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On the concentration of creative industries in specialized creative local production systems in Italy and Spain: Patterns and determinants

Luciana Lazzeretti
Department of Business Economics, University of Florence
Via delle pandette, 9, 50127 - Firenze
Tel. 0039 0554374698. Email: luciana.lazzeretti@unifi.it

Rafael Boix
Departament d'Economia Aplicada II, Universitat de València
Edifici Departamental Oriental, Campus dels Tarongers
Avda. dels Tarongers, S/N (4P15), 46022 - València. (España)
Tel. 0034 963825033. Email: rafael.boix@uv.es

Francesco Capone
Department of Business Economics, University of Florence
Via delle pandette, 9, 50127 - Firenze
Tel. 0039 0554374698. Email: Francesco.capone@unifi.it

Abstract: Creative industries and creative employment tend to concentrate, forming creative local production systems around medium and large cities. We follow a multidisciplinary approach, based on cultural and creative economics, evolutionary geography, and urban economics, to analyze the forces behind the clustering of the employment in creative industries, and to explore the performance of these industries in a comparative analysis for Italy and Spain. The results show different patterns of clustering of creative employment in both countries. The historical and cultural endowments, the average size of creative industries, the size of the place, the productive diversity, and the concentration of human capital and creative class have been found as common factors leading to a concentration of creative firms and creative employment in both countries.

Keywords: creative industries, creative local production systems, creative clusters, agglomeration economies.

JEL: L22, R12, L82

1. INTRODUCTION

International literature has intensively studied a full range of different types of territorial models of concentration (Moulaert and Sekia 2003) as the industrial districts and local production systems (Marshall 1890; Becattini et al. 1990), and the most diffused geographical clusters (Porter, 1990).

Despite the criticisms that, from a theoretical point of view, the "fuzzy" definition of clusters has received, the full range of contributions on geographical clusters has led to the development of a cluster theory (Maskell and Kebir 2001) as well as to the use of the idea of clusters for policy making (DTI 2001; EU 2001). These contributions are not isolated from the recent interest in the creative economy in the form of creative industries (Howkins 2007; Caves 2008) and creative places (Landry 2002; Florida 2002).

Creative firms and creative jobs are characterized by their tendency to concentrate spatially (Cooke and Lazzeretti, 2008; Scott, 2005; Lange et al., 2008) forming geographical clusters and creative cities (Maskell and Lorenzen 2004; Florida 2008), nourished by "situated creativity" and creative networks (Staber 2008). Several definitions for creative concentrations have emerged, mirroring the diversity of cluster concepts more generally. De Propris et al. (2009) define a creative cluster as a place that: a) brings together a community of 'creative people' (Florida, 2002) who share an interest in novelty but not necessarily in the same subject; b) is a catalysing place where people, relationships, ideas, and talents can complement each other; c) is an environment that offers diversity, stimuli, and freedom of expression; and, finally d) is a thick, open, and ever changing network of inter-personal exchanges that nurture

individuals' uniqueness and identity. Clusters specialize on a great variety of creative industries and creative professions (Hawkins 2007; Unctad, 2008) such as, music (Lorenzen and Maskell 2004), video, film and photography (Lorenzen 2007), and fashion design (Crewe 1996; Aage and Belussi 2008), etc.

In this context, there is a growing interest on the study of the patterns of spatial location of creativity and its role in local and regional development (Malberg and Power, 2006; Wolfe and Gertler, 2004). Furthermore, the literature on creative clusters and creative cities has focused in particular on case studies with a multiplicity of approaches; Consequently, this has made generalization very difficult. As a result of the lack of comparative analysis, general processes of clustering of creative industries, as well as the reasons for their concentration in urban and metropolitan environments, are still under-investigated.

The first point has been only recently addressed by some contributions that have focused in a more general way on the identification of clusters of creative industries (Lazzeretti et al., 2008; De Propris et al., 2009) and the patterns of distribution of employment in creative industries (Lazzeretti et al., 2008; Clifton and Cooke, 2009). From the very beginning, the contributions on "creative class" has been based on a wide empirical analysis of European countries developed during 'Europe in the Creative Age' (Florida and Tinagli, 2005). More recently, contributions have tended to range from investigating "creative class" assumptions (Asheim, 2009), to analyzing regional distribution and economic effect of the "creative class" in several North European countries or in specific countries (Boschma and Fristch, 2009).

However, the reasons for the concentration of creative industries in urban and metropolitan environments are still, in general, under-investigated, and there is a lack of

comparative studies. The aim of this work is twofold: first, to provide a multidisciplinary approach to investigate the reasons of spatial clustering of creative. Second, to present and discuss a comparative analysis between Italy and Spain in order to generalize some results.

The paper is divided into six parts. After this introduction, the second section surveys the literature on the determinants of clustering of creative industries. Section three introduces the methodology for measuring and mapping creative industries in Italy and Spain. Section four deals with an econometric modelling of the determinants of clustering of creative industries. Section five present the results. The work ends with some concluding remarks.

2. THEORETICAL FRAMEWORK

Creative industries tend to concentrate in specific places, forming creative local production systems (Cooke and Lazzeretti 2008; Lazzeretti et al. 2008). The reasons for this phenomenon can be explained by a multiplicity of elements coming from several approaches:

One of the first explanations to the clustering of creative industries came from the field of "Cultural Economics". Studies on cultural economics and those on clusters and cultural districts have intensified, creating a rich and interesting mass of literature (Cinti, 2008). Among the many studies of cultural economy and arts management, in parallel with the interest in various cultural sectors (Evrard, Colbert, 2000; Benhamou, 2004), the debate has recently been extended to the implications of creativity and culture as a "fly wheel" of local economic development (Scott, 2000).

The strategic role of artistic and cultural resources and clusters as engines of sustainable economic development has been highlighted from many points of views (OECD, 2005). On the one hand, it is asserted that they can mould knowledge dynamics in local economic systems, evidencing their ability to activate new productive chains (*filières*) and to revitalize European cities and regions through policies of urban regeneration (Mommas, 2004). On the other hand, it has been discussed whether if it is possible to present a background in order to determine the processes of value production in the relationship between artistic and cultural organizations and a territory (Sedita, 2008). In particular, the presence of cultural and artistic heritage in a territory is a significant issue and one of the bases for the development of cultural districts and clusters (Camagni et al., 2004); and sometimes these elements are related to the historical role of the place as a regional, national, or international capital. The territorial contexts are multifarious, and the fundamental role of forms of clustering is emphasized: from cultural districts (Frost-Kumpf, 1998; Santagata, 2002) to cultural cluster (Van den Berg et al., 2000; Mommaas, 2004), to creative cities and, at last, to cultural quarters (Landry and Bianchini, 1995; Hall, 2000).

Notwithstanding the importance of the presence of cultural resource in the territories, the basic reasons for clustering of creative industries are still recognised as based on the traditional concept of "agglomeration economies" (Lorenzen and Frederiksen, 2008; Trullén and Boix, 2008). Agglomeration economies can be broadly defined as advantages on costs or quality due to the spatial concentration of productive resources and actors (population, firms, institutions, and other collective agents). Agglomeration economies are divided in internal and external to the firm where external economies are usually divided into localization and urbanization economies.

Following this approach, creative industries are affected by external agglomeration economies, which basically act as centripetal forces, fostering the incubation and attraction of creative industries in places with specific characteristics (localization economies) or in large cities and metropolises (urbanization economies) (Glaeser et al., 1992).

Localization economies are associated with the concentration of many firms of similar characteristics in particular localities (Marshall, 1920). From this point of view, creative industries concentrate to take advantage from the existence of a skilled labour market for these industries, from the existence of local suppliers specialized in other parts of the creative *filière*, and to benefit from local knowledge spillovers. Urbanization economies were originally related to the concentration of industry in general (Ohlin, 1933); to an increase in the total economic size of the city in terms of population, income, output or wealth; to urban labour market efficiency, flexibility, and skill (Hoover, 1937); to social and productive diversity (Jacobs, 1961, 1969); and to the density of agents (Hoover and Vernon, 1959; Ciccone and Hall, 1996). Urbanization economies explain the concentration of creative industries since they benefit from the large size or capacity of the local consumption market, from the mixture among uses, and variety of activities and people. This generates a dense and varied network of agents that fosters mutual economic and social support, knowledge transfer through cross-fertilization mechanisms, and promotes creation and innovation.

Analysing the more recent determinants of clustering in Evolutionary economics and New economic geography, a new, evolving paradigm is the concept of "related variety" (Frenken and Boschma, 2003). A "related variety" industry is defined in terms of industrial sectors that are related because of shared or complementary competences

in a cognitive-based definition (Boschma and Iammarino, 2007). In other words, a certain degree of cognitive proximity (Nooteboom, 2000) gives rise to effective communication and interactive learning among different industries that contribute to a higher capacity to absorb innovations from neighbouring sectors though cross-fertilisation. In other words, "related variety" means that there exists a relationship between industrial sectors and economic activities in terms of (effective and potential) competences, innovations, and transfers of knowledge. The concept of related variety has been recently applied to creative industries (Lazzeretti, 2009) as particularly active in the process of cross-fertilisation and cognitive relationships among different industries[1].

A fourth explanation to the concentration of creative industries is related to the seminal contribution of Florida (2002, 2005) with his concept of "creative class". Florida remarks that some places are poles of attraction for the creative class, and accordingly, the driving force behind the development of a city turns out to be its ability to attract and retain creative individuals. Florida introduced the theory of the 3Ts (Technology, Talent and Tolerance), which shifted the focus from the creative industries to the human factor and its creative habitat. The advantages deriving from diversity are emphasized, together with the socio-demographic characteristics of the population (the bourgeois-bohemian or "bobo" index) (Florida, 2002). Creativity is a multifarious factor; a resource for innovation, but also a competitive advantage associated with culture and territory and a factor in attracting and developing creative industries.

[1] The growing importance of the 'related-variety' approach is underlined in some empirical works, such as that of Frenken and Boschma (2003), who analyse the Dutch metropolitan areas and find that geographical concentrated firms with a high related variety present a larger growth in terms of GDP for the years 1998-2006. Cantwell and Iammarino (2003) also proved that the most competitive Italian clusters have related-variety economies.

In this context, human capital (talent), in the form of a "creative class", takes a prevalent role in the development of creative industries and creative jobs. This point was previously explained by Rauch (1993) and Hall (1996), who assumed the existence of externalities related to human capital in cities. Lucas (1988) remarked that the externalities generated by the exchange of ideas not only depends on the concentration of people in an area but also on the quality of human capital. Glaeser (2000) reports that the access to human capital encourages firms to cluster. Florida (2002 and 2005) associates human capital with talent and highlights that the economic geography of talent is highly concentrated. Thus, human capital externalities contribute to explain the concentration of activities, specially of creative activities, in concrete points of the space[2].

3. MAPPING METHODOLOGY

3.1. Creative industries

The term "creative industry" is increasingly used in the context of political planning in many countries (OECD, 2007; UNCTAD, 2008). The term originated in Australia with the report "*Creative Nation: Commonwealth Cultural Policy*" (DCA 1994), although it was popularized by the Department of Culture, Media, and Sports in the United Kingdom (DCMS, 1997). The term "creative industries" exceeds the limits of the

[2] Florida's theory has been criticized by some authors. Critics underline that Florida does not say that the creative class increases population, just local development (Glaeser, 2005). Employment growth in regions closely follows population development; people are mobile and relocate because of job opportunities, but population growth is not necessarily a measure of success because it tells us nothing of residents' quality of life, especially in places that lack land on which to expand. Moreover, Bontje and Musterd (2009) conclude that heritage amenities (and not the 3Ts) are the key factors for development. Despite these criticisms, the contribution of the "creative class" theory is recognized as redirecting the attention from the firm to the creative class, and so to the qualified human capital (Asheim, 2009).

cultural sector to include the multi-media and other industries, and follows the structural changes due to the growth and development of new technologies. The DCMS (2001, p.05) defines creative industries as "industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property".

There is not any commonly accepted list of the activities that form the "creative industry" and even the scope and criteria used to determine an activity as creative are different. Towse (2003) considers creative industries as an evolution of the traditional cultural industries, whereas other authors focus on new technologies (video, media, software) by analyzing the changes related to ICT (Lorenzen and Frederiksen, 2008; Lorenzen, 2007). Some authors and organizations suggest concrete criteria to classify an industry as creative, for example Caves (2002) or Wymorzisky (2004). The latter broadly defines creative industries on the basis of four criteria: 1) the product/service supplied; 2) the producing organization; 3) the central production process; and 4) the occupational/workforce groups. However, the main contributions pursue the elaboration of a list of activities considered as "creative" in order to measure the size, evolution, and characteristics of the sector. These definitions focus on a wide range of criteria and activities.

The DCMS report (2001, 2009) considers the following as creative industries: advertising, architecture, the art and antiques market, crafts, design, designer fashion, film and video, interactive leisure software, music, the performing arts, publishing, software and computer services, and television and radio. In the absence of a standard, the DCMS definition is used as a point of departure by many contributions (Brinkhoff 2006). UNCTAD (2008, p.13) enhances the definition of creative industries as not only

those that have a strong artistic component, but also includes other visual arts (painting, sculpture); cultural tourism; and creative R&D. The DCMS and UNCTAD (2008) do not take into account the activities associated with the artistic and cultural heritage, which are, however, included in Gordon and Beilby (2006) for the OECD. KEA (2006) and Eurostat (2008) enhance the list of creative activities to include some cultural touristic and recreational activities. World Intellectual Property Organization (WIPO) (2003) proposes an analysis not very different from that of the DCMS (2001), including traditional and technological creative activities, although based on the intellectual property rights.

Howkins (2001) proposes the inclusion of "research and development" as a creative industry. Hesmondhalgh (2002) identifies a core of cultural industries as advertising and marketing, broadcasting, film, internet, and music industries, print and electronic publishing, and video and computer games as activities more related to some form of industrial reproduction. Other authors departs from the DCMS definition but focus on a more restricted list of creative industries, such as Yusuf and Nabeshima (2005) or Harabi (2009).

In this context, there is a group creative activities that are common in the most relevant contributions. Starting from the contribution of creative industries of DCMS (2009) and considering other works (OECD, 2005; Gordon and Beilby-Orrin, 2006; UNCTAD, 2008; Lazzeretti et al., 2008), we propose an operalisation of creative industries in NACE codes in Table 1. This permits us to have a proxy already used in empirical analysis and a reference for cross-country comparison.

Table 1: The creative industries

Traditional creative industries	Non-traditional creative industries
Publishing 22.1 Publishing 22.2 Publishing and other activities related to publishing	**Research and development** 73.1 R&D experimentation in the field of natural sciences and engineering 73.2 R&D experimenting in the field of social and humanistic sciences
Reproduction of music, film and video 22.3 Reproductions from original sound registrations	**Software & Computer Services** 72.2 Production of software and information consulting 72.6 Other activities related to computer services
Film, video, performing arts 92.1 Production and distribution of videos and films; film projection; 92.2 Radio and television activities, excluding the management of the radio and television transmission networks 92.3 Other entertainment activities	**Advertising** 74.4 Advertising
Architecture and engineering studios 74.2 Architectural and engineering activities and related technical consultancy	

Source: our elaboration on DCMS (2001), OECD (2005, and Gordon and Beilby-Orrin 2006) and UNCTAD (2008). NACE Rev. 1.1 codes.

3.2. Creative local production systems in Italy and Spain

After defining a list of creative industries, our goal is to provide some information about the patterns of spatial clustering of creative activity. The empirical research is performed on Italy and Spain due to our interest in the patterns of concentration of creative industries in Mediterranean countries, where little research has been performed as yet. Italy and Spain have very similar territorial and socioeconomic structures: both are Mediterranean countries, have similar climate, similar social structures, similar territorial divisions and government structures, have high relevance of manufacturing and tourism, are rich in industrial districts, and enjoy very similar per capita income. The main differences come from the geography of the countries and their political history, particularly after the eighteenth Century. From the point of view of the cultural

resources, Spain has an important heritage, although the relevance of the Roman Empire and the Renaissance turn Italy into, perhaps, the most relevant country in the world regarding heritage.

At this point in the research, we need to define a territorial indicator of concentration that is able to indicate if a place is specialized in creative industries and if this concentration is relevant. This implies three choices: the concrete indicator, the territorial unit, and the type and source of data.

The basic Location Quotient (LQ) provides a clear, comparable measure of specialization. It can be used jointly with other criteria (e.g. the lowest number of jobs or firms) to simultaneously assure specialization and concentration. Moreover, in econometric regressions, the LQ is equivalent to the simple concentration quotient when used as a dependent variable[3]:

$$LQ_{ij} = \frac{L_{ij}}{L_i} \Big/ \frac{L_j}{L}$$

where L_{ij} is the number of employees in the creative industry i in a local production system j, L_i is the total number of employees in the creative industry i, L_j is the number of employees in a local labour system j, and L is the total employment in the country. An LQ above 1 indicates that the clustering of a creative industry i in a place j is larger than the national average, so that the local labour systems is specialized in creative industries, this is to be said, a creative local production systems (LPS).

[3] We refer to Lazzeretti et al. (2008) for a wider discussion on the use of the LQ as an indicator of specialization-concentration. The choice is also pragmatic: we have used other indicators (simple concentration coefficient, Florida mixed indicator, etc.) and other versions of the LQ, but the basic LQ continues to be the clearest to interpret and produces the more solid results.

The election of local labour systems as territorial units of analysis is consistent with our main interest on location, more than on the simple concentration. Lazzeretti et al. (2008) provide justification for the use of this unit; other units (provinces, municipalities) are too large or small to capture socioeconomic processes of creativity over space. Local labour systems (LLS) contain the area where the population lives and works and form a community of firms and people that can be identified as a local production system, as suggested by Sfozi (1997) and De Propris (2009). This choice also permits to use an homogeneous definition of local labour market based on daily commuting flows in Italy and Spain (Sforzi, 1997; Boix and Galletto, 2006).

We use employment (number of jobs) as basic data for the measure of specialisation-concentration due to two reasons. First, employment is a suitable measure in an industry (or group of industries) where the human cognitive activity is particularly important in the form of human capital or creative class. Secondly, we consider employment more appropriate than other indicators, as the number of firms since the small firm size in both countries causes an overweighting of the small firms if the number of firms is used as indicator of concentration[4]. Otherwise we would underestimate large firms and overestimate the impact of small firms mainly present in the two industrial structures of both countries (Clifton and Cooke, 2009).

Local labour systems with an LQ of the jobs in creative industries and a minimum of 250 jobs in creative industries have been considered as creative local production

[4] Using firms as the basic unit of measurement of concentration does not produce very different results in the maps of creative local production systems or in econometric regressions, which has been interpreted as a sign of robustness.

systems (Creative LPS). This procedure identifies 29 creative local production systems in Italy and 18 in Spain[5].

In Italy, the LQ ranges from 0.1 up to 2.5 and the median LQ is 0.53. There are 29 creative LPSs from a total of 686 LPSs in the country (5% of the local labour systems). The highest values are concentrated in big cities like Rome, Turin, Milan, Florence, Trento, and Padua. The total jobs in creative industries in these systems is over 470,000 units, representing 53.5% of the total employment in creative industries in Italy (879,000 jobs).

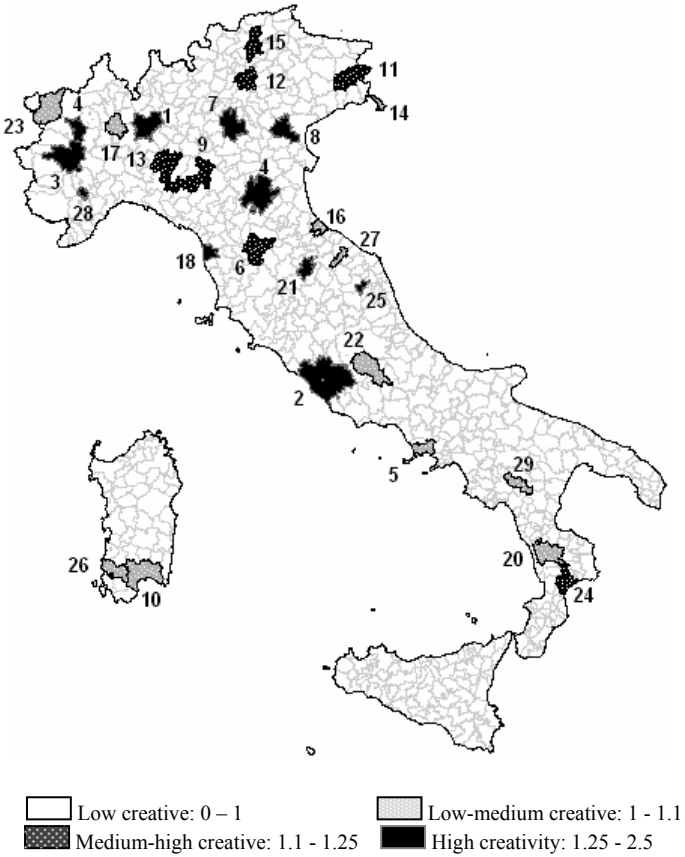
In Spain, the LQ ranges from 0.04 up to 2.1 and the median LQ is 0.33. There are only 18 creative LPS (2.2% of the local labour systems) from a total of 806 LPSs in the country. Creative LPS encompass around 423,000 jobs (63% of creative employment). Madrid's LPS accounts for 30% of the Spanish jobs in creative industries and Barcelona's another 15%. Combined, they have 45% of the Spanish employment in creative industries and 72% of the employment of creative LPSs.

Figure 1 presents creative LPSs (LQ above 1 and more than 250 employees in creative industries) in Italy and Spain in 2001. Creative industries are less concentrated in Italy (though occurring mainly in the centre and north of the country) whereas in Spain they are very concentrated in a few LPSs (Madrid, Barcelona, Basque Country-Navarre-Rioja, and Galicia, as well as Valencia and Seville).

[5] Lazzeretti et al. (2008) apply the LQ to the creative industry divided into traditional creative industries and non-traditional creative industries. They obtain three LQs and conclude as to whether the local production system is specialized in traditional creativity, in non traditional creativity, or diversified (when both partial LQs and the LQ on the total creative activities are more than one). Since the global LQ will be used in the econometric regressions as a dependent variable, we consider only the case where the local production system as a whole is specialized in creative industries.

Figure 1. Creative local production systems in Italy and Spain, 2001. Location quotient above 1. Minimum 250 employees in creative industries.

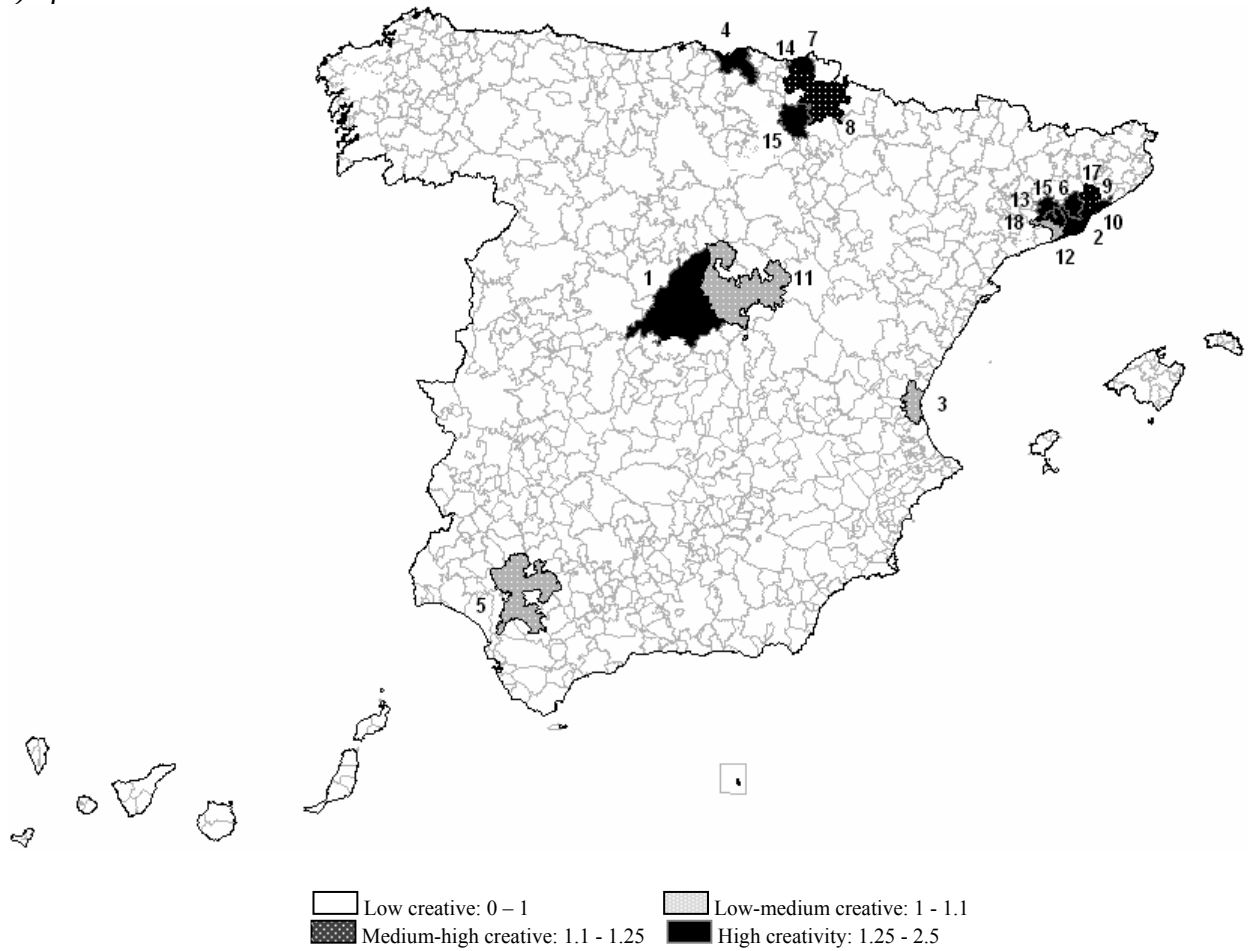
a) Italy



Source: Elaborated from ISTAT (2001) and INE Census (2001).

Nº	LLM	LQ	Jobs in CIs	% Italy
1	Milano	2.08	146,268	16.6%
2	Roma	2.20	117,507	13.4%
3	Torino	1.65	55,961	6.4%
4	Bologna	1.30	21,096	2.4%
5	Napoli	1.01	20,000	2.3%
6	Firenze	1.23	16,778	1.9%
7	Verona	1.32	15,073	1.7%
8	Padova	1.31	14,668	1.7%
9	Parma	1.14	7,662	0.9%
10	Cagliari	1.07	6,473	0.7%
11	Udine	1.10	5,565	0.6%
12	Trento	1.22	4,752	0.5%
13	Piacenza	1.18	4,565	0.5%
14	Trieste	1.07	4,413	0.5%
15	Bolzano	1.12	4,155	0.5%
16	Rimini	1.03	4,080	0.5%
17	Novara	1.09	4,035	0.5%
18	Pisa	1.36	3,375	0.4%
19	Ivrea	2.50	3,022	0.3%
20	Cosenza	1.04	2,786	0.3%
21	Città di Castello	1.64	1,682	0.2%
22	Avezzano	1.09	1,571	0.2%
23	Aosta	1.06	1,505	0.2%
24	Catanzaro	1.13	1,395	0.2%
25	Tolentino	1.31	637	0.1%
26	Iglesias	1.02	492	0.1%
27	Pergola	1.10	406	0.0%
28	Dogliani	1.78	401	0.0%
29	Marsicovetere	1.03	321	0.0%
	Total Creative LPS		470,644	53.5%
	Total Italy		878,962	100.0%

b) Spain



Nº LLM	LQ	Jobs in CIs	% Spain
1 Madrid	2.07	204,950	30.4%
2 Barcelona	1.80	99,177	14.7%
3 Valencia	1.03	24,909	3.7%
4 Bilbao	1.37	22,607	3.4%
5 Sevilla	1.04	18,237	2.7%
6 Sabadell	1.51	16,009	2.4%
7 San Sebastián	1.32	7,569	1.1%
8 Pamplona	1.18	6,774	1.0%
9 Granollers	1.17	5,821	0.9%
10 Mataró	1.33	5,573	0.8%
11 Guadalajara	1.05	2,807	0.4%
12 Vilafranca del Penedès	1.07	2,589	0.4%
13 Igualada	1.46	1,744	0.3%
14 Tolosa	1.11	1,500	0.2%
15 Sant Sadurní d´Anoia	1.36	992	0.1%
16 Estella/Lizarra	1.33	736	0.1%
17 La Garriga	1.24	510	0.1%
18 Capellades	2.01	401	0.1%
Total Creative LPS		422,905	62.8%
Total Spain		673,363	100.0%

Source: Elaborated from ISTAT (2001) and INE Census (2001).

4. EMPIRICAL MODEL

4.1. The model

Despite the several theories explaining spatial concentration and clustering of creative activities, there is not any specific theoretical model that explains spatial concentration of creative industries. This necessitated the development of an empirical model departing from the factors of concentration of creative industries previously exposed.

The concentration of creative industries and creative employment in medium and large cities suggest that the relationship between the clustering of creative employment and its determinants could follow power, lognormal, or Pareto distributions (Zipf, 1949; Gibrat, 1931). If fact, the initial exploration of the LQ of the jobs in creative industries by local production systems suggests that they follow an exponential distribution:

$$y = \alpha X_1^{\beta_1} X_2^{\beta_2} X_3^{\beta_3} X_4^{\beta_4} \qquad (1)$$

where y is the LQ of employment in creative industries, X_1 to X_4 are sets of variables, and α, β_1 to β_4 are the sets of parameters to be estimated.

This functional form can be linearized, taking logarithms by producing a log-linear equation where the estimated parameters can be interpreted as elasticities [1]:

[1] Additionally, we can generalize this equation to a more flexible form as the translog function (Berndt and Christensen, 1973), which relaxes the restrictions on the elasticities of substitution of factors and allows for a second order and crossed effects: $\ln(y) = \ln(\alpha) + \sum_{i=1}^{N} \beta_i \ln(X_i) + \frac{1}{2} \sum_{i=1}^{N} \sum_{j=1}^{N} \varphi_{ij} \ln(X_i) \ln(X_j)$ (3).

$$\ln(y) = \ln(\alpha) + \beta_1 \ln(X_1) + \beta_2 \ln(X_2) + \beta_3 \ln(X_3) + \beta_4 \ln(X_4) \quad (2)$$

4.2. Data and variables

Following the previous section, the LQ of the jobs in creative industries by LPS is proposed as a proxy for the concentration of creative industries. The explanatory variables come from the theoretical determinants exposed in the second epigraph, and most of them are elaborated using data from respective national statistics institutes for the year 2001[2].

Three variables have been used as proxies for "*historical and cultural heritage*". First, the extent of local artistic and cultural heritage designated as protected by the Ministry of Culture of Italy and Spain, and divided by the total population in the LPS in order to avoid over representing big cities[3]. Second, the share of jobs in the LPS related to heritage and cultural sites (NACE, 92.5). Third, a dummy to identify capitals of province, considered as a proxy for proximity to political power and funds.

Indicators for external economies have been divided in two families. "*Localization economies*" follow Marshall's (1920) concepts: structure and organization of industry, qualification of the local labour system, specialized suppliers, and knowledge and information spillovers. The range of information and indicators available for localization economies is, however, limited, particularly when the

[2] Even if some indicators could seem slightly crude when compared with the detail of case studies, they are well know indicators used in quantitative frameworks (Table 2).

[3] We have also considered the number of museums localised in the LLS registered by the Ministry of Culture in the two countries as a proxy for the cultural heritage and a dummy representing the UNESCO World Heritage List, although results have been not significant. These indicators are used for "historic and cultural heritage", as those assets protected by the state (e.g. historic/heritage designation) are used as a proxy for cultural facilities.

indicator usually used as a proxy for localization economies (the LQ) is in this case the dependent variable. Thus, we have considered four families of indicators (Table 2):

The average firm size in the LPS *(firm size)* takes into account the preference for the organization of the industry in small or large firms (Glaeser et al., 1992; Combes, 2000). A second indicator controls the effect of firm size in creative industries in the LPS (firm size in creative industries).

The specialisation of the local labour system has been addressed using the share of qualified jobs in creative industries (ISCO categories 1 to 8) (Trullén and Boix, 2008).

The inverse of a Herfindahl index inside the productive chain is proposed as a proxy for specialized suppliers (*filiere*) (Capone and Boix, 2008). It indicates the relative degree of homogeneity in the distribution of employment among sectors in creative industries by LPS, where more equilibrated compositions means more local suppliers[4].

"Urbanization economies" relies on four indicators:

a) Ohlin-Hoover's potential size of the local system has been approached, using the *total population* in the LPS.

b) Chinitz's (1961) and Jacobs' (1969) productive diversity has been computed using the inverse of a Hirschman-Herfindahl index of diversity of employment at 2 digits in the LPS. Higher values indicate higher specialization (less diversity) of the economic structure (Combes, 2000; Trullén and Boix, 2008).

[4] A second index has been calculated, departing from Dumais et al. (2002), and uses a mixed local and input-output approach to detect if the presence of suppliers is above the local requirements, indicating the existence of a powerful chain of suppliers. However, this index has been removed from estimates as it has proved to be very collinear with other localization variables.

c) The effect of social diversity and social capital, measured by the density of jobs by population (Trullén and Boix 2008).

d) The potential effect of density of urban land approach the density economies in the form of the number of employees by m2 of urbanized land (Ciccone-Hall, 1996) .

Related variety has measured using the three-digit level entropy index proposed by Boschma and Iammarino (2008)[5].

Florida's creativity and the 3T (technology, talent and tolerance):

Technology includes two indicators: the LQ of high and medium-high technology manufacturing industries as defined by OECD (2003) and the density of local patent applications (Florida 2005).

Talent is also measured using two indicators: first, the share of local tertiary graduates (ISCED 5 and 6) on total jobs as a proxy for Lucas' human capital (Florida, 2005; Trullén and Boix, 2008). Second, the proportion of creative jobs (creative class) of the total local jobs (Florida, 2005; Trullén and Boix, 2008)[6].

Tolerance has been interpreted as the share of foreign workers of the total local jobs (Florida 2005).

Other control variables have been included. The linkages between creative industries and the knowledge economy have been contrasted by including the share of high and medium-high technology manufacturing industries and the share of knowledge intensive services (except those classified as creative in our framework) as defined by

[5] The value of the entropy indicator increases the more diversified the creative profile of a LPS is, where $P_{g,j} = \sum_{i \in S_g} p_{i,j}$ is the aggregation from three digits to two digits sectors of the share of each industry employment on the total employment $p_{i,LPS} = L_{i,j} / \sum_{i=1} L_{i,j}$, and $H_{g,j} = \sum_{i \in S_g} \frac{p_{i,j}}{P_{g,j}} \log_2 \left(\frac{1}{p_{i,j} / P_{g,j}} \right)$.

[6] C represents creative occupations or the creative class (ISCO-88 scientist, engineers, artist, cultural creatives, managers, professionals and technicians) to capture the effects of creativity.

OECD (2003), as well as the share of private per capita expenditures in R&D. Finally, a dummy has been included to control the relationship between creativity and Marshallian industrial districts (a widespread reality in both Italy and Spain), although no significant results were obtained.

Table 2. Dependent and explanatory variables

Dependent variable $LQ_{ij} = \frac{L_{ij}}{L_i} \Big/ \frac{L_j}{L}$	
History and cultural heritage	Related variety
• Density of cultural heritage goods by population: $CH = M_{ij} / P_{ij}$	• Related variety: $\text{Re}lated\ \text{var}iety_j = \sum_{g=1}^{G} P_{g,j} H_{g,j}$
• Share of jobs in heritage and cultural sites: $L_{Mj} = L_{Mj} / L_j$	Florida 3Ts. Technology
• Political power dummy: 0 = non-capital city; 1 = capital city	• LQ High-Tech Manufactures $LQ_{HTMj} = \frac{L_{HTMj}}{L_{HTM}} \Big/ \frac{L_j}{L}$
Localization economies	• Patents per employee: $TP_j = PAT_j / L_j$
• Firm size in the LPS: $FS_j = L_j / F_j$	Florida 3Ts. Talent
• Firm size in creative industries: $FS_{ij} = L_{ij} / F_{ij}$	• Creative class: $CC_j = C_j / L_j$
• Filière: $FIL_{ij} = 1 \Big/ \left(\sum_i L_{ij} / L_{ij} \right)^2$	• University graduates: $HK_j = L_{ISCED(5,6)\ j} \Big/ \sum_{isced=1} L_{ISCED\ j}$
• Share of qualified jobs in creative industries: $Q_{ij} = QL_{ij} / L_{ij}$	Florida 3Ts. Tolerance
Urbanization economies	• Foreign born: $TO_j = FB_j / L_j$
• Size of the market: $SM_{ij} = Pop_{ij}$	
• Productive diversity: $DIV_j = 1 \Big/ \sum_j \left(L_{ij} / L_j \right)^2$	
• Social capital: $SK_{ij} = L_{ij} / Pop_{ij}$	
• Density of employment: $D_{ij} = L_{ij} / U_j$	

i = municipality; *j* = sector or *filiere; L* = Employment; *F* = Firms; M = Cultural and heritage goods; *QL* = qualified employment; *Pop = population; U = Urbanized land (ha); PAT* = patents*;* C = creatives; *FB* = foreig born population.

5. ECONOMETRIC ESTIMATION AND RESULTS

The model has been estimated for each country separately, coherent with the independent calculation of the LQ. An additional control on the possibility of pooling both samples has been performed, although pooling has been rejected. A two step strategy was followed for estimations. Firstly, in order to test separately the contribution of the different factors to the concentration of creative employment, partial regressions have been estimated for history and cultural heritage, localization economies, urbanization and related variety, and the creative class (Figure 2 and Annex 1). Secondly, a full model, including all the economic and statistically significant variables in partial regressions, was estimated and reduced to a parsimonious specification (Figure 3 and Annex 2).

5.1. Partial regressions

History and cultural heritage

Historical and cultural endowments are associated with the differentials of concentration of employment in creative industries, although this only provides a small part of the explanation (between 14 and 20% of the differentials in concentration). The per capita number of ruins, listed buildings, museums, etc. are positively related to the differentials in concentration of jobs in creative industries in Italy, where an increase of 1% in the per capita endowments is associated to an increase of 0.08% in the differentials of concentration. However, in Spain this relationship is negative, which is

explained by the dispersion of the cultural heritage as well as by the fact that some medium and large Spanish cities are not rich in heritage (Figure 2).

We notice that the way the indicator is designed may not take into account the relevance or use of this heritage (e.g. visitors to museums). This should be captured more accurately by the indicator of share of jobs in heritage and cultural sites of the total local employment. This second indicator is positive. Although this is very small for Italy (0.01), it is much more important for Spain (0.13). The results of both indicators indicate the global correlation between heritage and concentration of jobs in creative industries, although with significant differences in the way it performs across the two countries.

On the other hand, the capitals of the provinces, used as a proxy for proximity to the political power or access to funds, are highly correlated with concentration, as the estimated coefficients are 0.62 for Italy and 0.72 for Spain. However, that could be also capturing the effect of urbanization economies, so that the real effect of capitalisation can only be evaluated in the full model.

Localization economies

Firm structure and localization economies explain about 39% of the differentials of concentration in Italy and 52% in Spain. Firm structure affects the concentration of creative industries in both countries (Figure 2). First of all, a larger average firm size in the LPS is negatively correlated with the concentration of jobs in creative industries (-0.13 for Italy and -0.52 in Spain)[7]. Secondly, a larger firm size in creative industries is

[7] In the estimations for Italy, the average firm size in the LPS and the average firm size in creative industries in the LPS are highly collinear, so that both have been estimated in separated regressions.

positively associated with the concentration of creative industries, particularly in Italy, where an increase of 1% in the average firm size of creative industries leads to an increase of 0.72% in concentration[8].

A more balanced distribution of the creative *filière* is also positively correlated with differentials in creative concentration (0.51 in Italy and 0.30 in Spain). The estimates for Spain (the information is not available for Italy) also include the percentage of qualified jobs in creative industries in the LPS, which is positively correlated with creative clustering (0.31).

Urbanization economies and related variety

Urbanization economies explain 25% of the differentials in concentration in Italy whereas in Spain it explains up to 64% of the differential in concentration. The population in the LPS (size of the local market) shows an small but significant impact on the concentration of creative industries, whereas an increase of 1% only reports an increase of concentration of 0.07% for Italy and 0.08% for Spain (Figure 2).

On the other hand, the diversity of the local productive structure proves to be much more important for concentration of creative jobs. It shows a high and positive correlation with the differentials in concentration of creative industries, reaching coefficients of 0.32 for Italy and 0.62 for Spain. The results of population and diversity indicators suggests options to foster creative industries in small and medium cities that show a highly diverse productive structure.

Although the coefficient for the average firm size in the LPS in Italy is negative, as in Spain (although close to zero), this could be due to the collinearity of this variable with the variable "*filière*".

[8] The larger impact for Italy could be due to the smaller size of creative industries by LPS (the median is 1.5 in Italy against 5.5 in Spain), which contrasts with a similar median size for the complete industry in both countries (around 3 employees by firm by LPS).

The rest of the variables regarding urbanization economies are not significant for Italy. In Spain the correlation of creative concentration with social capital (0.62) as well as with the related variety (0.46) are highly significant. In general, urbanization economies seem to be the principal cause in explaining the differences in the patterns of concentration of creative industries across both countries, due to their powerful impact in Spain.

Florida's creative class

Florida's 3Ts approach explains les than 1% of the differentials of concentration of creative jobs in Italy and about 56% in Spain. Despite this difference on the performance of the model, the estimated coefficients are quite similar in both countries (Figure 2).

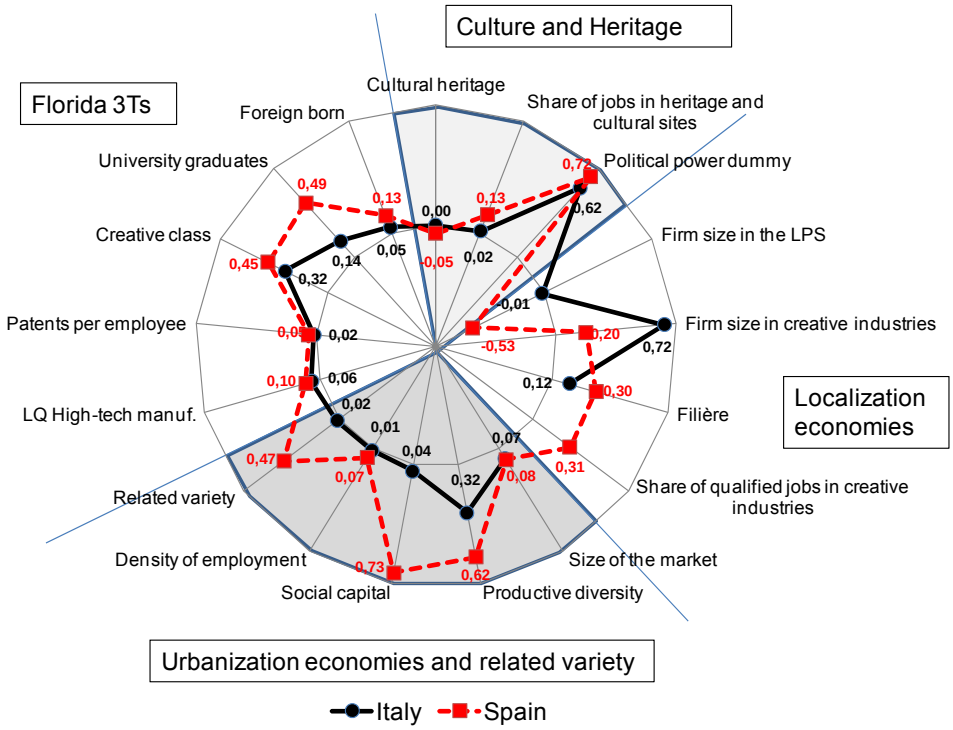
The first T (Technology) shows an small effect on the differentials of concentration. The coefficients for the LQ of high tech manufacturers are 0.05 in Italy and 0.09 in Spain. The estimated coefficients for the number of patents per employee are 0.01 in Italy and 0.04 in Spain.

The second T (Talent) proves to be much more important in explaining the differentials of concentration of jobs in creative industries. The share of creative class of the total employment shows an estimated coefficient of 0.32 in Italy, which rises to 0.44 in Spain. On the other hand, the share of resident employees with tertiary education levels shows coefficients of about 0.14 for Italy and 0.48 for Spain[9].

[9] The components of talent (human capital and creative class) are potentially endogenous. The results of a path analysis in partial regressions indeed suggest this possibility for Spain, although not for Italy. A Wu-Hausman test has been performed, testing the possible effects on the consistency of the estimations in both countries. The test confirms the results of the path analysis and suggests that creative class can be

The third T (Tolerance) has been approached using the foreign-born index. Their effect on the differentials of concentration are positive and significant, although with an small effect: 0.04 in Italy and 0.12 in Spain.

Figure 2. Results of the partial regressions. Estimated coefficients



Notes: (a) Dependent variable = Ln(LQ employees in creative industries); (b) All variables are natural logarithms; (c) Partial regressions include History and cultural heritage (cultural heritage index; share of jobs in heritage and cultural sites; political power dummy), Localization economies (firm size in the LPS; firm size in creative industries; internal creative filiere; share of qualified jobs in creative industries), Urbanization economies and Related variety (size of the local market; productive diversity; social capital; density of employment; related variety), and Florida creative class (LQ high tech. manufacturing; patents per employee; creative class; university graduates; foreign born people); (d) Robust Huber-White estimators. More details are in the Annex 1.

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treated as exogenous in both countries, whereas the percentage of tertiary graduates could be treated as endogenous in Spain in the partial regression (although not in the full regression). Two additional GMM regressions have been estimated for Spain, where the first includes as an instrument the percentage of secondary and tertiary graduates in 1991, and the second considers as instruments agglomeration economies and the percentage of knowledge-intensive services other than the creatives. The effects of potential endogeneity does not hold in the full regression and the coefficient for the percentage of tertiary graduates is unusually high in IV estimations. Consequently, it is our opinion is that the results of the Wu-Hausman test and the subsequent IV estimations are affected by the misspecification of the partial model and the coefficient from OLS estimations is more correct.

5.2. Full model

The regressions combining the four sets of variables highlight the similarities and differences between both countries (Figure 3 and Annex 2). First of all, the fit of the model is much better for Spain (R2 = 0.74) and the causes of the differentials in concentration of creative jobs covers the global structure of the firms in the LPS (-0.19) and in creative industries (0.06), localization economies (share of qualified jobs in creative industries = 0.17), urbanization economies (productive diversity = 0.37; social capital = 0.49; and density of employment = 0.07), and talent (share of university graduates = 0.46). This indicates that a large number of forces are correlated with the differentials of concentration of creative jobs in Spain, where urbanization economies and talent seem to be the main determinants. This is on the basis of the strong concentration of creative jobs in large cities and metropolitan areas.

In Italy, the fit varies from 0.49 (non-spatial model) to 0.56 (spatial model). Although direct comparison between Spain and Italy cannot be performed using the R2, the results suggests that, in Italy, a larger share of the reasons for the concentration of jobs in creative industries are still unmodeled. This is to say, other forces could have a relevant role in explaining concentration. Regarding the explained part, only the average firm size in creative industries (0.63), the dummy for political power/budget (0.37), the productive diversity (0.22), and the share of tertiary graduates (0.24) are economically and statistically significant (Figure 3 and Annex 2)[10].

Common to both countries are the positive and significant coefficient for the productive diversity and the human capital (tertiary graduates) - even if the coefficient

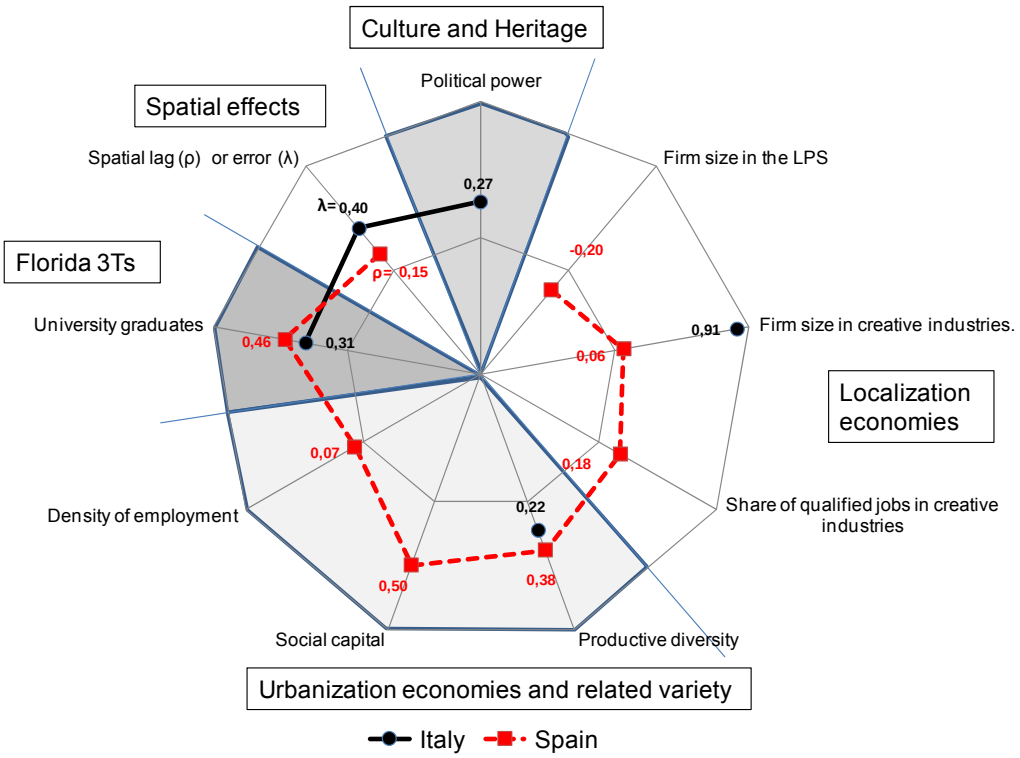
[10] It is noted that for both countries, in the full model, the significance of the creative class was absorbed by other variables with which it was highly correlated (firm size, diversity, etc.).

for Spain is double that of Italy - and the positive correlation with the average firm size of creative industries, although for Spain this latter coefficient is very small in the full estimates.

Spatial autocorrelation has been incorporated on the form of spatial lag and error effects based on a row standardized contiguity matrix. In Spain, the coefficient for the spatial lag (ρ=0.15) is significant, and suggest the existence of spatial spillovers, where the concentration of jobs in creative industries is correlated with concentration in neighbourhood LPS. In Italy, a process of spatial error dominates, with a large coefficient (0.39). This spatial error could be interpreted as the existence of spatial stochastic shocks between LPS. However, in our opinion the coefficient could be affected by the existence of omitted variables in the specification of the model, and reinforces our previous intuition about the existence of additional factors explaining the differentials of concentration.

Since it could be argued that differences between both countries could be due to a different composition of the creative industry in terms of more relevance of some activities, this fact has been also tested by dividing creative industries into traditional and non-traditional. The results suggest that traditional and non-traditional creative industries tend to co-agglomerate, and that their clustering determinants are not very different. A similar comment could be made about the changes in results if jobs were substituted by firms in the dependent variable. In this case, although there are variations in size of the coefficients, the reasons for the differentials of concentration point in the same direction and scale as jobs.

Figure 3. Results of the full model. Estimated coefficients



Notes: (a) Dependent variable = Ln(LQ employees in creative industries); (b) All variables are natural logarithms; (c) The full model estimated for Italy is an spatial error model (GM iterated) including: History and cultural heritage (political power dummy), Localization economies (firm size in creative industries), Urbanization economies (productive diversity), Florida creative class (university graduates), and an spatial error term (λ); (d) The full model estimated for Spain is an spatial lag model (IV robust) including: Localization economies (firm size in the LPS; firm size in creative industries; share of qualified jobs in creative industries), Urbanization economies (productive diversity; social capital; density of employment), Florida creative class (university graduates), and an spatial lag term (ρ). More details are in the Annex 2.

6. CONCLUSIONS AND DISCUSSION

The main purpose of this work was to contribute to examining the reasons of clustering of creative industries in Italy and Spain in order to identify the main differences between the two countries and any other factors useful to formulate some possible generalizations. For this purpose, we have adopted the classification of creative

industries shared by most important European studies in order to facilitate future benchmarking.

As mentioned in the introduction, most of the works on creative industries are case studies or quantitative national surveys. There are few comparative studies and there is also a lack of analysis of the determinants of the phenomenon. To allow a comparison in this study, an exploratory econometric model was constructed, considering four theoretical approaches at the same time: *agglomeration economies*, divided into localisation and urbanization economies; *cultural approach,* which considers the role of cultural heritage and the institutional and political cultural dimension; the theory of *creative class and Florida 3Ts;* and finally, the concept of *related variety*. Some of the most significant proxies were tested in both countries in order to operationalize the model.

The results contribute to investigating the relationship between creativity and space and show, first of all, the presence of two different spatial patterns. While in both cases the phenomenon of clustering is clear, in Italy its presence in creative industries is much more dispersed inside the territory. In Spain, it is actually concentrated around big Metropolitan areas.

The details emerging from the local creative systems allow us to appreciate the variety in the different systems, both specialized and diversified into various typologies of creative industries.

A difference is also observable in the econometric model that highlights how the localisation economies are more important in Italy and how urbanization economies are more diffused in Spain. In both countries, agglomeration economies are relevant, and

this confirms the strong relationship existing between spatial concentration and creativity, as often recalled in the international literature on creative industries.

Regarding the related variety approach, we wondered whether the presence of this phenomenon has encouraged the clustering of creative industries thanks to cross-fertilization, and spatial and cognitive proximities. With regard to Spain, results are positive, while in Italy, estimations are not equally important. This issue supports the hypothesis that urbanization economies are a relevant factor nurturing related variety, especially in creative industries.

Regarding the cultural approach, the presence of an important artistic and cultural heritage is particularly relevant for Italy. In Italy, the "heritage dependence" is probably significant as well as the correlation with institutional elements related to culture. The fact that much of the historical and artistic heritage in Italy is public influences the presence of *heritage dependent creative industries*.

In both countries, the role of capital cities is significant and emphasizes the importance of public and institutional actors for the development of creative industries. This role could even increase if, in addition to the considered economic activities, non-profit sectors, such as museums, would be included in the analysis.

Finally, regarding the approach of creative class, its influence is the most common and generalizable aspect, together with the tendency to cluster in places. The strategic role of Talents is present in both countries, but the indexes of Tolerance and Technology do not register the same relevance.

In conclusion, this study permits us to investigate the reasons of the clustering of creative industries, according to a multidisciplinary approach and from a perspective of an international comparison. Some common features were identified, but also many

differences. Creativity and place are related, but the manners in which they are manifested are different from country to country. Consequently, it is important to continue these comparative analyses which allow us to explore more deeply the ways in which this phenomenon occurs, in order to develop the most appropriate policies for creativity, considering all the differences among countries.

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Annex 1. Partial regressions. Dependent variable: LQ of the employment in creative industries

a) Cultural heritage

	Log LQ employees in creative industries				Log LQ firms in creative industries			
	Italy		Spain		Italy		Spain	
Constant	-0.4204	***	-0.2619	**	-0.1555	***	0.4740	*
	(0.000)		(0.031)		(0.000)		(0.086)	
Cultural heritage	0 .0801	***	-0.0516	***	0.0224		-0.2157	***
	(0.000)		(0.004)		(0.104)		(0.000)	
Share of jobs in heritage and cultural sites	0.0182	**	0.1348	***	0.0200	***	0.1825	***
	(0.020)		(0.000)		(0.000)		(0.000)	
Political power dummy	0.6222	***	0.7204	***	0.3458	***	1.0430	***
	(0.000)		(0.000)		(0.000)		(0.000)	
R2-adj	0.1393		0.1981		0.0811		0.1114	
Mean VIF	1.08		1.02		1.08		1.02	
Condition number	7.25		6.29		7.25		16.00	
Obs	686		806		686		806	

b) Organization of the industry and localization economies

	Log LQ employees in creative industries						Log LQ firms in creative industries			
	Italy		Italy		Spain		Italy		Spain	
Constant	-0.9640	***	-1.0693	***	-1.8037	***	-0.4590	***	-3.5608	***
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Firm size in the LPS	-.01367	**	-		-0.5262	***	0.0310		-0.4987	***
	(0.017)		-		(0.000)		(0.509)		(0.004)	
Firm size in creative industries	-		0.7203	***	0.2006	***	0.0820		0.5264	***
	-		(0.000)		(0.000)		(0.128)		(0.000)	
Filière	0.5158	***	0.1185	***	0.3014	***	0.1511	***	0.7297	***
	(0.000)		(0.005)		(0.000)		(0.000)		(0.000)	
Share of qualified jobs in creative	-		-		0.3113	***	-		0.3941	***
	-		-		(0.000)		-		(0.000)	
R2-adj	0.2261		0.3914		0.5293		0.0900		0.4018	
Mean VIF	1.34		1.70		1.19		1.90		1.21	
Condition number	8.77		7.01		28.71		11.42		27.04	
Obs	686		686		806		686		806	

c) Urbanization economies and related variety

	Log LQ employees in creative industries				Log LQ firms in creative industries			
	Italy		Spain		Italy		Spain	
Constant	-2.2035	***	-2.6011	***	-	***	-5.0449	***
	(0.000)		(0.000)		(0.000)		(0.000)	
Size of the market	0.0743	***	0.0831	***	0.1232	***	0.3590	***
	(0.002)		(0.000)		(0.000)		(0.000)	
Productive diversity	0.3242	***	0.6248	***	-		0.5717	***
	(0.000)		(0.000)		(0.581)		(0.000)	
Social capital	0.04420		0.7315	***	0.0755	**	1.3868	***
	(0. 269)		(0.000)		(0.021)		(0.000)	
Density of employment	0.0113		0.0706	***	-	***	0.1029	***
	(0.571)		(0.000)		(0.001)		(0.008)	
Related variety	0.0221		0.4661	***	0.0224		0.5169	*
	(0.372)		(0.000)		(0.305)		(0.070)	
R2-adj	0.2532		0.6463		0.1878		0.3921	
Mean VIF	2.06		1.91		2.29		1.91	
Condition number	43.50		33.90		44.80		39.08	
Obs	686		806		686		806	

d) Human capital and creative class (Florida's 3Ts)

	Log LQ employees in creative industries								Log LQ firms in creative industries			
	Italy		Spain (OLS)		Spain (IV-I)		Spain (IV-II)		Italy		Spain	
Constant	0.3840		1.0604	***	1.9651	***	1.8383	***	-0.4826	*	1.7423	***
	(0.283)		(0.000)		(0.000)		(0.000)		(0.093)		(0.000)	
LQ High-tech manuf.	0.0595	***	0.0978	***	0.0723	***	0.0698	***	0.0676	***	0.2404	***
	(0.000)		(0.000)		(0.000)		(0.000)		(0.000)		(0.000)	
Patents per employee	0.0153		0.0489	***	0.0354	***	0.0423	***	0.0071		0.1117	***
	(0.174)		(0.000)		(0.000)		(0.000)		(0.345)		(0.000)	
Creative class	0.3205	*	0.4464	***	-		-		0.0757		0.4894	
	(0.096)		(0.000)		-		-		(0.559)		(0.109)	
University graduates	0.1447	**	0.4859	***	1.1911	***	1.1367	***	0.1676	***	0.7552	***
	(0.		(0.000)		(0.000)		(0.000)		(0.001)		(0.001)	
Foreign born	0.0483	*	0.1294	***	0.1511	***	0.1514	***	0.0146		0.2239	***
	(0.088)		(0.000)		(0.000)		(0.000)		(0.432)		(0.000)	
R2-adj	0.0709		0.5592		0.5263		0.5677		0.1006		0.3360	
Mean VIF	2.33		2.31		-		-		2.33		2.21	
Condition	68.55		37.76		-		-		87.25		40.62	
Prob. Wu-	0.170		0.000	***	0.000	***	0.000	***			806	
Obs	686		806		806		806		686			

Notes: (a) Dependent variables = Log (LQ employees in creative industries), Log (LQ firms in creative industries); (b) All variables are natural logarithms; IV are instrumental variables estimations where IV-I includes as instrument the percentage of secondary and tertiay graduates in 1991, and IV-II includes the second considers as instruments agglomeration economies and the percentage of knowledge-intensive services other than the creatives; (d) P-values are in parentheses and asterisks represent statistical significance at 1% (***), 5% (**) and 10% (*);(d) Robust Huber-White estimators.

Annex 2. Full model. Parsimonious estimation Dependent variable: LQ of the employment in creative industries

	Italy		Italy		Spain		Spain	
	OLS Robust		Spatial error model		OLS Robust		Spatial lag model	
Constant	-1.1494	***	-1.0645	***	-0.7272	***	-0.6307	**
	(0.000)		(0.000)		(0.001)		(0.013)	
Political power	0.2887	***	0.2682	***	-		-	
	(0.000)		(0.000)		-		-	
Firm size in the LPS	-		-		-0.2126	***	-0.1968	***
	-		-		(0.000)		(0.000)	
Firm size in creative industries.	0.8072	***	0.9096	***	0.0609	***	0.0621	***
	(0.000)		(0.000)		(0.000)		(0.000)	
Share of qualified jobs in creative industries	-		-		0.1857	***	0.1796	***
	-		-		(0.000)		(0.000)	
Productive diversity	0.2328	***	0.2203	***	0.4232	***	0.3797	***
	(0.000)		(0.000)		(0.000)		(0.000)	
Social capital	-		-		0.6471	***	0.4979	***
	-		-		(0.000)		(0.000)	
Density of employment	-		-		0.0748	***	0.0721	***
	-		-		(0.000)		(0.000)	
University graduates	0.2489	***	0.3106	***	0.4615	***	0.4642	***
	(0.000)		(0.000)		(0.000)		(0.000)	
Spatial lag (ρ) or error (λ)	-		0.3969	***	-		0.1524	***
	-		(0.000)		-		(0.000)	
R2-adj	0.4912		0.5665		0.7324		0.7448	
Mean VIF	1.37		-		1.55		-	
Condition num.	23.17		-		55.26		-	
Prob.Wu-Haus.	0.3814		-		0.125		-	
Robust LM-lag	25.16	***	-		16.54	***	-	
Robust LM-error	87.36	***	-		7.55		-	
Obs	686		686		806		806	

Notes: (a) Dependent variables = Ln(LQ employees in creative industries), Log (LQ firms in creative industries); (b) All variables are natural logarithms; (c) P-values are in parentheses and asterisks represent statistical significance at 1% (***), 5% (**) and 10% (*);(d) Robust Huber-White estimators in non-spatial regressions; (e) Spatial error model GM iterated; (f) Spatial lag model IV-Robust.