

## Location conditions for the clustering of creative activities in extra-metropolitan areas: Analysis and evidence from Spain

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### ARTICLE INFO

#### Keywords:

Creative clusters  
Location factors  
Stepwise regression models  
Extra-metropolitan areas  
Rural development  
Spain

### ABSTRACT

This article investigates the territorial conditions associated with the existence of creative activity clusters in extra-metropolitan areas. This issue is timely because the demographic, social and economic stagnation that continues to affect many of these areas requires recognition of the innovative dynamics that could alleviate it. We worked in a study zone composed of 2498 Spanish municipalities of between 1000 and 50,000 inhabitants distributed throughout the country. We began by identifying 514 municipalities with relative concentrations, or clusters, of creative activities. Next, we evaluated which factors explain the formation of the clusters identified: traditional factors related to markets and government policies—*hard* factors—or new factors related to, *inter alia*, amenities, tolerance, and the local climate—*soft* factors. To do this, we applied an econometric analysis that both manages employment and business data as exogenous variables and controls whether the demographic size and creative profile of the clusters influences the intensity of the clusterisation. The models obtained match the prediction only partially because they attribute the majority of the explanatory power to some *hard*-type factors but do not confirm the expectations raised by the *soft* factors. As a possible explanation we do not disregard the possibility that the literature has overvalued the benefit that extra-metropolitan or rural areas can extract from their specific advantages in the realm of “soft” factors. We believe that our study offers a valuable perspective on how creative activities are inserted into extra-metropolitan economies, and in this way, we contribute to a relevant social debate about rural development in both national and international spheres.

### 1. Introduction

This article investigates the territorial conditions associated with the existence of creative activity clusters in the small cities and municipalities located outside of large urban areas. This issue is timely because the demographic, social and economic stagnation or decline of many of rural localities requires recognition of the innovative dynamics that might exist and the extent to which they can contribute to confronting and resolving this structural crisis (Camagni & Capello, 2013; Mayer & Baumgartner, 2014). This is a long-standing problem whose influence affects the development of people and their communities, in the terms suggested by Sen (1999), capability approach and freedom, rather than arising as much from economic aspects. So, these sparsely populated rural areas usually have higher economic standards and lower unemployment rates than congested regions (Alcaide, 2011), but on the other hand, some *public goods*, such as those more relevant in the Welfare State—education, health- and infrastructure relating to physical and digital accessibility, are insufficient or of lower quality. So for rural citizens in depopulated areas, the options for defining their life project

are fairly limited compared to urban citizens. It should also be pointed out that Spain's fast transition towards economic and social modernity witnessed one of the most extreme processes of rural depopulation in Europe (Collantes & Pinilla, 2011). For this reason, it is important to find activities that contribute as much to the revitalisation of local society and to territorial cohesion as they do to economic growth.

In relation to creative activities—advertising, architecture, the art and antiques market, crafts, design, designer fashion, film, interactive leisure software, music, the performing arts, publishing, software, and television and radio (UNCTAD, 2010)—international institutions consider that they can foster intelligent, sustainable and inclusive growth on all levels and recommend reinforcing their potential (European Commission, 2012). This recommendation is endorsed by recent studies that clarify the contribution of creative activities to rural development through the creation of high quality firms (McGranahan & Wojan, 2007); improved economic and social viability (Roberts & Townsend, 2015), and sometimes the development of international networks of collaboration (Balfour, Fortunato, & Alter, 2016). Although there are more critical works which present the difficulties of these activities in

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rural areas and the limitations of their impact (Anderson, Wallace, & Townsend, 2015; Argent, Tonts, Jones, & Holmes, 2013) the dominant argument seems to be that creative activities are one of the determinants of smart rural growth (Jakob & Van Heur, 2015; Naldi, Nilsson, Westlund, & Wixe, 2015) and that in all cases, there is a positive relationship between the existence of creative clusters and economic behaviour, such that in rural municipalities that contain clusters, this behaviour is better than average (Escalona-Orcao, Escolano-Utrilla, Sáez-Pérez, & Sánchez-Valverde García, 2016).

Our focus delves into a line of inquiry dominated by case studies (Freire-Gibb & Nielsen, 2014; Lafuente, Vaillant, & Serarols, 2010; Murphy, Fox-Rogers, & Redmond, 2014; Roberts & Townsend, 2015) and develops on a broader scale than usual because the study zone is composed of the 2498 municipalities of more than 1000 and less than 50,000 inhabitants located outside of large urban areas in Spain and distributed throughout the country (Ministerio de Fomento, 2016). The article begins by identifying and localising municipalities with relative concentrations, or clusters, of creative activities. In our subsequent review of the theories that could explain the localisation of these clusters, we see that together with the traditional factors brought by markets and government policies (infrastructures and other “hard factors”), other distinct factor (“soft factors”) come into play. These soft factors are related to immaterial questions such as, *inter alia*, the evaluation of *amenities*, tolerance and the local atmosphere. These hypotheses are verified using an econometric analysis that not only manages employment and business data as exogenous variables but also controls whether the municipalities' demographic size and creative profile influences the intensity of the clusterisation. The models obtained confirm the predictions in the new debates because they attribute the majority of the explanatory power to some *hard*-type factors but, interestingly, do not confirm the expectations raised by the *soft factors*. In this line of inquiry, we believe that our study offers a valuable perspective on how creative activities insert themselves into extra-metropolitan economies, and in this way, we contribute to a relevant social debate about local development, which is now being discussed in both national and international spheres.

## 2. Material and clustering method

Spain has 7366 municipalities with fewer than 50,000 inhabitants situated outside of large urban areas (Ministerio de Fomento, 2016). These municipalities represent 90.8% of the total Spanish municipalities, 32.2% of the population, and 90.7% of the surface area of the country. Table 1 clearly shows the marked fragmented structure in Spanish municipalities, as more than 80% of those considered have populations under 2500.

The municipal structure is the legacy of the sustained population losses affecting Spanish rural areas, especially inland, from which they have yet to recover. The existence of an inland Spain depopulated by the exodus of its rural population to the large cities in the centre and the periphery of the country can already be seen in the middle decades of the 20th century, when the number of provinces losing population was steadily increasing.<sup>1</sup> This enormous spatial demographic shift meant that “... in the space of one generation, Spain's rural population fell by more than 25 per cent. Because initial population densities in many rural communities were already low, large parts of the country became demographic deserts” (Collantes & Pinilla, 2011, p. 1). Depopulation is shown in the average population density, 19.79 inhabitants/km<sup>2</sup>, well below the average for the European Union, 40 inhabitants/km<sup>2</sup>, and even lower in large inland areas (Aragón, Castilla-León, Castilla la Mancha) which average 10 to 11 inhabitants per km<sup>2</sup> (Ministerio de Medio Ambiente, Rural y Medio Rural y Marino, 2009).

Restricted data availability for the smallest municipalities has led us to centre our work on the set of 2498 municipalities with more than 1000 inhabitants. The information managed arises out of the statistics on businesses and employment on the municipal scale provided by the

<sup>1</sup> 8 provinces out of 50 lost population from 1941 to 1950; 16 from 1951 to 1960; 23 from 1961 to 1970 (Bielza de Ory, 1989; Tamames, 1976).

**Table 1**

Size distribution of the Spanish extra-metropolitan municipalities.  
Source: Population census, 2011

Size (inhabitants)	Municipalities	
	Number	%
25,001 a 50,000	72	1,0
10,001 a 25,000	287	3,9
De 5001 a 10,000	412	5,6
De 2501 a 5000	603	8,2
De 1001 a 2500	1133	15,4
de 501 a 1000	1035	14,0
de 101 a 500	2686	36,5
hasta 100	1136	15,4

General Treasury of Social Security (in 2012) and refers to activities that are internationally considered to be creative. All of these activities generate “... tangible produces or intangible services—intellectual or artistic—with creative content, economic value and market objectives” (UNCTAD, 2010) and can be categorised into four types: Heritage, Arts, Media and Functional Creations. The NACE Rev. 2 headings that fit such definitions are presented in Table 2. The activities included in the first three categories are usually identified with the so-called cultural industries,<sup>2</sup> whereas the “Functional Creations” categories, which are the most numerous and heterogeneous, include activities that relate to business and individual demands for goods and services with creative content (Méndez, Michelini, Prada, & Tébar, 2012).

When interpreting these data we must bear in mind that despite their potential, creative activities, like all other sectors, have experienced severe decline due to the economic crisis. The household budget survey (INE, 2016) shows that the average spend on culture in Spanish homes fell by 44.7% from 2007 to 2014, so that the proportion of cultural spending to total spending, previously around 7%, was down to less than 5.7% by the end of the period studied. As Spain began to recover from the crisis, cultural spending did not begin to recover until 2015, and then only weakly.

To identify which of the municipalities studied contain relative concentrations, or clusters, of creative activities, we have calculated the horizontal localisation quotient (HC), a measurement that is close to the conventional localisation quotient but that considers the magnitude of the activity in the locality (Fingleton, Iglori, & Moore, 2004; Polèse, 2012).<sup>3</sup> Although the HC denotes the existence of a cluster when it includes positive values in a single variable, employment (*e*) or businesses (*f*), the small size of the majority of the municipalities (34.7% of which have fewer than 2000 inhabitants and 69.3% have fewer than 5000) suggests the requirement that this condition be met simultaneously in both, that is,  $HC_e > 0$  and  $HC_f > 0$ . In this way, we minimise the risk of detecting spurious clusters because all employment either comes from a single business (that offers the majority of the work in the locality) or because the cluster is composed of a few freelancers. In addition, we have calculated  $HC_{fpac}$ , the localisation quotient of the businesses in the categories of Heritage, Arts and Media, along with the  $HC_{f\text{func}}$ , the localisation quotient of the businesses belonging to the Functional Creations category. Grouping the companies in the Media

<sup>2</sup> Thus, they are collected in the Satellite Count of Culture in Spain (*Cuenta Satélite de la Cultura en España*) (Ministry of Education, Culture and Sport (Ministerio de Educación, Cultura y Deporte), 2012).

<sup>3</sup> Indeed, the horizontal quotient is defined as the number of businesses or employments related to an activity in excess of the expected number, with the latter being the number that exists when the activity in the locality has the same importance as a reference space producing an LQ equal to 1. It is calculated for employment by first obtaining the LQ expressed as  $LQ = (E_{ij}/E_j)/(E_i/E)$ , with LQ being the location quotient of activity *i* in municipality *j*;  $E_{ij}$  are the employment from activity *i* in municipality *j*;  $E_j$  is all of the employment of *j*;  $E_i$  is the employment from the activity *i* in the entire study area; and  $E$  is the total number of employments in the study area. Then,  $E_{ij}$  is replaced by  $\hat{E}_{ij}$  to obtain  $LQ = (\hat{E}_{ij}/E_j)/(E_i/E) = 1$ , with  $\hat{E}_{ij}$  being the number of employment necessary for  $LQ = 1$ , given the other values. Finally HLQ is obtained by calculating  $HLQ = E_j - \hat{E}_{ij}$ . With the variable for firms, the process is the same (Fingleton et al., 2004).

**Table 2**  
Creative activities according to activity type.

Types <sup>a</sup>	NACE Rev. 2 Code Definition
Heritage	91. Libraries, archives, museums and other cultural activities
Arts	90. Creative, arts and entertainment activities
Media	18. Printing and reproduction of recorded media 58. Publishing activities 59. Motion picture, video and television programme production, sound recording and music publishing activities 60. Programming and broadcasting activities
Functional Creations	74. Other professional, scientific and technical activities <sup>b</sup> 71. Architectural and engineering activities; technical testing and analysis 73. Advertising and market research 70. Activities of head offices; management consultancy activities 62. Computer programming, consultancy and related activities

<sup>a</sup> UNCTAD, 2010.

<sup>b</sup> T group include *specialised design activities, translation and interpretation activities and photographic activities*.

category with those in Heritage and Arts, we adopt the criteria of the statistical report *Cuenta Satélite de la Cultura en España* (Ministerio de Educación Cultura y Deporte, 2017),<sup>4</sup> which classes them in the “cultural” sphere, and differentiates them from “intellectual property activities”, sphere covering the activities we call functional creations. The comparison of both quotients -  $HC.f.pac$  and  $HC.f.funcl$ - enables, in the second stage of analysis, the detection of which clusters have a profile that is more cultural than functional ( $HC.f.pac > HC.f.funcl$ ), and vice versa ( $HC.f.funcl > HC.f.pac$ ).

There are only 514 municipalities that combine the requirements  $HC.e > 0$  and  $HC.f > 0$ —to be considered creative clusters. They are approximately 20.5% of the total although they represent 55.8% and 61.8% of the total creative businesses and employment, respectively. Their mean size is relatively high, at 9014 inhabitants, although 24.7% of them have fewer than 2000 inhabitants. Meanwhile, 207 of the municipalities present a cultural profile, whereas in 294 of the municipalities, we find a functional profile. A large part of the clusters (Fig. 1) forms *creative belts* around the large urban areas of the country (Madrid, Barcelona, Valencia, Alicante, Seville, Bilbao and San Sebastian). There is also a clear contrast between the northeast periphery, on the one hand, and the southern periphery and the interior of Spain, on the other hand. In the first case, the greater number of municipalities and businesses reflects the greater number and density of settlements and people. For this reason, it is notable that although the clusters are relatively scarce in the southern periphery and southern half of the country, where the density of population and settlements is high, they nevertheless have a significant presence in very sparsely populated areas both in the interior and in the northern half of the country.

With regard to the creative profile, the map does not show clear contrasts of localisations by cluster specialisation. There are fewer cultural types in the interior areas except for those that surround Madrid, and the functional types abound among the clusters of the smallest municipalities whether they are close to urban zones or are located in areas that are more remote.

### 3. The localisation and profile of creative clusters in rural areas: factors and hypothesis

The determination of the conditions that the municipalities of the extra-

<sup>4</sup> The *Cuenta Satélite de la Cultura* is an annual statistics operation intended to provide a system for economic information relating to culture, designed as a satellite to the main National Accounts system, which enables us to estimate the impact of culture on the Spanish economy as a whole (Ministry of Education ..., 2017).

<sup>5</sup> As the source does not publish data at the local scale, we requested them from the body gathering the statistics, the General Sub-directorate of Statistics and Studies, part of the Ministry of Education, Culture and Sport. We would like to thank the directors of the Institution for providing the requested data.

metropolitan areas must bring together to facilitate the existence of creative ecosystems or clusters first requires the evaluation of the factors that are the most analysed in the literature (Freire-Gibb & Nielsen, 2014; Murphy et al., 2014; Roberts & Townsend, 2015; Törnqvist, 2011). Factors that can be classified as “hard factors” (Murphy et al., 2014) are noteworthy: these are the easily monetised ingredients present in the function of local production that model the most conventional theories of local development. This is the case for infrastructure, the cost of rent, purchasing power, productive structure, business typology, and diversity. Combined with human capital, which is a factor that is both qualitative and intangible, they contribute to the existence of industrial districts with various types of positive externalities and agglomeration economies (Lafuente et al., 2010; Méndez et al., 2012). These hypotheses have been corroborated by evidence that creative businesses are more dynamic in those areas in which capital accumulates (Grodach, Currid-Halkett, Foster, & Murdoch, 2014; Törnqvist, 2011). Although some of the studies mentioned refer to urban environments, the effects described also hold for rural areas, where it is common for localities with greater economies to have greater output than smaller ones (Lafuente et al., 2010; Porter, 2004), leading to the consideration that the municipality's economic aspect and the size of its market are both significant. In relation to the infrastructures, there is also a large amount of evidence of business opportunities that have opened in remote but well-connected localities (Bell & Jayne, 2010; Capone, 2008; Lafuente et al., 2010; Mateos García, Bakhshi, & Lenel, 2014; Vallance, 2014).

Nevertheless, as the economy has been changing, the literature on local development has been incorporating another type of factor connected to knowledge and social capital as elements that improve productive efficiency, along with other variables related to quality of life in the place of residence that are not always quantifiable or correctly monetised. Various explanatory hypotheses known as “soft factors” respond to this new economic reality (Murphy et al., 2014). “Soft factors” is a term that refers to the intangible characteristics of the places that make an environment attractive and that are therefore composed of competitive advantages to stimulate demographic and economic development (Argent et al., 2013). As an example of these intangible conditions, “amenities”—environmental, landscape and cultural—have been cited that favour quality of life: *inter alia*, the dynamism of the local atmosphere, ethnic and social diversity and the population's receptiveness and tolerance. These variables assess whether a territory is suitable for its potential residents, with the traditional function of the territory as a supplier of raw materials and conventional inputs relegated to a secondary role. In his theory of the “three Ts” of economic growth, Florida (2002), referring to this analytical change, explains that tolerance, technology, and talent are the basis of a dynamic local economy, thus underlining the new preferences of the public for the setting or atmosphere of a place where different people live side by side, and where creative production happens at the same time. Specifically, an open and inclusive community is attractive to people who are open to new experiences, the only personality factor with a consistent effect on regional development (Florida, 2008). It correlates significantly with jobs in IT, science, art, design, and entertainment, with general human capital levels, with high-technology industry, with incomes, and with property values.

Törnqvist (2011) has defended the role of cultural and disciplinary variety and heterogeneity by affirming that creativity is stimulated in the spaces that promote the informal exchange of ideas. Because soft factors describe aspects valued positively by stakeholders, their consideration introduces to the analysis a perspective of *demand* and the consideration of intangible aspects that complements the perspective of *supply* represented by the previously mentioned “hard factors”. However, both aspects interact with and stimulate each other at the local scale: the creative class affects the production of and demand for culture, and at the same time, attracts other residents who consume culture and value it as a factor of local development. In other words, “social milieus are indeed important for the production, consumption and ultimate valorization of a particular [cultural] good or service” (Currid & Williams, 2009, p. 444).

Although “soft factors” appear appropriate to justify the extra-metropolitan localisation of those creative activities that primarily produce

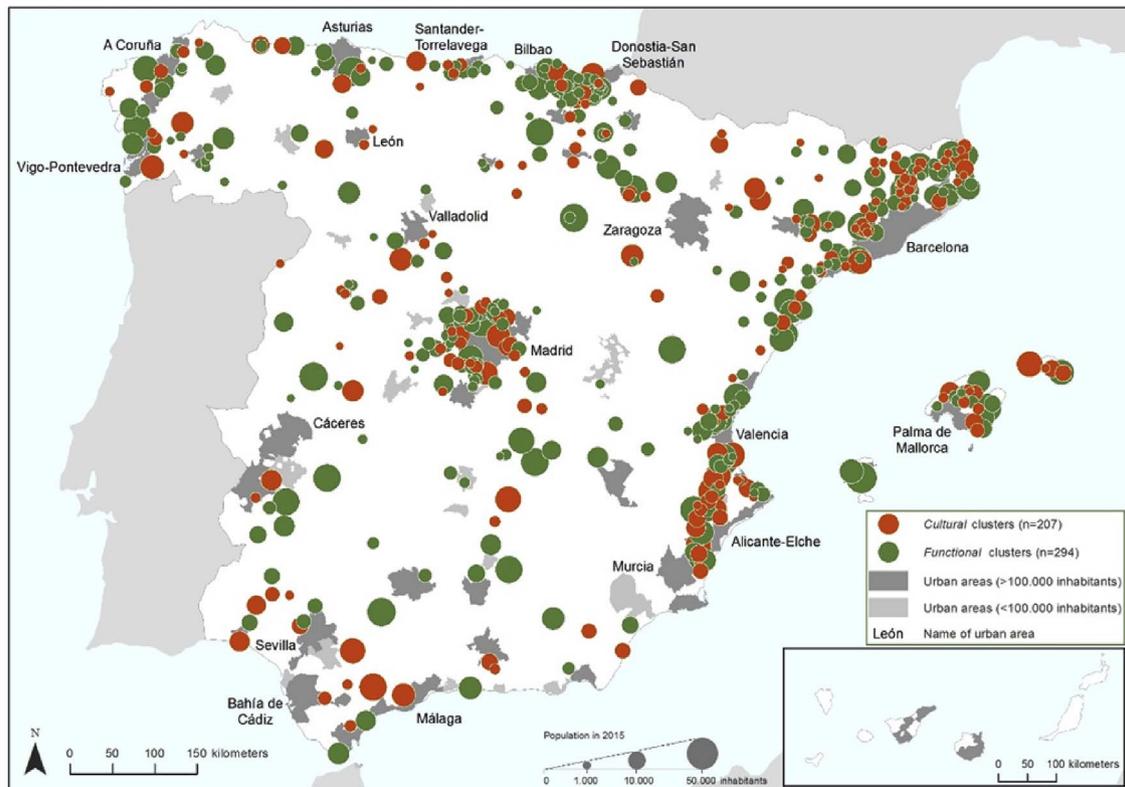


Fig. 1. Localisation of the extra-metropolitan municipalities with creative activity clusters by profile.  
Source: General Treasury of Social Security (*Tesorería General de la Seguridad Social*). Created by the authors.

services, the explanatory pertinence of activities producing immaterial goods, such as those that compose the Functional Creations category, has not been sufficiently contrasted. Studies in rural American and Australian areas have confirmed the relationship between the presence of creative classes and localities' high environmental quality (Argent et al., 2013; Grodach et al., 2014; McGranahan & Wojan, 2007; McGranahan, Wojan, & Lambert, 2011). However, other studies note that although rural areas are a good place for creativity to emerge, they are not as good for business development because of the existence of structural obstacles that impede business consolidation. In this manner, the promising expectation of a “creative countryside ... culturally inspired and entrepreneurially driven, where ... place matters more” is called into question (Anderson et al., 2015).

In addition to *hard* and *soft* factors, some authors have verified that certain structural characteristics of place (*settlement factors*), such as a place's recent demographic trajectory or proximity to an urban market, influence the presence of creative businesses (De Propriis, Chapain, Cooke, MacNeil, & Mateos, 2009; McGranahan & Wojan, 2007). It has also been observed that localities' competitiveness is greater if they are close to economically strong metropolitan areas (Porter, 2004). Meanwhile, no locational influence has been detected for institutional factors even though political debates often include the argument that synergies are generated between public and private cultural activities. These factors have been shown to be inexpressive in studies of small localities (Lafuente et al., 2010). Our own previous study (Escalona-Orcao, Sáez-Pérez, & Sánchez-Valverde García, 2017) also failed to find any causal relationship between public expenditure on culture by the regional and local governments of the towns studied and their specialisation in cultural activities.

#### 4. Modelling the factors that influence creative clusters in extra-metropolitan areas

##### 4.1. Variables, data and methods

Having presented the factors that (according to the literature) favour the formation of clusters of creative activities, in this section we evaluate those

factors' possible occurrence in the 514 creative clusters identified in the Spanish extra-metropolitan areas. To do so, we will perform an econometric analysis in which as dependent variables we distinctly and successively use the two indicators of clusterisation,  $HC_f$  and  $HC_e$ , from each municipality. In the first stage of the analysis, we have considered the clusters in their totality, whereas in the second stage, we have split the set into three and two groups according to their demographic size and profile as cultural or functional, respectively. When differentiating the clusters according to their profile, the dependent variables used have been the specialisation quotient of cultural businesses ( $HQL_{f_{pac}}$ ) and the specialisation quotient of the businesses in the Functional Creations sector ( $HQL_{f_{funct.}}$ ). The analysis is completed by a tentative evaluation of creative activities' contribution to their respective local economies. Accordingly, we simply evaluate whether the local economic dimension can somehow be attributed to the existence of a creative cluster. To do so, we modify the character of the variables  $HC_f$ ,  $HQL_{f_{pac}}$  and  $HQL_{f_{funct.}}$ , which then act as independent variables, taking them as a variable that explains one of the economic variables considered explanatory in the previous analysis and that are presented in Table 3.

When selecting the variables that refer to the *hard factors*, we attempted to capture municipalities' potential to generate, on their scale, the various types of agglomeration economies (Boix & Lazzaretti, 2012; Sánchez Serra, 2016). The index of economic activity, obtained from the taxes to which all businesses except agrarian are subject, synthesises the economic size of the municipality, whereas the market quota considers the quantity of products and services that the municipalities can absorb, i.e., their purchase capacity.<sup>6</sup> Although both indicators tend to appear correlated, that is not the case not in this instance. We also included the diversity both of employment and of businesses (Argent et al., 2013; Grodach et al., 2014; McGranahan & Wojan, 2007; McGranahan et al., 2011), considering that they favour the

<sup>6</sup> These and other indicators come from the *Economic Annual of Spain (Anuario Económico de España)*, created by the study service of an important financial entity. This source is very useful for economic information about small municipalities.

**Table 3**

Themes, independent variables and sources for the explanatory analysis of the clustering of creative industries in extra-metropolitan areas.

Factor	Theme	Variable (measure) [expected sign]
<i>Hard factors</i>	Infrastructure	Number of broadband lines <sup>a</sup> [ + ]
	Urbanisation economies	Economic activity index <sup>b</sup> [ + ] Market share <sup>b</sup> [ + ] Sectoral diversity of firms (Theil index) <sup>c</sup> [ - ] Sectoral diversity of employment (Theil index) <sup>c</sup> [ - ] Bank branches/population*1000 <sup>e</sup> [ + ]
	Localisation economies	Sectoral diversity of creative firms (Theil index) <sup>c</sup> [ - ] Average size of firms (total firms/total employment) <sup>c</sup> [ + ] Production services (firms in the production services sectors/total firms*100) <sup>c</sup> [ + ]
	Human capital	High School completion rate <sup>d</sup> [ + ] College completion rate <sup>d</sup> [ + ]
<i>Soft factors</i>	Amenities	Number of protected cultural sites/population <sup>a</sup> [ + ] Tourism index <sup>b</sup> [ + ] Restaurants and bars index <sup>b</sup> [ + ]
	Tolerance	Diversity of population (Theil index) <sup>d</sup> [ - ]
	Local atmosphere	Voter turnout (% of participation in 2011 general elections) <sup>f</sup> [ + ] Unemployment rate <sup>b</sup> [ - ]
Settlement factors	Demographic dynamism	Population variation 2001–2011 <sup>d</sup> [ + ]
	Proximity to urban areas or markets	Distance to the provincial capital (in minutes) <sup>g</sup> [ +, - ]
	Commuters to the municipality	Non-resident workers and students/resident population*100 <sup>d</sup> [ + ]

<sup>a</sup> Source: La Caixa, Anuario Económico de España, 2012.<sup>b</sup> Definition and sources in annex 1.<sup>c</sup> Source: General Treasury of Social Security (*Tesorería General de la Seguridad Social*) 2012.<sup>d</sup> Source: 2011 Population census; for the variable *Population variation*, also the one from 2001.<sup>e</sup> Source: *Cultura\_base* 2014<sup>5</sup>.<sup>f</sup> Source: Ministry of Interior.<sup>g</sup> Source: *Google Maps*.

generation of positive externalities in municipalities because cross-pollination tends to be more fertile, less risky and more creative than a productive monoculture. For its part, the diversity of creative businesses can denote the existence of localisation economies for the creative sector itself, together with the characteristics of human capital and the existence of service businesses. The three diversity situations mentioned are measured using the Theil index such that the expected value of the three variables is negative.<sup>7</sup>

In the selection of variables referring to *soft factors*, we have attempted to adjust to the culture and idiosyncrasy of the studied zones not only to establish consistent connections between the phenomenon being studied and the variable that describes it but also to negotiate existing statistical restrictions with respect to places with low population. To capture the effect of the amenities, we did not use the variables of landscape and climate that are common in the American literature, which has probed them the most deeply (Argent et al., 2013; McGranahan & Wojan, 2007; McGranahan et al., 2011), because we considered them to be barely differentiable in a country with the size and geographical characteristics of Spain. Instead, we introduced other indicators of the quality of the environment, such as the wealth of monuments and tourist offerings (Boix & Lazeretti, 2012; Escalona-Orcao et al., 2015). We attempt to approach tolerance in a manner similar to that proposed by other authors, i.e., by using a variable that refers to the diversity of nationalities among the population (Grodach et al., 2014; McGranahan & Wojan, 2007). We understand that the stable shared socialisation of people with different customs permits the inference that the society is open and that it is comfortable with its heterogeneity and pluralism. The value expected for all of the variables discussed is positive, except

in the case of unemployment.

Finally, with the variables that represent the *settlement factors*, we follow the best-known literature and propose, in addition to population variation in the preceding decade, the distance in terms of travel time to the provincial capital and the proportion of commuters received by the municipality (Florida, Mellander, & Rentfrow, 2013; McGranahan & Wojan, 2007). These two variables attempt to verify the extent to which either proximity to an urban market or integration into its employment market influence the existence of creative clusters. The value expected for the first and third variables is positive, whereas for the distance it is less predictable because its effects depend on the type of relationships (i.e., centrifugal or centripetal) between the urban market and its environment: closeness is advantageous if centrifugal flows dominate, just as distance is advantageous if the typical relationships are centripetal.

Before undertaking the econometric analysis, the linear correlations between the variables have been examined. Because the index of restoration showed a high correlation with the market share ( $r = 0.93$ ), we chose to eliminate it. Similarly, we have eliminated the atypical values and considered the problem of collinearity, which has been controlled by observing the variance inflation factor (VIF). Finally, in the interpretation of the models, we have considered the number of variables that compose them, the order in which they appear and the proportion of the explanation that each one offers. Although these details are not usually specified, in our opinion, they are essential for a complete understanding of the results. A description of the values adopted by the explanatory variables that have remained in the analysis is included in Annex 1.

## 5. Results. Drivers of the location of creative clusters in extra-metropolitan areas

The regression models presented in this section have been obtained

<sup>7</sup> The Theil's coefficient expression for firms data is as follows:  $Th_i = 1 - (\sum z_{it}^* \log(1/z_{it}) / \log k)$ .  $Th_i$  is Theil's coefficient for municipality  $i$ ;  $z_{it}$  denotes the number of firms in each of the activity sectors in the municipality  $i$ ; and  $k$  is the number of activity sectors considered. With the variable for employment, the process is the same. The coefficient has a value of 0 when diversification is at its maximum level and 1 in the opposite case.

**Table 4**  
Regression findings for creative specialisation of clusters in extra-metropolitan areas (in grey: variables included in some model; p-value < 0.005).

Factor	Independent variables	Clusters						
		All		Pop<2000	2000<pop<10,000	Pop>10,000	Cultural	Functional
		HQL_f	HQL_e	HQL_f	HQL_f	HQL_f	HQL_f-PAC	HQL_f-FUNCT
Hard	Index of economic activity	2 50.88 (+)	2 31.48 (+)	2 24.81 (+)	4 23.67 (+)	2 47.09 (+)	1 53.42 (+)	2 62.78 (+)
	Market share	1 48.55 (+)	1 27.28 (+)		1 13.39 (+)	1 43.56 (+)	2 57.58 (+)	1 60.19 (+)
	Diversity of firms		5 37.72 (+)					
	Div. of creative firms			1 14.98 (-)	2 20.45 (-)			
	Average size of firms		4 36.38 (+)			5 50.87 (+)		
	Production services					4 49.8 (+)		
	College rate	3 51.56 (+)	3 34.90 (+)		3 22.32 (+)	3 48.48 (+)		3 63.41 (+)
Settlement.	Distance		(-)					
R <sup>2</sup> a		51.56	38.27	24.81	23.67	50.87	57.58	63.41
N		514	514	120	237	141	207	294

(1) For the complete names, see Table 3.

using the *stepwise* technique applied to the variables with a p value < 0.005 in the linear correlation matrix. The results of the analysis are summarised in Tables 3 and 4, which include only the best models obtained together with the 14 variables that enter into any of those models. Please note that Table 4 does not include any of the soft factors, as these do not appear in any of the models created. Meanwhile, the models created using employment as a dependent variable have been very poor in terms of R values, which is why we only present the models that refer to the entire set of clusters.

The first two models in the table identify the factors that influence the creative specialisation of the 514 clusters in the set. The specialisation of the businesses is reasonably well explained (R<sup>2</sup> = 51.56) and is clearly associated with economic-type factors, market share and the economic activity index, although the first set of factors alone account for 48.5% of the variability. The explanatory force of both variables is maintained in all of the models obtained, suggesting at this point a clear association between creative activity and the size of the local economy both on the supply side and on the demand side. The equation is completed with the variable “college rate,” confirming the expected influence of human capital, albeit with a relatively low explanatory weight. The specialisation of employment is explained in a less satisfactory way (R<sup>2</sup> = 38.27), although it is richer in nuances because in addition to the two economic variables cited, the model includes not only the diversity and size of businesses but also the distance to the province capital. This variable appears with the expected sign, suggesting that proximity to an urban centre is advantageous for employment that, predictably, is performed outside the municipality.

With respect to regressions by demographic size, the best results are obtained for the larger municipalities (R<sup>2</sup> = 50.8), with a model that reinforces the importance of the hard-type factors because those factors include the variables “production services” and “average business size.” In the models obtained for the rest of the municipalities, although the explained variability is very low, the diversity of the creative businesses has a special explanatory force, suggesting that in this type of municipality, the existence of various types of creative businesses incentivises the ulterior localisation of others.

The analysis has been completed seeking the creative clusters' potentially specific factors based on their profiles as either functional or

cultural. The models obtained are the strongest in the entire analysis for their explanatory capacity (R<sup>2</sup> takes the values of 63.41 and 57.58, respectively). Both models' composition includes simplicity and bias because their two and three unique variables, respectively, are hard-type and maintain a strong inclination towards the economic factors. It is notable that cultural specialisation is first associated with the index of economic activity, whereas in the explanatory model of the functional specialisation, market quota dominates. The variable that completes the equation is the population with university studies, which is coherent with the nature of this type of business. Therefore, this model is identical to that which explains all of the clusters as a set.

The close relationship between economics and creativity is also observed in the inverse sense (Table 5) because in the models created to verify the influence of the creative on the index of economic activity, businesses' specialisation in these activities appears as a second or third variable in terms of explanatory force, with its weight being notable in the case of municipalities of more than 10,000 inhabitants.

## 6. Discussion and conclusion

Taken as a set, the results obtained lead us to affirm that there are only a few clear predictors of the existence of creative clusters in extra-metropolitan areas: the index of economic activity, the market quota, the population with university studies, some descriptive variables of the business composition (diversity, size, existence of services) and, to a much lesser extent and only in relation to employment, the distance from an urban market. Concentrations of creative activities do not appear to exhibit any association with the remainder of the variables considered, not even in the specific models according to size or profile. The case of the settlement factors is an exception to the poor result obtained by the distance variable in the explanatory model of employment specialisation. McGranahan and Wojan (2007) obtain similar results—correctly, in our opinion—showing that demographic dynamism and the number of commuters is more expressive measures of metropolitan growth than of rural growth.

In the same way, the variable associated with qualitative factors and residential amenities—i.e., the *soft* factors—also have not confirmed the expectations of their capacity to explain the cultural economy in these small extra-metropolitan cities. The implicit discourse in the theoretical models

**Table 5**

Regression findings for the economic activity index of clusters using creative specialisation of firms as explicative variable (in grey: variables included in some model; p-value < 0.005).

Factor	Independent variables	Clusters					
		All	Pop<2000	2000<pop<10,000	Pop>10,000	Cultural *	Functional*
Creative clustering	<i>HCO_f</i>	3 65.68 (+)			2 41.52 (+)	2 75.15 (+)	2 72.82 (+)
Hard	<i>Broadband lines</i>	5 66.53 (+)					4 73.60 (+)
	<i>Market share</i>	1 60.49 (+)	1 5.78 (+)	1 15.38 (+)	1 36.95 (+)	1 72.56 (+)	1 70.90 (+)
	<i>Diversity of jobs</i>			4 36.45 (+)			
	<i>Bank branches</i>			3 35.57 (+)			
	<i>Diversity of creative firms</i>				4 46.81 (+)		
	<i>Average size of firms</i>	2 63.87 (+)	2 10.83 (+)	2 31.83 (+)			
Soft	<i>Tourism index</i>		3 13.80 (+)				
Settlement.	<i>Population variation</i>	66.29 (-)			44.70 (-)		73.22 (-)
R <sup>2</sup> <sup>a</sup>		66.53	13.80	36.45	46.81	75.15	75.76
N		514	120	237	141	207	294

(1) For the complete names, see Table 3; \*in these models, the independent variables are *HCO\_f\_pac* and *HCO\_f\_funct*.

following Florida's (2002) framework seems to favour small cities' quality of life, many of them with historical and monumental environments in addition to less-congested public spaces. Nevertheless, because we have not found an explicit relationship that is clear and evident, the previously mentioned perspective of the demand of citizens who appreciate and consume this better quality space is not significant, unlike the more conventional perspective of supply, in which the majority of the explanatory variables are found. Although this result could be due to a poor choice of some of the explanatory variables, we are inclined to think that it is more likely a consequence of the fact that the business makeup studied is dominated by small business owners (see the descriptive tables incorporated as an annex) who prefer localities close to their residences and who—as Murphy et al. (2014), among others, assert—attribute greater importance to the “hard” or traditional factors (Musterd & Gritsai, 2013). For small businesses and freelance workers, the decision on where to locate their business is not relevant, as they usually expect to establish it where they live. Additionally, we should not disregard the possibility that the literature has overvalued the benefit that rural areas can extract from their specific advantages in the realm of “soft” factors. Nor should we disregard the possibility that rural areas' recovery might be losing strength. These hypotheses, which have been anticipated in some studies (Anderson et al., 2015), are supported by recent data showing that in both small cities and rural areas, there is now a lower probability of launching new businesses given the continuing crisis (Tankersley, 2016).

For all of these reasons, we affirm that the formation of creative activity clusters in extra-metropolitan areas depends on the economic level of municipalities, a result that is consistent with those of other authors (Grodach et al., 2014; McGranahan & Wojan, 2007; McGranahan et al., 2011; Roberts & Townsend, 2015). On the one hand, the capacity for local consumption is

decisive as to the localisation of businesses in all types of clusters, with the sole exception of the smallest clusters. On the other hand, the existence of business and individual demand for goods and services with creative content—or, in other words, of a critical mass—stimulates the localisation of both cultural-type and Functional Creations group businesses. The same argument justifies the presence of the economic activity index in the regressions, accompanied by indicators of business size and variety, supporting the idea that specialisation in creative activities is favoured in places with a certain economic size, with cross-fertilisation of ideas and with innovation among the locality's businesses. In this context, the explanatory importance of human capital – understood as an input of the productive function of creative activities - clearly fits, extending to the rural sphere the evidence that a qualified population is the most capable of triggering economic growth in territories of any scale (Tankersley, 2016). Likewise, the presence of qualified people in places with a higher residential quality generates an attractive local atmosphere, in line with the remarks mentioned above by Florida (2008) and other authors on how places open to knowledge appear to be dynamic residential spaces. Migratory chains among similar people (Portes, 1995) would reinforce gravitation towards small towns and rural settings which include residents with a high level of education and strong cultural preferences.

The interrelationships between culture and economic development are thus confirmed in both directions. The set of economic factors influence creative activities on the demand and the supply sides, but cultural specialisation is also significant for the clusters' economy because it is either the second or the third variable in the explanatory models of the economic activity indices (see Table 4). This explanation would strengthen the role of knowledge in the local economy, even considering its most generic and transversal versions, such as culture.

In summary and with the prudence required by the methodological conditioners mentioned—the data were incomplete and biased towards what is functional in the NACE rev. 2, together with a need to refine the treatment of the variables managed—we believe we have demonstrated that the existence of creative clusters, regardless of their profile, is most likely not only in the rural localities that are similar, given their demographic or economic size, to urban localities but also in rural localities that can develop, to a greater or lesser extent, agglomeration economies (Naldi et al., 2015). Our conclusion situates the benefits of agglomeration above other possible qualitative or residential determinants of local development such as those that compose the soft factors. To put it another way, rural municipalities with the quality of life factors but without the hard economic factors identified should not aspire to build creative clusters. We believe this conclusion invites reflection on the effects of the lack of scale not only in relation to the development of creative activities but also, in general, with the pending demographic, social and economic recuperation of the majority of the rural areas.

In this context, a useful recommendation could be for policies supporting creative activities not to focus on single towns, but instead, on functional areas made up of small municipalities which cooperate, share their resources, and generate a broad space for economic agents, and which show the typical phenomena of clusters – commuting, spillovers, synergies, and buzz (Currid & Williams, 2009; Escalona-Orcao et al., 2016). This is

what international organisations propose for Spain (OCDE, 2014). Meanwhile, our work also clearly shows the importance of the accessibility and connectivity which transport and communication networks, respectively, provide for extra-metropolitan areas. Thanks to the digital revolution, segments of the value chains of creative activities could be located in remote areas, and new intangible services are being provided (Roberts, Beel, Philip, & Townsend, 2017). For its part, transport infrastructure facilitates the personal contacts which are still valuable and irreplaceable inputs for creativity. However, it is well-known that the transport and telecommunications networks on the market do not provide sufficient services, so public provision should be added to complement the initiatives that may emerge from the sharing economy, thus improving the resilience of the rural environment.

### Funding sources

The investigation from which this study originated has been mainly financed by the Ministry of Economy and Competitiveness of the Government of Spain (*Ministerio de Economía y Competitividad del Gobierno de España*) (project code: CSO2012-31650). Additional resources have been contributed by the University de Zaragoza research programme (*Vicerrectorado de Política Científica, convocatoria 2017*) (Project code: UZ2017-HUM-01).

### Appendix 1. Descriptive statistics

Variable	N	N*	Mean	StDev	Minimum	Maximum
Population variation	514	0	29.48	40.79	–25.82	335.47
Broadband lines	514	0	0.20285	0.06542	0.00130	0.40527
Bank branches	514	0	0.9324	0.5546	0.0000	4.1597
Tourism index	514	0	16.16	64.19	0.00	592.00
Economic activity index	514	0	16.411	21.686	0.000	171.000
Voter turnout	514	0	0.71787	0.08458	0.39174	0.91851
Average size of firms	514	0	7.341	2.458	1.904	22.538
Diversity of firms	514	0	0.15189	0.05699	0.05632	0.45483
Diversity of jobs	514	0	0.16335	0.08817	0.05209	0.70589
Diversity of cre. firms	514	0	0.4915	0.3220	0.0000	1.0000
Production services	514	0	0.06027	0.03050	0.00000	0.16216
Distance	514	0	34.946	20.224	0.000	155.000
Market share	514	0	19.749	21.718	2.000	119.000
Commuters	514	0	0.4310	0.3613	0.0000	3.2257
Diversity of population	514	0	0.83793	0.11540	0.41407	1.00000
High school rate	514	0	0.48031	0.05083	0.14196	0.90082
College rate	514	0	0.12178	0.05005	0.02244	0.32597
Protected cultural goods	513	1	0.000804	0.001650	0.000000	0.016583
Unemployment rate	514	0	13.098	4.404	2.200	27.900

Sources: Appendix 2.

### Appendix 2. Definitions and sources of some indicators and indices included as independent variables in the regression analysis

Economic activity index: Obtained based on business tax on total business activities, except agricultural (which are not subject to business tax). The index value indicates the participation (per 100,000) corresponding to each municipality over a national base of 100,000 units (total euros collected in tax = 100,000). Source: La Caixa, 2012, *Anuario Económico de España*.

Market share: Index expressing the comparative purchasing power of consumption capacity of the municipalities on 1 January 2012. It is based on the population plus five other variables representing its purchasing power: number of landline phones, cars, lorries, bank branches and retail activities. The index value indicates the participation (per 100,000) corresponding to each municipality over a national base of 100,000 units (total euros collected in tax = 100,000). Source: La Caixa, 2012, *Anuario Económico de España*.

Production services. The Nace Rev. 2 codes and activities considered are: 58. Publishing activities; 59. Motion picture, video and television programme production, sound recording and music publishing activities; 60. Programming and broadcasting activities; 61. Telecommunications; 62. Computer programming, consultancy and related activities. 63. Information service activities; 68. Real estate activities; 69. Legal and accounting activities; 70. Activities of head offices; management consultancy activities; 71. Architectural and engineering activities; technical testing and analysis; 72. Scientific research and development; 73. Advertising and market research and 74. Other professional, scientific and technical activities.

High school completion rate. In Spain, students are considered to have completed high school when they have finished ESO, EGB or *Bachiller*

*Elemental*, or if they have an Education Certificate or Primary School Certificate. *Bachiller* (LOE, LOGSE), BUP, *Bachiller Superior*, COU, PREU, middle grade FP (vocational training), FP I, *Oficialía industrial* or equivalent, middle grade in Music and Dance, certificates from Official Language Schools, upper grade FP, FP II, *Maestría industrial* or equivalent.

*College completion rate* refers to people with a university-level education, i.e., who have completed a diploma course, architecture or technical engineering course, university 3- or 4-year degree course, official Master's degree, medical specialisation course, or doctorate in 2011.

*Tourism index*: Figures for 2011, obtained based on business tax corresponding to tourism businesses, which is based in turn on the category of the tourist establishments, number of rooms and annual occupancy, making it practically an indicator of the tourism offer. The index value indicates the participation (per 100,000) corresponding to each municipality over a national base of 100,000 units (total euros collected in tax = 100,000). Source: *La Caixa*, 2012, *Anuario Económico de España*.

*Diversity of population*: Figures for 2011 de los siguientes grupos de nacionalidad: España, Otros Estados miembros de la Unión Europea, UE27, Otros Estados de Europa fuera de la Unión Europea, África, Magreb, resto de África, Norte América, resto de América, Asia, Oceanía.

*Unemployment rate* collects the number of firings recorded at the State Public Service of Employment (formerly the INEM) in each municipality on July 1, 2012, relativized by the potentially active population (15–64 years of age), referring to the Standard of January 1, 2012 (Recorded unemployed/Population 15 to 64) \* 100.

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