

Beyond urban–rural dichotomy: Exploring socioeconomic and land-use processes of change in Spain (1991–2011)



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ABSTRACT

In the last decades, the process of land-use intensification linked to human activity has changed considerably causing important modifications in the traditional dichotomized urban–rural relationships. Given their more complex dynamics, alternative methodologies for analysing the spatial consequences of changes are required. The present study investigates the variables shaping the urban–rural relationship in Spain over the last 20 years using a synthesizing methodology based on statistical and cartographic techniques that take into account a large number of variables and cases. The study was carried out at the level of local municipalities (nearly 8000 spatial units), fitting 36 socioeconomic and geographical indicators into a multivariate statistical framework. Indicators were selected to describe processes of intensification, extensification, or abandonment implying both land-use changes and important transformations in the local socioeconomic structure. Multivariate analysis identified seven processes contributing to the change in the urban–rural relationship in Spain: urban intensification and sprawl, coastalization, naturbanization, expansion of irrigated crop systems, livestock and pasture expansion, afforestation and reforestation, and depopulation. An in-depth understanding of recent spatial dynamics in Mediterranean countries may inform sustainable land management with the final aim to mitigate or re-balance the impact of these processes in land degradation or in an excessive human pressure along the coastal rim between other undesirable consequences.

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Introduction

'Urban' and 'rural' are key – and typically dichotomized – concepts in regional science, being the study of both long- and short-term changes in the urban–rural relationship at various spatial scales one of the most important and traditional issues in applied geography. The intensive and extensive use of land, together with the spatial distribution of labour and capital in various economic activities, has changed dramatically in the last decades at both the global and local scales. For this reason, regional

planning needs to take into account new and more complex relationships, together with the intensity of changes (Bengs & Schmidt-Thomé, 2007).

The process of intensification in the use of land has been logically connected to human activity through the analysis of land-cover and land-use changes. Urbanization may be considered an example of land intensification carried out through increased population density along the urban gradient due to settlement density and a higher vertical profile in urban areas. Together with traditional urbanization patterns (mainly compact expansion), the term “urban sprawl” has appeared, being defined as a scatter occupation of the territory by medium- and low-density settlements, occurring around the world but especially around metropolitan areas (Catalán, Saurí, & Serra, 2008; Salvati, Gargiulo, Rontos, & Sabbi, 2013) and possibly associated with a more intense use of private cars and exemplified by a settlement pattern dominated by detached houses (Halleux, Marcinczak, & van der Krabben, 2012).

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Urbanization may take on a different nature due to its driving forces, which are mainly associated with work and first residence or with tourism and second residence. In the latter case two processes can be differentiated, one related to the coastline, known as coastalization and defined as a procedure of concentrating population and economic activities along the coastal rim and in the immediate surroundings (Moriconi-Ebrard, 2001). The other process is related to the mountain sites, known as naturbanization and defined as the population de-concentration and its spread towards mostly rural and natural areas, which play an attractive role as places of leisure, second residence or even work; in many cases, the attraction is connected with protected areas and to winter activities (Prados, 2009).

On the other hand, land extensification is a process usually intended as the reverse pattern of intensification, primarily associated with (partial or complete) land abandonment and depopulation, and spatially concentrated in marginal, inland areas with a stagnant job market and elderly population. Cropland abandonment is a clear example of land extensification, and may occur in areas with a high urban pressure (around metropolitan centres) or as a result of depopulation in more isolated mountain areas with fewer economic activities (Corbelle-Rico, Crecente-Maseda, & Santé-Rivera, 2012; Sluiter & de Jong, 2007). Consequences of such a decline may be afforestation and reforestation, the regeneration of woodland as a result of ploughed fields or pastures abandonment (Chauchard, Carcaillet, & Guibal, 2007).

The methods and data used to analyse spatial changes in land intensification/extensification, taken as the most important transformations in the urban–rural relationship at a large scale, have been very diverse. According to data type, two main large groups may be differentiated: one is statistical records extracted from census or other statistical surveys, generally collected within administrative boundaries, which may be mapped using vector boundaries such as provinces/prefectures (Ayuda, Collantes, & Pinilla, 2010), municipalities (Serra, Vera, & Tulla, 2013), or districts of social or economic interest (Salvati, 2012). The second most common data type is extracted from aerial photographs or remote sensing images, with diverse pixel sizes (Feranec, Jaffrain, Soukup, & Hazeu, 2010). In this case, one advantage is that researchers may analyse land cover and land-use at any period of time if the corresponding image is available, whereas statistical records in some occasions do not offer the required temporal, spatial, and information precision. Despite recent improvement in research strategies, the most common technique for detecting spatial changes remains the overlay of different land-use-cover maps to reveal gains or losses, a process known as post-classification comparison or cross tabulation analysis (Hewitt & Escobar, 2011; Serra, Pons, & Saurí, 2003). Nevertheless, when socioeconomic variables are included in change-detection analysis, alternative methodologies for analysing spatial dynamics are required.

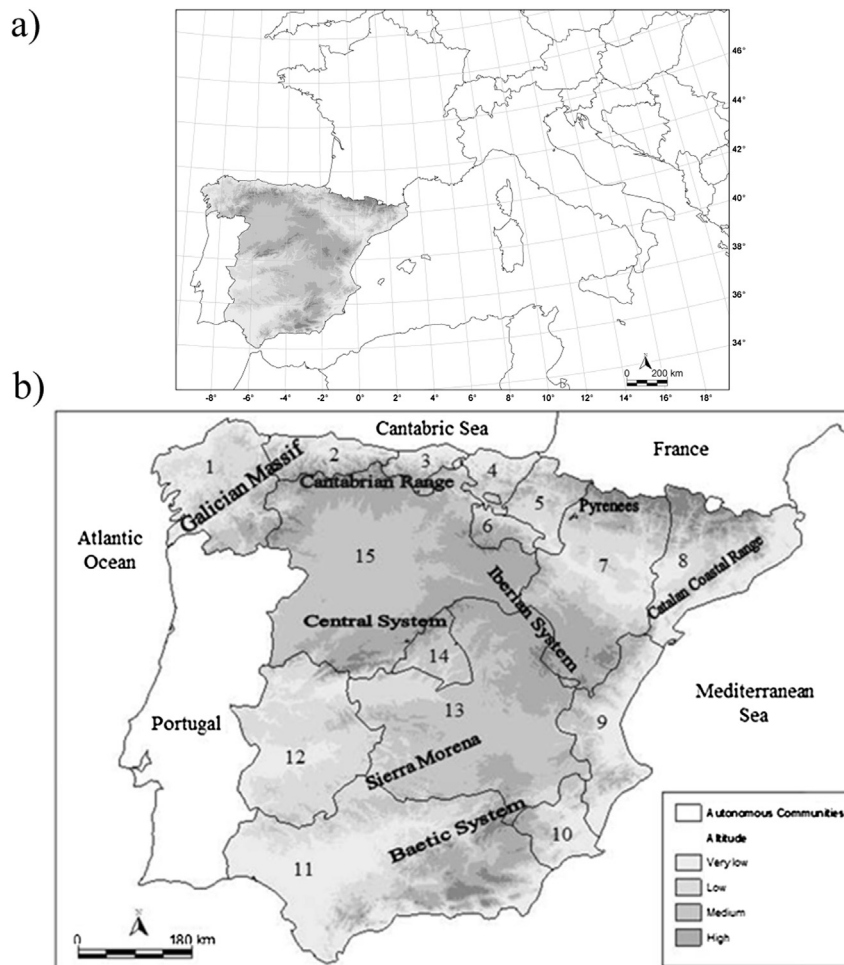


Fig. 1. a. Study area: Spanish Iberian Peninsula, located in the Western Mediterranean. b. Study area: Spanish Iberian Peninsula. Autonomous Communities: 1. Galicia, 2. Asturias, 3. Cantabria, 4. Basque Country, 5. Navarra, 6. La Rioja, 7. Aragón, 8. Catalonia, 9. Comunidad Valenciana, 10. Murcia, 11. Andalucía, 12. Extremadura, 13. Castilla-la Mancha, 14. Madrid, 15. Castilla-León.

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