urban areas underwent, relative suburbanization followed by absolute suburbanization and then, as centers
continued to grow, went back to relative suburbanization. It should also be underlined that
despite absolute suburbanization was not observed in the smallest areas, as their centers never
lost population, this last decade, both their centers and peripheries are gaining inhabitants.
However, urban area size differences should not be the only ones mentioned, as geographical
location is as important or even more relevant. Therefore, a typology allowing classifying
Spanish urban areas by their growth rates during these last for decades has been built.

5.4. 1970 to 2011 Spain’s metropolitan growth typology

Figure 4 shows a typology of the 53 metropolitan areas built from their center and periphery
growth rate data for every ten years. The 6 categories resulting from applying the Ward
method to cluster analysis can be observed in table 1.

The first group resulting from the cluster is made up of two urban areas (Costa Blanca and
Costa del Sol), which are situated in the Mediterranean coast and are both residential and
tourist-orientated. During the four decades, their two centers and peripheries had an elevated
population growth, always much higher than the mean. In both cases, urban center growth is
particularly significant. Only in this last decade periphery municipalities have grown more
than their centers. The second group contains six urban areas situated in the Mediterranean
coast –Blanes-Lloret, Castellón, Gandía, Murcia, Orihuela, and Vélez-Málaga. These urban
areas have also always positively grown above the mean, though less than the former group.
They are the only areas in which, except in the 1990s, centers are still more than their
peripheries. In fact, they are the ones which are presently increasing more. The next group,
number 3, holds 8 urban areas, both Mediterranean ones (Alicante, Dénia, Málaga, Palma de
Mallorca, and Tarragona-Reus) and interior ones (Salamanca, Toledo, and Guadalajara).
Though both centers and peripheries have always shown positive growth, since the 1980s, the
latter are growing more than the former. These trends have progressively intensified and, this
last decade, these peripheries have become the most dynamic. Centers have however
gradually continued to increase, accelerating this last decade. These three groups contain the
highest population growth urban areas. They are either situated in the Mediterranean coast or,
like the cases of Toledo and Guadalajara, influenced by Madrid’s suburbanization. Salamanca
would be the only exception, as it would not fit into either of these.

| Table 1. Periphery and centre mean cumulative annual growth typology. |
|--------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
|                         | **Group 1 (2)**          | **Group 2 (6)**          | **Group 3 (8)**          | **Group 4 (13)**         |
|                         | **Centro** | **Periferia** | **Centro** | **Periferia** | **Centro** | **Periferia** | **Centro** | **Periferia** |
| 1981-1991                | 1,84       | 1,64         | 1,66       | 0,90         | 1,01       | 1,44         | 3,12       | 2,88         |
| 1991-2001                | 3,24       | 3,20         | 0,93       | 3,88         | 0,46       | 4,40         | 1,56       | 4,86         |
| 2001-2011                | 2,55       | 0,33         | 0,97       | 1,83         | -0,30      | 2,54         | 0,63       | 4,66         |
|                         | 1,78       | 0,00         | 1,24       | 0,56         | 0,18       | 0,75         | 0,72       | 1,06         |
|                         | 1,20       | 2,75         | 0,00       | 1,17         | -0,42      | 1,25         | 0,36       | 1,83         |


The following group is made up of thirteen urban areas –Almería, Granada, Huelva, León,
Lleida, Logroño, Santiago de Compostela, Tenerife-La Laguna, Segovia, Talavera,
Valladolid, Zamora, and Zaragoza. Except for Talavera, they are all either autonomous
community or province capitals distributed throughout Spain. Though later than the preceding
group, they have all clearly undergone a de-concentration process. In effect, since 1980s,
these centers grow less than the mean and even decrease in the 1990s, while, their peripheries
grow significantly above the mean, particularly these last two decades. Group 5 contains ten
areas –Algeciras, Badajoz, Cáceres, Central de Asturias, Jaén, Mérida, Orense, Palencia,
Ponferrada, and Vigo-Pontevedra. In general, their growth has been low. Despite from the 1990s their peripheries have grown more than their centers, this group’s main feature is that their suburbs have the lowest increase. Except for Algeciras, they all are situated in western Spain, that is to say, the less dynamic part of the country. Finally, there is category 6. It holds 14 urban areas distributed all around –A Coruña, Alcoi, Barcelona, Bilbao, Bahía de Cádiz, El Ferrol, Las Palmas de Gran Canaria, Madrid, Manresa, Pamplona, San Sebastián, Santander, Sevilla, and Valencia. In other words, it contains the largest Spanish metropolitan areas. Though in the 1970s they all grew above the mean, in the rest of the periods under study they only grew moderately. However, if the volume of population involved is taken into account, their absolute growth figures can be considered significant, those of their peripheries, particularly. In fact, oppositely to what occurred in category 5, peripheries grew much more than their centers, which had the lowest growth of all groups, even decreasing in the 1990s. Madrid and Barcelona anticipated behaviors later adopted by the rest of the group (De Cos, 2007; Nel·lo, 2007; Bayona et al. 2012) and, compared to other categories, category 6 urban areas have a more mature suburbanization processes than the rest.

6. Discussion

This last four decades, Spanish urban areas have generally grown more than non-urban ones. This trend became less dominant in the 1980s and 1990s but it picked up speed once again in the first years of the 21st century when foreign immigrants started to arrive. Most of these concentrated in eastern Spain urban areas, in those situated east from an imaginary line going from Marbella (South Spain) to Pamplona (North Spain). In other words, they settled in a high growth area which includes Madrid, Mediterranean coast provinces, the archipelagos and the Ebro Valley. The urban areas situated to the west of this line have received fewer immigrants and therefore have grown much less (figure 2).

Spanish urban area’s second main feature is suburbanization, which is becoming increasingly important and has expanded throughout the territory. Former paragraph differences can be partly explained by recent demographic dynamics. Except in very few cases, all periphery municipalities presently grow more than their core cities (figure 3). The typology obtained from the cluster would however indicate that, urbanization stage differences lead to suburbanization strong intensity and timing differences, which should also be taken into account.

The second decade of the 21st century starts with a strong economic crisis. Even though present evidence seems to indicate that foreign immigrants are not massively leaving the country, inflows do seem to have reduced. Therefore, this would indicate that, in this new phase, the more dynamic Spanish urban areas are not growing at the same pace at which they did in the former decade. As the construction industry has been paralyzed, their suburbanization processes has slowed down. Growth differences between urban areas are probably reducing, so the spatial dichotomy observed during the former decade will probably disappear. Therefore, the 2011 to 2021 growth map will probably become more similar to that observed in the 1980s and 1990s. However, these are only hypothesis, and future developments will probably depend on the depth and the duration of the crisis.

Finally, on the causes of the east-west divide, we would like to indicate that we only still have preliminary results. However, they do seem to show that the main cause would probably be related to the deep economic/labor market structure differences between the two areas. These would, in other words, be linked to whether the urban areas analysed is a residential-tourist one, an industrial area in decline, a service sector based urban core… and other purely geographic elements such as the place where they are located (for instance, near the coast or not).
References


BAYONA, J.; GIL-ALONSO, F. and PUJADAS, I. (2012): “La evolución demográfica de las áreas metropolitanas españolas: entre el boom migratorio y la crisis económica e inmobiliaria”. In: COMITÉ ESPAÑOL DE LA UGI (Ed.) Aportación española al XXXII Congreso de la UGI.


urbanos, Barcelona: Departament de Geografia Humana de la Universitat de Barcelona and Grupo de Población de la AGE, 163-180.


