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Creative industries and firm creation: disentangling causal effects through historical cultural associations

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Creative industries and firm creation: disentangling causal effects through historical cultural associations *

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Abstract:

In the last decade policy makers and scholars have highlighted creative industries' capacity to stimulate economic dynamism. However, there is still some debate about the potential effect of reverse causality on this relationship, as CIs may also be attracted to successful areas. Therefore, the aim of this paper is to disentangle the role played by the existing spatial concentration of these kinds of activity on new firm creation. In order to deal with this potential reverse causality issue this paper relies on an instrumental variable approach. The main statistical source is the REIC (Catalan Manufacturing Establishments Register), which has plant-level microdata on the location of plants in Catalan municipalities between 2002 and 2007. By using, for the first time, the foundation of cultural associations and urban population as historical instrumental variables, the results confirm CIs' potential for new firm creation.

JEL classifications: R39, Z100

Keywords: creative industries, cultural associations, industrial location, IV

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1. Introduction

The creative industries (CIs), defined as a set of economic activities that use creativity as main input and that provide tangible or intangible goods or services with creative content and economic value potentially generating revenues from trade and intellectual property rights (UNCTAD 2010), have been highlighted for their potential in terms of local economic growth, development and competitiveness (see, for instance, Florida 2002; European Comission 2010; UNCTAD 2008, 2010). In an increasingly global world context, those sectors incorporating high value added from creativity and knowledge – i.e. like the CIs – are identified as the key sectors for the transformation of economic activity (Sassen 2009). Because of that, local governments have attempted to attract the CIs to their cities seeking to improve their regional competitiveness.

The positive association between CIs and economic growth is justified by the role of creativity as a source of innovation and industrial mix reconfiguration process (Hall 2000; Florida 2002; Scott 2004; Currid and Connolly 2008; UNCTAD 2010; Potts 2011). Lee (2014) tries to identify this causal relationship by summarising the three mechanisms by which CIs may lead to economic growth according to the literature. First, the CIs are attractive simply as a growth sector, leading to a multiplier effect increasing local demand. Second, the CIs may increase productivity in other sectors. Third, the CIs may have an amenity value attracting skilled residents or tourists. In line with these channels, municipalities having higher levels of employment in CIs should be more able to attract new firms because of the generation of knowledge spillovers in terms of creativity and innovation, leading to new business development and growth in other industries (Scott 2000; Lee et al. 2004; De Jong et al. 2007; Stam et al. 2008; Coll-Martínez and Arauzo-Carod 2017).

Although most of these contributions suggest that the CIs enhance economic outcomes, there is still some debate about the potential effect of reverse causality on these models, as CIs may also be attracted to successful areas (Hall 2000; Markusen 2006, 2010). In this sense, even if Lee (2014) tries to deal with this causal relationship by using instrumental variables (IV) with inconclusive results, it seems that more theoretical and empirical studies dealing with this controversial issue are required.

Besides the traditional location factors enhancing the concentration of creative employment – i.e., agglomeration economies within the organization of industry; the existence of historical and cultural infrastructures; the infrastructure of specialised public and social actors that provide support for these activities; and 'soft factors[1]' or amenities in terms of quality of life, tolerance, and

[1] We refer to soft characteristics as 'specific urban amenities' that create an environment that attracts people who are key to the most promising economic activities for the economic development of the urban region'

cosmopolitan environments – a particular identity also attracts creative talents (Scott 2000; Andersson and Andersson 2008; Pareja et al. 2008; Murphy et al. 2014; Coll-Martínez et al. 2017). This particular identity, as an intangible characteristic, is difficult to measure and there only few papers that have tried to disentangle its effects on economic dynamism: Wojan et al. (2007) and Coll-Martínez and Arauzo-Carod (2017) try to identify an unobservable *creative milieu* (as a proxy measuring the image of a specific location that helps to attract creative talents and entrepreneurs) and examine if this unobservable *creative milieu* attracts both businesses and artists to a particular municipality by using a two-step procedure. However, their approach may be susceptible to omitted variables critiques, where 'creative milieu' is reduced to a misspecification error.

In this sense, it should be taken into account that despite the potential of the CIs enhancing the location of economic activity, the conditions for creating or stimulating creative knowledge regions in a context of a globalised economy are certainly dependent on urban history and the economic tradition of the territory (Pareja-Eastaway and Pradel-i-Miquel 2014). One of the closest ways to control for this urban past history and to capture a tolerant, creative, proactive and venturesome personality identifying a municipality are cultural associations. Cultural associations (or a*teneus* in Catalan) arose in Catalonia from the popular initiative in order to bring great social, economic and political changes in the last third of the nineteenth century. Cultural associations were also centres of inclusion and dissemination of new ideas (Arnabat and Ferré 2015; Navais 2017). Thus, it is important to emphasise the role of cultural associations on the transmission of creativity and knowledge.

Therefore, this paper tries to present an alternative approach to that of Wojan et al. (2007), Lee (2014) and Coll-Martínez and Arauzo-Carod (2017) by addressing previous gaps through an analysis of the links between the CIs – defined as the employment in arts, advertising, architecture, design, audio-visual, publishing, software, videogames, and radio and television – and new firm location for Catalan municipalities between 2002 and 2007. Concretely, it investigates two questions: 1) Do cultural associations capturing the unobservable local identity of a municipality explain the present concentration of creative employment? And 2) Do the CIs lead to new firm location?

Because of the potential endogeneity of the employment in CIs, this paper relies on cultural associations and urban population in the eighteenth and nineteenth centuries as sources of exogenous variation. Cultural associations allowed democratising culture and knowledge in all its fields. Since these cultural associations were not randomly placed and some of the local factors arising from the foundation of cultural associations in the nineteenth and twentieth centuries may

(Musterd and Murie 2010). The use of the term 'soft' relates to the fact that these factors are difficult to measure or define (Clark et al. 2002).

still influence the present concentration of creative employment in these municipalities nowadays, instruments exogeneity and relevance should be satisfied. The main statistical source is the REIC (Catalan Manufacturing Establishments Register), which has plant-level microdata on the location of new plants in Catalan municipalities between 2002 and 2007. By making use of these historical IV for the first time in this literature, results confirm CIs' potential for new firm creation. Concretely, results show that by increasing a 10% the employment in creative service industries (CSI), the number of new firms located in the municipality increases by a 6.7%. These results are robust across metropolitan and non-metropolitan municipalities, and also when different empirical approaches are considered. These results support the view that the CIs lead to economic dynamism (i.e., new firm creation) in the local economy. Furthermore, analysis of IV suggests that the intrinsic and historical identity defining the municipality – in terms of cultural associations – should explain the attraction of creative employment to the municipality and, at the same time, this should encourage the location of new firms.

The remainder of the paper is as follows. Section 2 outlines the links between cultural associations and creativity. Section 3 presents the methods used. In Section 4 presents the data and in Section 5 discusses the main results. Finally, Section 6 summarises main conclusions and the implications for policy makers.

2. Cultural associations: a source of creativity

2.1. Defining cultural associations

When it comes to explain the relevance of *associacionisme*[2] in Catalonia, first it is important to understand what are cultural associations (or *ateneu* in Catalan). According to the *Gran Enciclopèdia Catalana* (1968), a cultural association can be defined as a literary and scientific association devoted to increase the intellectual level of its own members through the celebration of seminars, conferences, courses and readings. Furthermore, cultural associations are defined as an institution that creates and accepts culture, that disseminates and confronts different cultural alternatives as a result of human reason, that can be scientific or literary (Solà 1978). The general term of cultural associations refers to different types of cultural or leisure entities: casinos, centres, coral groups, recreational associations, etc. To a large extent, the name of the entity indicates what ideology was behind its founding and the main reason for its formation (Arnabat and Ferré 2015).

2.2. The history of cultural associations in Catalonia

[2] *Associacionisme* can be defined as a social, legal and historical phenomenon of modern societies consisting of the will of several individuals to join in associations to achieve predetermined goals or to satisfy specific interests (Mestre-i-Campi 1998). Please do not confuse *associacionisme (*the Catalan term*)* for associationism (i.e. the psychological and philosophical theory).

The effervescence of cultural associations arose in the second third of the nineteenth century in the framework of a liberal Catalonia that was being industrialised, but which generated great social and cultural inequalities. Cultural associations rise up from below, from popular classes to alleviate inequalities, guarantee a dignified life and contribute to the formation and *culturalisation* of its population. Cultural associations would be consolidated throughout the first third of the twentieth century, and will become a key part of the Catalan civil society and of its associative network (*associacionisme*) (Arnabat and Ferré 2015; Navais 2017). Years later, the Franco dictatorship involved the interdiction of most cultural associations, although they never really stopped working during these scrambled political times (Santacana 2013). Later, at the end of the twentieth century once the democracy was stablished, cultural associations need to reinvent themselves to continue being an important link in the Catalan society due to new social, cultural and economic context – i.e., the emergence of cultural industries, the presence of the public sector, new technologies or the cultural massive consumption (Arnabat and Ferré 2015; Navais 2017).

In Europe the origin of cultural associations can be found in scientific-literary societies established throughout the eighteenth century. Broadly speaking, these institutions were designed for privileged classes where the culture was disseminated among its associates. This model was extended to Spain throughout the nineteenth century (Villacorta 2003). Unlike the rest of Europe, in Catalonia the fact that the Spanish State did not cover basic needs such as health, culture and education made cultural associations had a popular sociability and pedagogical vocation aiming to improve the education and training of the less-favoured classes. They were also characterized by their ability to promote social cohesion and popular culture activities (Bosch 1991; Todó-i-Tejero 2000).

2.3. From cultural associations to creativity

At this point one may wonder how cultural associations may be related to creativity and, concretely, to creative employment. In words of the former Minister of Culture of the Catalan Government F. Mascarell, creativity has an individual origin, but we cannot forget that the most important fact about creativity is its own transmission (Arnabat and Ferré 2015). Thus, it is important to understand the role of cultural associations on this transmission.

The main bases of cultural associations were freedom of speech and tolerance since they were the only source of entry and dissemination of new ideas. In most cases, artists and other creative minds found in cultural associations a meeting point to discuss their ideas as well as the support to develop and present their projects (Navais 2017). At the same time, it is important to notice that cultural associations were the only way to have access to cultural activities for the popular classes, especially, in the less populated municipalities (Baltà 1999; Arnabat and Ferré 2015). Indeed, cultural associations allowed releasing an important part of the Catalan popular classes of illiteracy and the relevance of this relationship was more intense in those municipalities departing from lower

illiteracy rates, usually rural areas (Solà 1998; Arnabat and Ferré 2015). In this sense, the connection between cultural associations and the cultural development and literacy of society is undeniable. Consequently, cultural associations became into an essential cultural and social structure for those municipalities involving the creation of a collective identity giving to their citizens a sense of connection and belonging (Fontana 2014; Navais 2017).

As it has been stated, the municipality's ability to attract and retain creative individuals essentially depends on the available "soft factors" in terms of city environment and its historical cultural dynamism shaping the particular identity of the municipality (Landry 2000; Florida 2002; Scott 2006). Thus, cultural associations – through the influence of both the local bourgeoisie and working classes[3] – made up the development of the cultural synergies and personality of the municipality and, therefore, the subsequent ability to enhance the emergence of CIs years later (Pareja-Eastaway and Pradel-i-Miquel 2014). Indeed, the role of cultural associations on the present development of creative cities has been highlighted in recent studies such as in García-García et al. (2012), Andres and Chapain (2013), Ponzini et al. (2014) and Bonfanti et al. (2015).

All in all, given the reasons that led to the development of cultural associations in the late eighteenth and early twentieth centuries, this article understands that the foundation of a cultural association in a municipality reveals the degree of cultural sensitiveness, tolerance to new ideas and proactivity defining the particular identity of the municipality. Concretely, if the creation of cultural associations throughout the eighteenth and early twentieth centuries provided some of the most important factors that still today explain the location of creative individuals (i.e., a shared cultural identity); these municipalities must now have some advantage in attracting to them employed in CIs. In short, this article argues that some of the local factors arising from the foundation of cultural associations in the nineteenth and twentieth centuries may still influence the present concentration of creative employment in these municipalities.

2.4. Stylised facts on Cultural associations

In terms of dynamism, around 2,170 cultural associations were created between the nineteenth and twentieth centuries in Catalonia. Even so, as can be seen in Table 1, most of these cultural associations were created in the nineteenth century and the first third of the twentieth century with 708 and 985 new cultural associations, respectively, as a result of the first Spanish constitution allowing the freedom to associate (Olías-de-Lima 1977). Without a doubt, the instability of the Civil War hampered their formation with only 45 new cultural associations. Later, the dictatorship led to

[3] In most cases the support of the local bourgeoisie assured the survival and expansion of the cultural project of cultural associations. Also the working class promoted their own cultural institutions and associations, mainly based on the promotion of anarchist and republican ideas through culture that contributed to bringing dynamism to their cities (Keating 2001; Pareja-Eastaway and Pradel-i-Miquel 2014; Navais 2017).

a low number of new cultural associations (287), most of them associated to the Franco regime (Augé 2004). However, contrary to what one might think, this downward trend would be maintained once democracy was established. Concretely, only 159 new cultural associations were created between 1975 and 2014. In this sense, the socio-economic changes of the late twentieth century have contributed to the decline of cultural associations and their subsequent appropriation by the market (Baltà 1999).

Table 1. Creation of cultural associations by historical periods

	Historical period	Cultural associations
1800 - 1900	Industrialisation	708
1900 - 1935	Restauration	985
1936 - 1939	Civil War	45
1940 - 1975	Dictatorship	287
1975 - 2014	Democracy	159
1800 - 2014	**-**	**2,170**

Source: Author's with Arnabat and Ferré (2015)'s data

Regarding the geography of cultural associations in Catalonia between the nineteenth and twentieth centuries, Barcelona (306), Vilanova i la Geltrú (45) or Valls (34) stand out as the municipalities where more new centres were created (see Table 2). Even if all these municipalities are county capitals, most of them are not among the most populated and dynamic in terms of firm entries, except for Barcelona as the Catalan capital. Nevertheless, it seems that municipalities having more cultural associations are among the ones having a higher presence of employed in CIs nowadays, which upholds the idea that their creation may have provided some of the factors that still influence the concentration of creative employment.

Table 2. The 10th municipalities with a higher number of cultural associations

#	Municipality	Cultural Associations (1800-2014)	Firm entries (2002-2007)	Employment in CIs (2001)
1	Barcelona	306	810	61,401
2	Vilanova i la Geltrú	45	71	485
3	Terrassa	34	396	1,952
4	Valls	34	46	237
5	Lleida	33	152	1,633
6	Sabadell	32	253	2,529
7	Vilafranca del Penedès	31	40	412
8	Mataró	28	341	1,088
9	Manresa	27	92	868
10	Banyoles	27	30	142

Source: Author's with Arnabat and Ferré (2015), IDESCAT, and REIC's data.

Table 3 depicts the density of cultural associations in relation to the surface of the municipality. Among them, municipalities like Puigdàlver (with 2.50 in the nineteenth century and 10 between 1900 and 1935) or Sant Hipòlit de Voltregà (with 2.22 in the nineteenth century and 5.71 between 1900 and 1935) should be highlighted for their high presence of cultural associations even their short geographical extent. The only exception here in terms of surface is Barcelona with 1.10 (in the nineteenth century) and 1.76 (from 1900 to 1935) cultural associations per Km^2. However, the relevance of Barcelona in cultural, economic and political terms can explain this fact.

Table 3. The 10th municipalities with more cultural associations' creations per Km^2

#	Municipality	Cultural as. / km^2 (XIX)	#	Municipality	Cultural as. / km^2 (1900-1935)
1	Puigdàlber	2.50	1	Puigdàlber	10.00
2	Sant Hipòlit de Voltregà	2.22	2	Cassà de la Selva	5.71
3	Capellades	2.07	3	Sant Hipòlit de Voltregà	2.22
4	les Cabanyes	1.67	4	Barcelona	1.76
5	el Masnou	1.56	5	Premià de Mar	1.50
6	Figueres	1.49	6	Gandesa	1.33
7	Cassà de la Selva	1.43	7	Montgat	1.03
8	Igualada	1.22	8	Salt	1.02
9	Barcelona	1.10	9	les Cabanyes	0.83
10	Banyoles	0.93	10	Calella	0.76

Source: Author's with Arnabat and Ferré (2015), Census 1900 and 2001 (INE), and REIC's data.

If we look at it with respect to the population (Table 4), municipalities having a higher index of new cultural associations per inhabitant are Olèrdola (0.0097), Puigdàlber (0.009) or Guardiola de Berguedà (0.0066) among others. Even if these municipalities are mainly located in the inner part of the province of Barcelona with low levels of population and economic dynamism, artistic, cultural and social inquisitiveness identified such municipalities.

Table 4. The 10th municipalities with more cultural associations per inhabitant (1900)

#	Municipality	# Cultural As. (1900-1935)	Population (1900)	**Cultural As./inhabitant (1900)**
1	Olèrdola	14	1,436	**0.0097**
2	Puigdàlber	4	442	**0.0090**
3	Sant Llorenç d'Hortons	7	924	**0.0076**
4	Vilanant	4	539	**0.0074**
5	Guardiola de Berguedà	2	303	**0.0066**
6	Banyeres del Penedès	5	776	**0.0064**
7	Copons	5	777	**0.0064**
8	els Guiamets	2	412	**0.0049**
9	Pacs del Penedès	2	416	**0.0048**
10	Biosca	4	846	**0.0047**

Source: Author's with Arnabat and Ferré (2015), Census 1900 and 2001 (INE), and REIC's data.

This paper mainly focuses on the setting up of cultural associations (*ateneus)* during the most representative period in the history of cultural associations in Catalonia*,* that is, the nineteenth century (1800-1899) and the first third of the twentieth (from 1900 to 1935). Their relevance and exogeneity as IV are discussed in depth in Section 5.2. Here the spatial patterns and stylised facts for these variables are presented as well as the distribution of population in 1900 for all the municipalities of Catalonia.

Figure 1 depicts the spatial patterns of these three historical IV. According to Panel A, even if in most Catalan municipalities no cultural associations were created in the nineteenth century, the spatial distribution of cultural associations was not homogenously spread along all Catalonia. This geographical pattern holds for the creation of cultural associations between 1900 and 1935 (Panel B). In this case, but, the number of municipalities having at least one cultural association is even larger and they are wider geographically spread along the region. In this sense, cultural associations were created in both inland and seaside municipalities. If these geographical patterns are compared to the spatial distribution of population in 1900 (Panel C) the idea that even in the less industrialised and populated municipalities the emergence of a cultural and social movement was relevant is confirmed.

Alternative IV have been considered to carry out this analysis, however, they are difficult to obtain or their relevance and exogeneity may be controversial. Examples of that are the following: 1) The artistic and cultural heritage destroyed due to political conflicts and later being rebuilt thanks to the civil society initiative and the financing support coming from the bourgeoisie of the municipality. Although this should be an excellent IV, access to these data and their subsequent elaboration are not straightforward; 2) The exodus of artists from Catalan municipalities due to the Spanish Civil

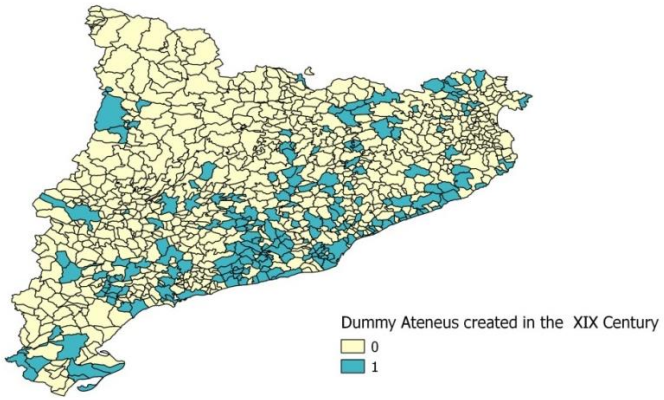
War and the subsequent Franco regime's repression and moral censorship (Santacana 2013; Hellmanzik 2016)[4], as one may think that the municipalities with more emigrated artists and intellectuals should reflect the creativity and cultural sensitiveness of the municipality. Yet, this fact is also not easy to justify, since municipalities having a greater exodus of artists may previously concentrate a great number of artists due to they are important cities where the proximity to cultural and intellectual infrastructures as well as the access to a larger market was possible. Furthermore, the accurate definition and identification of this data would not be straightforward as well; 3) The stock of cultural association per municipality during the Franco regime. Even if it may be a good example of the local initiative and cultural inquisitiveness, the low number of surviving cultural associations and the fact that the most part of new cultural associations created during this period where associated to the Franco regime may make their relevance debatable (Augé 2004; Pareja-Eastaway and Pradel-i-Miquel 2014; Navais 2017); and 4) The density of cultural associations per inhabitant or per Km^2, but they are highly correlated with contemporaneous population density which may bring their exogeneity into question.

Bearing in mind all the aforementioned facts, both dummy variables indicating the setting up of cultural associations in the nineteenth century (1800-1899) and in the first third of the twentieth (from 1900 to 1935) are believed to be the best candidates to deal with the possible reverse causality between employment in CIs and firm entries.

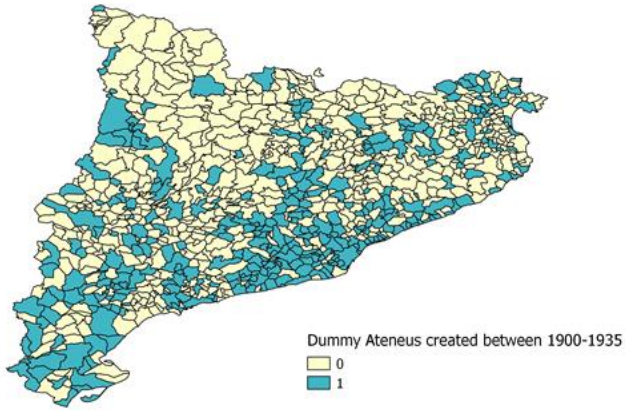
[4]Hellmanzik (2016) presents evidence of peer effects in creative production using an IV estimation based on the exodus of artists from Paris due to the Second World War.

Figure 1. Spatial distribution of cultural associations (*Ateneus*) and historic population

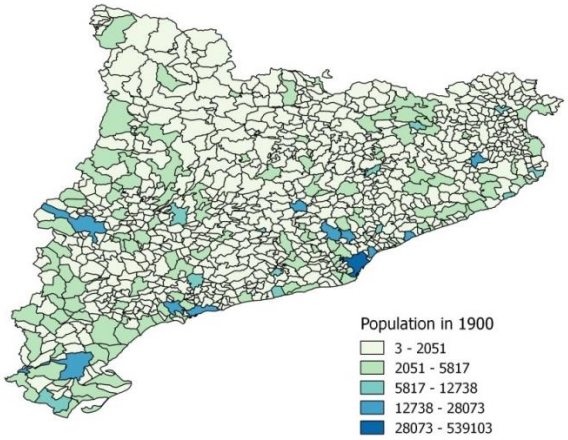
Panel A. Municipalities with cultural associations created in the nineteenth Century



Panel B. Municipalities with cultural associations created between 1900 - 1935



Panel C. Spatial distribution of population in 1900



Source: Own elaboration using Arnabat and Ferré (2015), and Census 1900 (INE).

3. Methods

3.1 Model specification

In order to test the relationship between the creative industries and new firm creation for all, metro and non-metro municipalities in Catalonia, the number of new and relocated manufacturing establishments (*Firm entries*) in a municipality as a function of the employment in CIs (*CSI*) and a set of specific local characteristics is estimated:

$$Firm\ entries_{i(2002-2007)} = \beta_0 + \beta_1 CSI_{i(2001)} + \beta_2 puni_{i(2001)} + \beta_3 ptech_{i(2001)} + \beta_4 pop\_density_{i(2001)} + \beta_5 job\_pop_{i(2001)} + \beta_6 job\_ind_{i(2001)} + \beta_7 psmall_{i(2001)} + \beta_8 dist\_pro_i + \beta_9 aktitude_i + \beta_{10} seaside_i + u_i \quad (1)$$

3.1.1 Explaining firm entries

According to the literature on firm location decisions, education (*ptech*, *puni*) is an important location factor whatever characteristics a firm may have. However, commuting flows may solve spatial mismatch in the labour market if there are appropriate transport infrastructures (Arauzo-Carod 2005). There is wide consensus about the more productive environment (which is preferred by firms) generated by agglomeration economies (*pop_densisty*, *job_pop*). The industrial mix (*job_ind*) helps to capture the local economic structure. Similarly, the existence of a wide number of small firms (*psmall)* typically encourages firms to locate, as suggested by the Incubator Hypothesis (Garofoli, 1994). Obviously, geography and institutional issues matter (Guimarães et al., 2000), as firms need good accessibility to services provided in cores, so it is necessary to control for the geographical position of the municipalities (*seaside, altitude*) and their distance from main cities (*dist_pro*) due to their institutional relevance. Finally, municipalities counting on more employment in CSI (*CSI*) should favour the entry of all kinds of firm. The results for this explanatory variable would allow us to test the main hypothesis of this paper.

Although some authors argue that adding human capital and creative class to the model could involve endogeneity problems (Glaeser 2004; Markusen 2006, 2010), this paper avoids this issue as it relies on the employment in CIs (defined by UNCTAD) and not on the concept of creative class (which defines as creative those occupations requiring high levels of education). In fact, CSI attempts to capture the concentration of employment (with different levels of human capital) in those sectors in which creativity is very important for carrying out their activity.

3.2 Model selection

Under the assumption that the random element of the number of firm entries is uncorrelated with the employment in CSI, it is possible to estimate Eq. (1) by ordinary least squares (OLS). However,

as Hall (2000), Markusen (2006, 2010) point out, CIs employment may not be placed randomly. On the contrary, their location is expected to be endogenous to economic dynamism: employed in CIs may be also attracted to most successful municipalities leading to reverse causality. To try to deal with this issue, this paper relies on an IV strategy which uses the historical instruments discussed in Section 2.

Another concern to the above approach is that estimating the number of firm entries by using OLS may lead to a potential coefficient bias since the number of firm entries could be understood as a discrete response variable. For econometric estimation, Count Data Models have been in common use when dealing with this location phenomenon from a spatial point of view: i.e., when trying to explain how the local characteristics of different sites (e.g., municipalities, counties, regions) can influence firms' decisions (see Arauzo-Carod et al. 2010, for a review of the empirical literature). Poisson models seem to be the starting point, but they have some limitations. They assume that the mean and variance are equal, but this is not usually the case when dealing with location decisions because of the concentration of entries in some areas, which involves an overdispersion problem. This problem can be solved by the generalised form of the Poisson model (the Negative binomial model), which introduces an individual unobserved effect into the conditional mean and allows the variance to exceed the mean.

Nevertheless, by the use of CDM the reverse causality issue arises again. Cameron and Trivedi (2010) propose a structural-model approach to control for endogeneity when estimating CDM. Concretely, this paper applies a bootstrap for Poisson and Negative binomial two-step estimations (see Cameron and Trivedi 2010, pp. 592-595 for further details).

4. Data

The data in this paper are from Catalonia,[5] an autonomous region in north-eastern Spain whose capital is Barcelona. The data includes one dataset about the location of new plants (dependent variable) and another dataset about territorial characteristics (independent variables). The dataset about the location of new plants is the Register of Manufacturing Establishments of Catalonia (REIC), supplied by the Catalan Government (Ministry of Innovation, Universities and Enterprise), which has plant-level microdata on the location of new and relocated manufacturing plants.[6] This dataset includes 10,033 manufacturing plants with codes 011 to 930 that located in Catalonia between 2002 and 2007.

[5] Catalonia has about 7.5 million inhabitants (15% of Spain's population) and a surface area of 31,895 km². It accounts for 19% of the Spanish GDP.

[6] See Manjón-Antolín and Arauzo-Carod (2011) for a detailed analysis of the interrelations between locations and relocations using the same dataset. Their results show that the location patterns of both new and relocated firms are quite similar.

To define CIs, this paper follows UNCTAD's proposal (2010) as it is the most widely accepted by researchers (see Boix-Domenech and Lazzeretti, 2012, among others). UNCTAD's classification is broader in terms of the industries it includes, including both manufacturing and service industries. Even so, the relevance of service creative firms is greater than manufacturing ones. In this paper only CSI are considered as Boix-Domenech and Soler-Marco (2017) suggested further research should focus exclusively on CSI because creativity is more evident in creative services than in creative manufacturing.

According to that, this paper works with 13 creative service sectors with codes between 221 and 925 (see NACE-93 industry classifications in Table 5). Consistence with this criterion, Census' dataset reports 111,380 employed in CSI.

Table 5. Creative Service Industries Employment (by NACE-93 classification)

Code	Creative Service Industries (CNAE 93.1)	Employment (2001)
221	Publishing	14,151
223	Reproduction of recorded media	78
721	Hardware consultancy	27,049
722	Software consultancy and supply	4,241
731	Research and experimental development on natural sciences and engineering	1,155
732	Research and experimental development on social sciences and humanities	165
742	Architectural and engineering activities and related technical consultancy	27,623
744	Advertising	13,747
748	Other economic activities (as photography and design)	2,020
921	Motion picture and video activities	11,032
922	Radio and television activities	7,697
924	News agency activities	256
925	Library archives, museums and other cultural activities	2,166
	Total employment in Creative Service Industries (CSI)	111,380

Source: Author's with data from IDESCAT and following UNCTAD (2008).

The dataset of the local characteristics of all 946 Catalan municipalities is mainly taken from Trullén and Boix (2005), the Catalan Statistical Institute (Census 2001, IDESCAT) and the Catalan Cartographical Institute. IV are elaborated from ISOCAC-URV database provided by Arnabat and Ferré (2015) and the Spanish Statistical Institute (INE). Table 6 shows some descriptive statistics of these variables. More information regarding the correlation between explanatory and IV is shown in Table 7.

Table 6. Summary Statistics

Variable	Description	Source	N	Mean	Std. Dev.	Min	Max
firm_entries	Total number of firm entries (02–07) (Ln)	REIC 2002-2007	946	1.27	1.33	0.00	6.70
puni	Educational level: Graduate relative to number of jobs (Ln)	IDESCAT (2001)	946	-1.88	0.38	-3.76	-0.69
ptech	Educational level: Technical studies relative to number of jobs (1st and 2nd degree) (Ln)	IDESCAT (2001)	946	0.15	0.04	0.00	0.31
pop_density	Population density (Ln)	IDESCAT (2001)	946	3.77	1.86	-0.20	9.85
job_pop	Ratio of number of jobs per population (Ln)	IDESCAT (2001)	946	0.36	0.04	0.00	0.46
job_ind	Percentage of industrial employment	IDESCAT (2001)	946	0.20	0.09	0.00	0.48
psmall	Percentage of small firms in the municipality	IDESCAT (2001)	946	0.60	0.15	0.00	0.69
dist_pro	Distance to the province capital (Ln)	Trullén and Boix (2005)	946	10.42	1.02	0.00	11.82
altitude	Altitude (Ln)	Trullén and Boix (2005)	946	5.39	1.23	1.10	7.34
seaside	It indicates if the municipality is beside the sea (1) or not (0)	Trullén and Boix (2005)	946	0.07	0.26	0.00	1.00
CSI	Employment in creative service industries (Ln)	IDESCAT (2001)	946	1.76	1.78	0.00	11.03
d_nineteenth	It indicates if the municipality has any cultural association created in the nineteenth century (1) or not (0)	Arnabat and Ferré (2015)	946	0.22	0.41	0.00	1.00
d_00_35	It indicates if the municipality has any cultural association created between 1900 and 1935 (1) or not (0)	Arnabat and Ferré (2015)	946	0.36	0.48	0.00	1.00
pop_1900	Total number of inhabitants in 1900 (Ln)	INE (1900)	946	6.88	0.89	1.10	13.20

Source: Author's.

Table 7. Correlation between independent variables

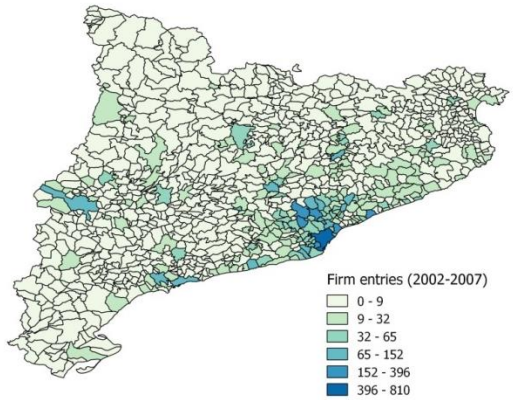
	1	2	3	4	5	6	7	8	9	10	11	12	13
1. puni	1												
2. ptech	0.1122*	1											
3. pop_density	-0.0125	-0.0346	1										
4. job_pop	0.1282*	0.041	0.1402*	1									
5. job_ind	-0.1883*	0.1139*	0.2831*	0.2432*	1								
6. psmall	0.0785*	-0.0338	-0.1589*	-0.2447*	-0.3726*	1							
7. dist_pro	-0.0770*	-0.0281	-0.1657*	-0.0799*	-0.0658*	0.1649*	1						
8. altitude	0.0853*	0.1838*	-0.3143*	0.0273	0.047	0.0984*	0.3743*	1					
9. seaside	0.0321	-0.1027*	0.2183*	-0.0047	-0.1598*	-0.0435	-0.1148*	-0.5477*	1				
10. CSI	0.0589	-0.003	0.5438*	0.2592*	0.3301*	-0.3975*	-0.3727*	-0.4252*	0.3717*	1			
11. d_nineteenth	-0.0285	-0.0456	0.2961*	0.0565	0.2224*	-0.1643*	-0.0884*	-0.1529*	0.1619*	0.4459*	1		
12. d_00_35	-0.0211	-0.0141	0.2582*	0.0015	0.1976*	-0.1466*	-0.1059*	-0.1822*	0.1502*	0.3966*	0.4268*	1	
13. pop_1900	-0.0525	-0.0602	0.2709*	-0.0356	0.1779*	-0.1940*	-0.2179*	-0.2191*	0.2538*	0.6028*	0.4507*	0.3970*	1

Source: Author's.

4.1 Spatial distribution of new firm creation and employed in creative service industries

Figure 2 depicts the spatial distribution of new firm creation located in Catalan municipalities between 2002 and 2007. Roughly 75% of new and relocated firms were agglomerated in the Metropolitan Area of Barcelona (MAB) and to a lesser extent around the other provincial capitals. It seems clear, then, that one of the most essential determinants of a firm's location decision are agglomeration economies, the advantages of which (specialised labour markets, availability of suppliers and knowledge spillovers) only exist in dense areas.

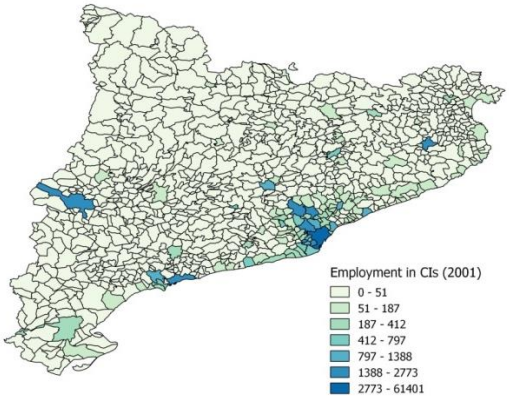
Figure 2. Spatial distribution of new plants (2002–2007)



Source: Own elaboration using REIC's data.

Figure 3 shows the spatial distribution of employment in CSI. Generally speaking, higher levels for this variable are reported near MAB whilst in inland and mountain areas employment in CSI is almost non-existent. In these latter areas, municipalities are less populated, so they have a less diversified industrial structure, which prevents them from developing an environment conducive to enhancing CIs.

Figure 3. Spatial distribution of employment in creative services industries



Source: Own elaboration using Census 2001 (IDESCAT).

5. Results

5.1. Do historical cultural associations explain employment in CSI?

In Section 2, it was claimed that, nowadays, the creation of cultural associations in the nineteenth and in the first part of the twentieth centuries still influences the concentration of creative employment. Now this affirmation is empirically tested for all (946), metro (420) and non-metro (526) Catalan municipalities. The metropolitan and non-metropolitan sub-samples are obtained by using a dummy variable defined by Trullén and Boix (2005) for Catalan municipalities. Although employed in CSI are assumed to be concentrated in metropolitan areas, there are several exceptions. Therefore, by making this distinction we determined whether there are significant differences in location determinants between the two areas.

The first goal of this paper is to estimate the effect of these three historical variables on the number of employed in CSI. OLS regressions grouped in three panels are presented in Table 8. The dependent variables include the number of employed in CSI in all Catalan municipalities (Panel A), the number of employed in CSI in metro Catalan municipalities (Panel B) and the number of employed in CSI in in non-metropolitan Catalan municipalities (Panel C). As in Lee (2014), the number of employed in CSI refers to concentration of creative talents. The main explanatory variables are a dummy indicating the creation of cultural associations in the nineteenth century (Panel A), a dummy indicating the creation of cultural associations between 1900 and 1935 (Panel B) and the 1900 population (Panel C).[7] Finally, some control variables are included.

Results in Table 8 clearly show that cultural associations matter for present new firm creation. In Panel A, all three historical variables positively influence the number of employed in CSI in 2001. The overall R^2 of the preferred specification in column 3 is 69%. At the metropolitan and non-metropolitan levels (Panel B and C) also all three historical variables are significant and with the expected positive sign. Preferred specifications are in columns 6 and 9 and show and overall R^2 around 75% and 63% for metro and non-metro subsamples, respectively.

[7] Main data source to elaborate historical urban population in 1900 comes from the Instituto Nacional de Estadística (INE) and includes census carried out every ten years from 1900 until 1981 when censuses moved to years ending in 1. Therefore, I have information from 11 censuses between 1900 and 2001. These censuses provide total number of inhabitants at a local (municipality) level in Catalonia. As number of municipalities change during the twentieth century, all of them are included through the census in which they appear for the first time. This empirical strategy implies that departing from 886 municipalities in 1900, it ends up with 946 in 2001 (Goerlich et al. 2006).

Table 8. CSI's employment as a function of historical cultural associations and population

	Panel A: All municipalities			Panel B: Metro			Panel C: Non-Metro		
Dep. Var. : CSI	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS	OLS
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
d_nineteenth	0.988***	0.793***	0.364***	0.888***	0.727***	0.349**	1.084***	0.889***	0.445***
	(0.111)	(0.114)	(0.102)	(0.143)	(0.147)	(0.145)	(0.163)	(0.160)	(0.124)
d_00_35	-	0.477***	0.222***	-	0.392***	0.200*	-	0.484***	0.178*
		(0.0885)	(0.0819)		(0.128)	(0.120)		(0.108)	(0.0919)
pop_1900	-	-	0.694***	-	-	0.538***	-	-	0.837***
			(0.0657)			(0.110)			(0.0596)
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Constant	4.333***	3.967***	-2.125*	5.819***	5.491***	0.681	-1.419	-1.571	-7.874***
	(0.863)	(0.822)	(1.171)	(1.471)	(1.441)	(1.972)	(1.277)	(1.247)	(1.080)
N	946	946	946	420	420	420	526	526	526
Adjusted R^2	0.600	0.613	0.694	0.704	0.711	0.748	0.422	0.444	0.632
First-stage statistic	79.180	54.689	83.018	38.592	23.089	24.751	44.349	31.636	95.308
Overid. *p*-value	-	-	0.863	-	-	0.321	-	-	0.321

Controls include the following variables: puni, ptech, pop_density, job_pop, job_ind, psmall, dist_pro, altitude, and seaside.

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

It is important to notice that the above results are first-stage results, in which the use of historical cultural associations and population as instruments for present new firm creation is studied. The use of historical instruments is not new in the literature (see, for instance, Duranton and Turner 2011 or García-López et al. 2015). However, this is among the first papers to use historical instruments to explain the economic dynamism potential of CIs. While Wojan et al. (2007) and Coll-Martínez and Arauzo-Carod (2017) follow a two-step process to estimate an unobservable creative milieu, this paper uses an alternative procedure to deal with possible omitted variables and reverse causality. Moreover, the use of historical IV allows capturing a tolerant, creative, proactive and venturesome personality identifying a municipality.

Instruments need to be relevant, and they seem to fulfill this requirement. First, common sense suggests that present employment in CIs does not depend on the creation of cultural associations in the nineteenth century / beginnings of the twentieth century or on the population in 1900. On the contrary, the current concentration of cultural and creative employment depends to a great extent on the historical urban development path and cultural embeddedness of each city (Bonfanti et al. 2015; Pareja-Eastaway and Pradel-i-Miquel 2015). Second, the preferred specifications in Table 4 show positive and significant effects for the selected instruments, and high over-all R^2 of their regressions. Finally, they also show first-stage statistic values that are above the Stock and Yogo (2005)'s rule of thumb ($F > 10$) and near the Stock and Yogo (2005) critical values for the size test in the context of TSLS estimation.

The IV need to be exogenous. Cultural associations may be exogenous because of the length of time since they were created and the significant changes undergone by society and economy in the intervening years. Furthermore, they were not created with the purpose of attracting more firm entries 150 years later. As discussed in previous Section 2, cultural associations arise from the social need and interest to alleviate inequalities, guarantee a dignified life and contribute to the formation and *culturalisation* of population.

However, it is also true that other factors, in particular the demographic issues, could have influenced both the development of cultural associations. Furthermore, these factors may have also affected present firm entries. Since the presence of cultural associations in the nineteenth century and between 1900 and 1935 tend to be larger in the most populated municipalities, in some extent these IV may predict the dependent variable directly as well indirectly by employment in CIs. According to Duranton and Turner (2011; 2012), the exclusion restriction requires the orthogonality of the dependent variable and the instruments conditional on control variables. Therefore, the inclusion of historic urban population in 1900 should fulfil with the exogeneity condition.

In summary, according to the above first-stage results, the three historical variables considered in this study, the creation of cultural associations in the nineteenth century and between 1900 and 1935, and 1900 population, provide with a set of non-weak and relevant instruments. According to the above comments, these instruments are believed to be also exogenous.

5.2. Does employment in CSI cause new firm creation in Catalonia?

Table 9 Panel A shows our main OLS and IV results in columns 1-4 for all Catalan municipalities. The OLS regression in column 1 has a high R^2 of 74% and the estimated coefficient of interest shows that employment in CSI has a positive and significant effect on new firm creation. In columns 2-5, employment in CSI is instrumented with a dummy of the creation of cultural association in the nineteenth century (column 2), a dummy of the creation of cultural association between 1900 and 1935 (column 3) and historical population in 1900 (column 4). In general, all TSLS results clearly show that employment in CSI have a positive and significant effect on new firm creation. It is important to notice that the estimated coefficient is quite stable across the different TSLS specifications, even when historical population as instrument and all the traditional location determinants. According to the included control variables, the first-stage statistic and the overidentification p-value, the preferred specification is in column 4 and its results indicate that by increasing a 10% the employment in CSI, the number of new firms located in the municipality increases by a 6.7%. These results remain consistent for metro and non-metro municipalities (Panels B and C in Table 9). Yet, this effect is larger for metro municipalities (8.9%) than for non-metro municipalities (5.9%).

Even the main aim is to analyse the effects of CSI employment on new firm creation, it may be interesting to analyse the results for the rest of location determinants. The coefficients analysed for OLS results for all Catalan municipalities are shown in Table 9 Panel A column 1. Agglomeration economies, proxied by population density, act positively; longer distances to provincial capitals reduces entries; manufacturing workforce shares increase entries but SME shares reduces them, which shows that these firms do not favour start-ups (see Arauzo-Carod and Manjón-Antolín 2012). Educational characteristics have opposite effects because technical studies are positive for firm location while higher educational levels are negative, as is shown by many other analyses (see Arauzo-Carod and Manjón-Antolín 2004; Arauzo-Carod and Viladecans-Marsal 2009; among others). Returning to the issue of possible endogeneity, some authors argue that human capital can capture the effects of the concentration of creativity (Glaeser 2004). However, our results show that the effects of employment in CSI on the creation of new firms are still significant when human capital variables are added. These results remain consistent for metro and non-metro municipalities (Panels B and C in Table 9).

Table 9. Firm creation as a function of CSI's employment

	Panel A: All municipalities				Panel B: Metro				Panel C: Non-Metro			
Dep. Var. :	OLS	TSLS	TSLS	TSLS	OLS	TSLS	TSLS	TSLS	OLS	TSLS	TSLS	TSLS
Firm entries	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
CSI	0.564***	0.662***	0.676***	0.670***	0.628***	0.781***	0.775***	0.878***	0.523***	0.563***	0.609***	0.565***
	(0.0185)	(0.0594)	(0.0536)	(0.0341)	(0.0263)	(0.0928)	(0.0894)	(0.0638)	(0.0277)	(0.0727)	(0.0648)	(0.0399)
puni	-0.249***	-0.291***	-0.297***	-0.294***	-0.474***	-0.547***	-0.544***	-0.592***	-0.134*	-0.147**	-0.163**	-0.148**
	(0.0609)	(0.0660)	(0.0654)	(0.0639)	(0.102)	(0.114)	(0.114)	(0.117)	(0.0725)	(0.0746)	(0.0738)	(0.0727)
ptech	0.970*	0.936*	0.932*	0.933*	0.854	1.048	1.040	1.172	0.824	0.834	0.847	0.835
	(0.513)	(0.519)	(0.521)	(0.519)	(0.906)	(0.938)	(0.936)	(0.988)	(0.633)	(0.628)	(0.633)	(0.629)
pop_density	0.052***	0.0213	0.017	0.0187	0.0454*	-0.0245	-0.0217	-0.0689*	0.0262	0.0212	0.0153	0.0210
	(0.0145)	(0.0227)	(0.0213)	(0.0176)	(0.0243)	(0.0480)	(0.0464)	(0.0373)	(0.0185)	(0.0199)	(0.0194)	(0.0187)
job_pop	1.031	0.558	0.491	0.518	0.825	0.276	0.298	-0.0728	1.425	1.186	0.905	1.174
	(0.635)	(0.692)	(0.687)	(0.649)	(0.855)	(0.924)	(0.909)	(0.945)	(0.914)	(1.012)	(1.009)	(0.932)
job_ind	1.377***	1.034***	0.985***	1.005***	1.322***	0.690	0.715	0.289	0.900**	0.748*	0.569	0.740*
	(0.277)	(0.334)	(0.324)	(0.295)	(0.494)	(0.630)	(0.625)	(0.587)	(0.373)	(0.436)	(0.412)	(0.383)
psmall	-0.234	0.0159	0.0515	0.0372	0.373	0.843**	0.824**	1.141***	-0.610***	-0.549**	-0.479**	-0.546**
	(0.174)	(0.222)	(0.212)	(0.190)	(0.288)	(0.407)	(0.399)	(0.397)	(0.221)	(0.239)	(0.231)	(0.219)
dist_pro	-0.068***	-0.0367	-0.0323	-0.0340	-0.00336	0.0598	0.0573	0.1000***	-0.349***	-0.358***	-0.370***	-0.359***
	(0.0222)	(0.0301)	(0.0294)	(0.0263)	(0.0206)	(0.0439)	(0.0425)	(0.0342)	(0.0788)	(0.0792)	(0.0796)	(0.0782)
altitude	0.0197	0.0381	0.0407	0.0396	0.0750	0.112**	0.110**	0.135***	0.0568**	0.0657**	0.0762**	0.0661**
	(0.0229)	(0.0255)	(0.0255)	(0.0242)	(0.0469)	(0.0505)	(0.0502)	(0.0511)	(0.0288)	(0.0324)	(0.0323)	(0.0295)
seaside	-0.119	-0.270*	-0.292**	-0.283**	0.00248	-0.148	-0.142	-0.243	-0.131	-0.202	-0.285	-0.206
	(0.111)	(0.150)	(0.143)	(0.125)	(0.159)	(0.197)	(0.195)	(0.194)	(0.153)	(0.202)	(0.188)	(0.159)
Constant	-0.418	-0.872*	-0.937**	-0.911**	-2.092***	-3.044***	-3.005***	-3.649***	2.943***	3.016***	3.102***	3.020***
	(0.382)	(0.455)	(0.441)	(0.408)	(0.537)	(0.745)	(0.735)	(0.713)	(0.914)	(0.908)	(0.909)	(0.902)
N	946	946	946	946	420	420	420	420	526	526	526	526
Adjusted R^2	0.743	0.600	0.613	0.694	-	0.704	0.711	0.748	-	0.422	0.444	0.632
First-stage statistic	-	79.1801	54.689	83.018	-	38.592	23.089	24.751	-	44.349	31.636	95.308
Overid. *p*-value	-	-	-	0.863	-	-	-	0.321	-	-	-	0.321
Instruments												
d_nineteenth	N	Y	Y	Y	N	Y	Y	Y	N	Y	Y	Y
d_00_35	N	N	Y	Y	N	N	Y	Y	N	N	Y	Y
pop_1900	N	N	N	Y	N	N	N	Y	N	N	N	Y

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

5.3. Does employment in CSI cause new firm creation in Catalonia? By using CDM.

One concern to the above approach is that estimating the number of firm entries by using OLS could lead to potential coefficient bias. Then, this paper makes use of the two-step procedure estimation to control for endogeneity following Cameron and Trivedi (2010). As explained in Section 3, this two-step procedure needs to be estimated by a bootstrap method instead of robust cluster errors since the p-value of the z statistic for the coefficient of the latent factor generated of the first step before being included in the second step (*Res*) is different from zero in this case.

Therefore, Table 10 compares robust OLS results (column 1) without making use of a bootstrap two-step procedure for Poisson (column 2) and Negative binomial models (column 3). Results confirm that even when using this alternative empirical approach the positive and significant effect of having higher levels of employment in CSI enhances the location of new firms in the municipality. The negative coefficient of *Res* can be interpreted to mean that the latent factor, which increases the probability of having more employed in CSI in the municipality, lowers the number of firm entries. This result is consistent if we think on all the unobservable characteristics of the municipality that can influence both the concentration of CSI and new firm creation. Controlling for endogeneity has a substantial effect on firm entries of an exogenous change in the employment in CSI because its coefficient is now much higher.

Table 10. Firm creation as a function of CSI's employment using CDM

	All municipalities		
Dep. Var. :	OLS	Poisson[a]	NB[b]
Firm entries	(1)	(2)	(3)
CSI	0.564***	0.783***	0.869***
	(0.019)	(0.049)	(0.059)
puni	-0.249***	-0.703***	-0.474***
	(0.061)	(0.124)	(0.134)
ptech	0.970*	2.372*	3.429
	(0.513)	(1.315)	(2.087)
pop_density	0.052***	0.014	-0.039
	(0.015)	(0.024)	(0.035)
job_pop	1.031	4.181**	2.662*
	(0.635)	(1.589)	(1.574)
job_ind	1.377***	2.258***	2.002**
	(0.277)	(0.621)	(0.634)
psmall	-0.234	1.024**	0.403
	(0.174)	(0.335)	(0.389)
dist_pro	-0.068***	0.054*	0.007
	(0.022)	(0.056)	(0.070)
altitude	0.0197	0.122**	0.005
	(0.023)	(0.056)	(0.044)
seaside	-0.119	0.038	-0.034
	(0.111)	(0.198)	(0.107)
Res (1st Step)	-	-0.155**	-0.234**
		(0.063)	(0.075)
Constant	-0.418	-5.753***	-3.386***
	(0.382)	(0.063)	(0.075)
N	946	946	946
Ln_alpha	-	-	-0.319**
			(1.163)
Instruments			
d_nineteenth	N	Y	Y
d_00_35	N	Y	Y
pop_1900	N	Y	Y

Bootstrap standard errors in parentheses. [a] and [b] : 400 simulations.

*** p<0.01, ** p<0.05, * p<0.1

6. Conclusions

This paper tries to contribute on the literature on the creative industries (CIs) by addressing potential reverse causality between CIs and economic dynamism. Concretely, it investigates two questions: 1) Do cultural associations capturing the unobservable local identity of a municipality explain the present concentration of creative employment? And 2) Do creative industries lead to new firm location? By using, for the first time, cultural associations and urban population as historical IV, the results confirm CIs' potential for new firm creation. Main results show that by increasing a 10% the employment in creative service industries (CSI), the number of new firms located in the municipality increases by a 6.7% for all municipalities, a 8.9% for metro

municipalities and a 5.9% for non-metro municipalities. These results are robust across Catalan metro and non-metro municipalities, and also when different empirical approaches are considered (from robust OLS, passing through TSLS, to CDM). These results support the view that the CIs lead to economic dynamism (i.e., new firm creation) in the local economy. Furthermore, analysis of IV suggests that the intrinsic and historical personality defining the municipality – in terms of cultural associations – should explain the attraction of creative employment to the municipality and, at the same time, this should encourage the location of new firms.

The contribution of this paper is relevant because it provides evidence that was needed in the literature of CIs. In terms of previous empirical contributions, on the one hand, these results are in line with Lee (2014) findings and support the positive association between entrepreneurship and 'creative milieu' claimed by Wojan et al. (2007) and Coll-Martínez and Arauzo-Carod (2017). On the other hand, these results also support the association between the concentration of employment in CSIs and new firms' creation at a municipality level (Scott 2000; Lee et al. 2004; Stam et al. 2008). Furthermore, they do corroborate contributions arguing that CIs are especially attracted to those intangible characteristics of municipalities (Scott 2006). In fact, the relevance of cultural associations on the employment in CSI and the resulting higher significance of this employment in CSI on new firm creation strongly suggest that for the potential in terms of local economic growth of CIs, the role of cultural dynamism path patterns and a strong particular identity are considerably important (Pareja-Eastaway and Pradel-i-Miquel 2014). These results have implications for policy focused on the CIs. Thus, creativity-based policies aiming to enhance local competitiveness should take into account the cultural path dependency and the historical context of their municipalities.

Unfortunately, this study does have some limitations. In this regard, any future research should focus on looking for alternative datasets allowing the elaboration of a panel data. When working with cross-section data I neglect the effects in changes on economic growth potentially influencing employment in CIs. Also the use of alternative historical IV should even more uphold the results found in this paper.

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