



PAPER

Title: New wine in old wineskins. Local constraints and knowledge transfer in the formation and development of cooperatives: Catalonia, 1860-1939

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Abstract: Different factors have been proposed to explain why some regions display a greater tendency to form cooperatives. The debate remains open. In recent years, several interpretations have focused on property structures, levels of human capital, distance to markets, the role of institutions, and the previous existence of social capital and trust. The main aim of this study is to assess the relevance of these and other factors in the greater propensity towards cooperativism. Focusing on Catalonia, the Spanish region with the greatest presence of cooperatives, we carry out a quantitative study at the local level; the period under consideration being from the 1860s to the Civil War (1936-39). All types of cooperative will be considered: consumers, production, agricultural, fishermen, credit, housing, electrical consumption, healthcare, and popular pharmacies.

Keywords cooperatives, human capital, social capital, knowledge transfer, Catalonia.

1. Introduction

In 1995 the United Nations (UN) declared July 1, as the International Day of Cooperatives. Likewise, 2012 was proclaimed the International Year of Cooperatives. The UN has stressed the importance of the social economy, and hence cooperativism, as democratic alternatives to capital-based societies, and has argued that they are a crucial tool in the struggle against poverty and inequality, improving quality of life and economic development.¹

Recent years have witnessed the publication of interesting studies about the formation and development of cooperativism, especially with regard to agrarian cooperatives, and a good deal of attention has been paid to the reasons that drive people to cooperate and the fact that not all regions present the same propensity to cooperativism. Traditionally, this form of collective action has been regarded as a direct outcome of industrialisation, urbanisation, and the widespread adoption of capitalism in Europe, including in the agrarian sector, as a mechanism to cushion the social problems caused thereby and to improve the living conditions of the population.

The debate remains open. The greater propensity to cooperate among agriculturalists has been related to prevalence of small- to medium-sized agricultural properties, high levels of human capital and, proximity to markets, as well as the role of institutions and the specialisation in products that can be sold in national and international markets (Henriksen, 1999; Simpson, 2000; O'Rourke, 2007a, 2007b; Garrido 2007; Martínez-Soto, 2012 *et al.*; Fernández 2014b; Fernández and Simpson, 2017).

Other studies have focused on the theoretical implications of trust and social capital for the social economy and cooperativism (Henriksen, 1999; Galassi, 1999, O'Rourke, 2007a, 2007b, Beltrán, 2012; Fernández 2014a; Garrido, 2014). Social capital is considered a crucial variable for cooperativism and collective action; the greater the social capital, the more developed cooperativism will be. The existence of previous social networks and trust-based interpersonal relations can be a crucial factor in the emergence and development of a strong cooperative movement. Social capital can reduce the transaction costs of collective action, and restrict free-riding behaviour, one of the greatest obstacles to cooperative organisations, according to the neo-classical theory of cooperativism (Ward, 1958; Vanek, 1970). Greater social capital facilitates decision-making, the resolution of conflict and the management of common-pool

¹ <http://www.un.org/es/events/coopsyear/>

resources (Putnam, 1993; Ostrom, 1990, 2000; Svendsen and Svendsen, 2004; among others).

This idea, however, has been criticised at the theoretical level, because of its ambiguity and immeasurability (Sobel, 2002). In addition, several historical studies of cooperativism have argued that social capital cannot be the sole explanation (other factors, technological and institutional in nature, also have to be taken into consideration), and that the presence of social capital does not necessarily lead to the development of successful cooperative institutions (Henriksen, 1999; Henriksen *et al.*, 2011, 2012; Henriksen and O'Rourke, 2005; Garrido, 2014).

Within the framework of this debate, the aim of the present paper is to present new evidence on the factors that determine the consumer, worker or farmer's propensity towards cooperation. This will hopefully contribute to an explanation as to why cooperativism expanded earlier and faster in some regions than others. It is argued that focusing on a specific type of cooperative at the national or provincial level, although potentially useful, does not capture the problem in all its complexity. For this reason, we have decided to combine recent historiographical developments with a more geographically focused perspective, using the municipality as the basic unit of analysis. Also, instead of focusing on a specific kind of cooperative, we have approached the issue more globally, focusing on the propensity of different social groups to cooperate, regardless of the type of cooperative into which this propensity crystallises.

We undertake a dynamic quantitative analysis of the Spanish region with the greatest presence of cooperatives: Catalonia. The cooperative atlas of Catalonia compiled by Celada (1989) provides information concerning foundation dates and periods of activity of cooperatives. Seven chronological milestones have been set between the 1860s, when these organisations first appeared, and the Spanish Civil War (1936-39). We take into consideration the three main types of cooperative – consumer, production and agrarian – and also other lesser types.

Following the literature, we take into consideration social capital, for which several variables have been proposed, together with other common factors such as the formation of social capital. However, other aspects, which are included in analysis less often, such as the distribution of wealth (in both rural and urban contexts), cross-fertilisation between municipalities and distance to major urban nuclei and the rail network, will also be considered.

The article is divided into the following sections: first, we provide a brief review of the existing literature on the history of social economy and cooperativism. The

second section undertakes a quantitative description of the cooperative phenomenon in Spain and Catalonia, and the importance of the region for cooperativism at the national level is emphasised. The third section presents the quantitative methodology of analysis, followed by sections on results, discussion and conclusion.

2. Literature review

Over the last few decades, the historical study of cooperativism has revolved around three key debates: 1). Causes of the formation and development of cooperative organisations, especially with regard to reasons that drive people to cooperate and that make some regions more prone to cooperativism than others; 2). Characteristics, governance and operation of cooperatives. This debate mainly revolves around economic performance, and the ability of these organisations to compete in the market; 3). Impact on the standard of living of social groups engaged in cooperative activities, both in rural and urban contexts. This debate has also paid attention to the role of cooperativism in modernising and improving the profitability of the agrarian sector.

Within the framework of the first of these debates, numerous studies have tried to establish the causes of the emergence of this phenomenon. Traditionally, cooperativism has been regarded as a direct outcome of the adoption of the capitalist system in Europe. The industrialisation and urbanisation processes undergone by European countries in the 19th and 20th centuries led to social problems and the consequent emergence of critical organisations and ideologies which aimed to improve the living conditions of the general population. These organisations included consumers' cooperatives, whose aim was to facilitate access to basic goods, especially food and clothing, but also other educational, welfare, recreational and cultural services. These associations distributed profits among their members, but also created libraries, theatres, nurseries and cafes and offered temporary assistance schemes to help members overcome difficult situations, such as illness, disability, death, strikes or unemployment. As such, they played the role that was later to be assumed by the Welfare State.

European cooperativism developed at different paces. The movement began in Great Britain in 1844 with the foundation of the first consumers' cooperative near Manchester, the *Rochdale Equitable Pioneers Society*, whose example was promptly followed elsewhere in the country. Reformist bourgeoisie groups played a central role in the dissemination of cooperativism. This was regarded as a mechanism to address social tensions generated by the market economy, which was characterised by low salaries; an uneven distribution of wealth; vulnerability of working-class families to unemployment,

old age, work-place accidents and widowhood; precarious educational infrastructures; and, poor hygiene in the burgeoning urban centres. During this period, these problems were grouped under the label ‘the social issue’ (Thompson, 1963; Wrigley, 1990).

Consumers’ cooperatives multiplied in the late 19th century, when the model was adopted by the labour movement owing to its increasing popularity. Initially, labour organisations had rejected them because they reinforced the exploitation mechanisms of social elites. Their creation accelerated even more after World War One, when living standards fell as a consequence of the conflict and associated inflation (Brazda and Schediwy, 1989: 14-16).

Cooperativism reached the agrarian sector in the late 19th century, several decades after it had emerged for consumers, also as a direct consequence of the penetration of the capitalist model in agriculture, and in a context of crisis and increasing competition (Federico, 2005). This process overturned traditional exploitation systems, leading to grave social conflicts and the organisation of agrarian associations by smallholders.

Despite the scope and historical relevance of cooperativism, the reasons behind its emergence and the greater propensity towards cooperation of individuals living in some regions over those in others remain underexplored, at least in the case of the early consumers’ cooperatives. Most studies approach the issue from social history or history-of-the-firm perspectives. The best-known country in this regard is Great Britain, but some interesting studies have also been published concerning other nations in which cooperativism expanded early, such as France, Germany, Italy or the Scandinavian countries.

By topic, the main issues under analysis are the relationship of cooperativism to the market, trade unions and social-democrat political parties (Purvis, 1998; Gurney, 2012); organisational issues, including internal conflict and the cooperatives’ lack of flexibility to adapt to conditions of changing demand (Gurney, 2012, Toms, 2012); the role played by wholesale cooperative societies (Black and Robertson, 2009; Webster, 2012; Wilson *et al.*, 2013a, 2013b); the social impact of cooperatives in the economic, financial, healthcare, educational and residential conditions of their members (Robertson, 2010, 2012; Samy, 2012; Jackson, 2016; Watts, 2017); the distribution of basic products among members (Schollier, 1999; Medina-Albaladejo and Pujol, 2014); the role of cooperatives in the modernisation of food distribution chains in the second half of the 20th century; and, the competitiveness of cooperatives compared to capitalist firms (including case-studies which reflect both the success and the failure of

cooperatives) (Zamagni *et al.*, 2004; Alexander, 2008; Shaw and Alexander, 2008; Menzani and Zamagni, 2009; Hilson, 2011, 2013; Ekberg, 2012a, 2012b; Friberg *et al.*, 2012; Kramper, 2012; Balnave and Patmore, 2012, 2015; Battilani and Zamagni, 2012; Menzani and Medina-Albaladejo, 2018).

Concerning Spain, where most cooperatives have an agrarian basis, workers' and consumers' cooperatives have received little attention, despite the fact that they were the earliest to emerge, chiefly in Catalonia. Most studies focus on the local level, and few attempts have been made to link these together and identify general trends. The first systematic analyses have allowed for the quantification of the phenomenon and for the outlining of various hypotheses, especially with regard to the role played by these institutions in improving the living conditions and access to basic products of the working classes (Medina-Albaladejo and Pujol-Andreu, 2014; Medina-Albaladejo, 2017).

Recent years, however, have witnessed the publication of a number of works on the emergence and development of agrarian cooperativism, and the debate remains open. These studies have emphasised the role played by social capital and institutions in cooperation and the social economy. Henriksen and others, for instance, have analysed in depth the successful example posed by the Danish case. These authors defend the importance of social capital in rural Denmark, and consider this to be the key to the success of the Danish agrarian cooperative model, although they insist that this is not enough, and that other technological and institutional variables are also important (Henriksen, 1999; Henriksen *et al.*, 2011, 2012; Henriksen and O'Rourke, 2005). Other authors, such as O'Rourke (2007a, 2007b), Van der Hallen (2009) and Galassi (1999), consider that the failure of dairy cooperatives in Ireland and Belgium and rural credit cooperatives in southern Italy can be largely explained by a lack of social cohesion.

Guinnane (2001), in his study about rural credit cooperatives in Germany, considers that these institutions are an example of successful economic institutions based on dense social relations (social capital). These social relations allow the cooperatives to closely monitor their customers and effectively enforce sanctions, opening credit lines to low-income social groups which otherwise have no access to conventional banking products. Fernández (2014a) and others have also emphasised the role played by cultural and religious factors in generating trust and, therefore, social capital, claiming that cooperativism was especially successful in protestant societies.

Concerning Spain, where this historiographical trend has also yielded important results, it was Beltrán (2012) who first analysed the importance of the existing stock of

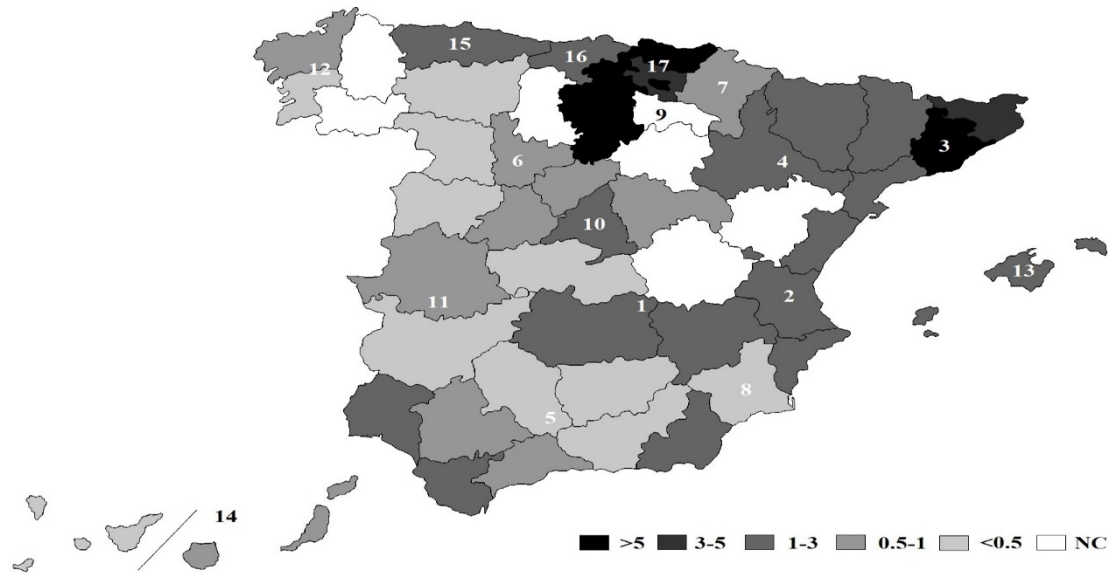
social capital for the emergence of agrarian cooperativism in particular regions. This author emphasises that the regions where agrarian cooperatives and trade unions emerged earliest were those in which there was previous experience in the management of common-pool resources, for instance in the intensively irrigated areas in the East of Spain. These previous relationships contributed to the formation of social networks that further facilitated circulation of information and interpersonal relationships. Martínez-Soto, Martínez-Rodríguez and Méndez (2012), however, stress the detrimental effect of male illiteracy on the formation of rural credit cooperatives. According to these authors, the key factors for cooperation are both formal education and social capital. Other authors, such as Garrido (2014), qualify Beltrán's conclusions and argue that the existence of previous social capital does not necessarily lead to the emergence of successful cooperatives, as demonstrated by the citrus-growing cooperatives in the East of Spain.

The role played by institutions is also an important variable in the analysis of cooperativism. From a theoretical perspective, many authors have argued that cooperatives, which often suffer endemic financial problems owing to low investment and weak capitalisation – mainly caused by a risk-averse membership – need support structures created by the State and other institutions in order to survive (Vanek, 1970; Ben-Ner, 1988; Hansmann, 1996; among others). A large number of case studies have emphasised this issue in their analysis of the success or failure of French, Italian, Spanish and Danish agrarian cooperatives (Garrido, 1996, 1997; Simpson, 2000; Simpson and Carmona, 2017; Chevet, 2009; Henriksen *et al.*, 2012; Planas, 2013, 2016; Medina-Albaladejo, 2015; Planas and Medina-Albaladejo, 2017; Medina-Albaladejo and Menzani, 2017; Fernández and Simpson, 2017).

3. Cooperatives in Spain and Catalonia

In Spain, cooperativism arrived late and expanded slowly, compared with other European countries. The statistics reveal that early Spanish cooperatives were riddled with major and well-known problems, which also hamper quantitative analytical approaches (Garrido, 1996). Despite this, the available sources allow for a general analysis of the scope and development of the phenomenon to be undertaken, although all conclusions must be handled cautiously, owing to the shortcomings of public statistics.

Map 1. Number of urban cooperatives* per 100,000 inhabitants in Spain, by provinces, 1933.



*Urban cooperatives (consumers', producers', fishermen's, credit, housing, electrical supply and pharmaceutical). NC: No cooperatives

Spanish regions: 1 (Castile-La Mancha); 2 (Valencia); 3 (Catalonia); 4 (Aragon); 5 (Andalusia); 6 (Castile and León); 7 (Navarre); 8 (Murcia); 9 (Rioja); 10 (Madrid); 11 (Extremadura); 12 (Galicia); 13 (Balearic Islands); 14 (Canary Islands); 15 (Asturias); 16 (Cantabria); 17 (Basque Country).

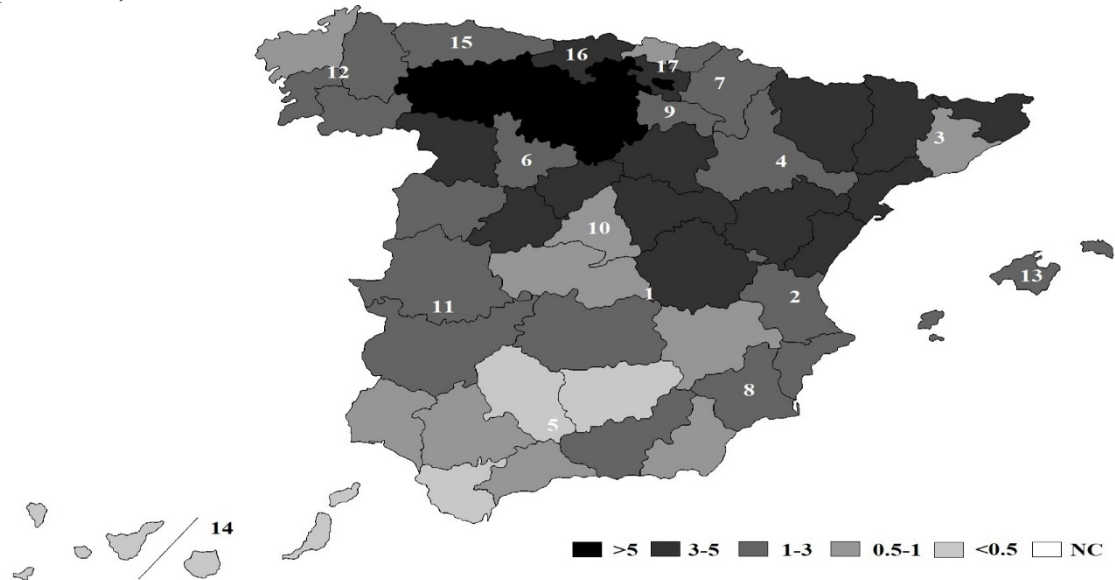
Source: Instituto Nacional de Estadística (1934); Dirección General de Instituto Geográfico y Estadístico (1932).

The earliest consumers' and producers' cooperatives were founded in the coastal and metropolitan areas of Gerona and Barcelona in the 1860s (Catalonia) (Medina-Albaladejo and Pujol, 2014). At the onset of World War One, urban cooperatives (consumers', producers', fishermen's, credit, housing, electrical supply and pharmaceutical) concentrated around the most industrialised and urban regions. In 1908, 41.8% of all Spanish cooperatives were based in Catalonia. Seven years later, this proportion had decreased to 29.3%, with some regions such as the Basque Country, Valencia and Asturias witnessing a substantial increase. Before World War One, the social impact² of consumers' cooperatives barely reached 1% of the Spanish population, compared to 10% in the industrial districts of Catalonia in 1915. Catalonia was, therefore, comparable in this regard from countries such as Switzerland (13.8% in 1910); Finland (11.9%); Germany (9.5%); Sweden (6.9%) and Italy (8.8%), but it was still far below the United Kingdom and Austria (Medina-Albaladejo and Pujol-Andreu, 2014). The popularity of cooperativism of Catalonia continued in the following decades, as illustrated by Map 1. In 1933, 33.8% of non-agrarian cooperatives were in Catalonia

² Measured by the percentage that the members of the cooperatives and their families supposed about the total population, assuming families of four members and that only one was a member.

(especially Barcelona), which was the most important region in this regard alongside the Basque Country (Instituto Nacional de Estadística, 1934).

Map 2. Number of agricultural cooperatives per 10,000 inhabitants* in Spain, by provinces, 1933.



* In this map the number of agrarian entities per 10,000 inhabitants has been calculated, and not for every 100,000 inhabitants as in the Map 1. The purpose of this change is that in both maps the same rank can be used to classify the provinces according to their cooperative intensity, because the number of urban entities in the total of Spain was much lower than that of agrarian in those years.

NC: No cooperatives

Spanish regions: 1 (Castile-La Mancha); 2 (Valencia); 3 (Catalonia); 4 (Aragon); 5 (Andalusia); 6 (Castile and León); 7 (Navarre); 8 (Murcia); 9 (Rioja); 10 (Madrid); 11 (Extremadura); 12 (Galicia); 13 (Balearic Islands); 14 (Canary Islands); 15 (Asturias); 16 (Cantabria); 17 (Basque Country).

Source: Ministerio de Agricultura (1934); Dirección General de Instituto Geográfico y Estadístico (1932).

Agrarian cooperatives emerged a few decades after consumers' cooperatives, in the late 19th century, in several Spanish regions, and were later to become the most common type of cooperative, although they were still less common than in other European countries (Fernández, 2014a: 686). In 1907 there were 433 agrarian syndicates, and by 1915 there were 1,530 (Garrido, 1996). By 1923, the number of agrarian cooperatives had soared to over 5,000, with a total of nearly 400,000 members (Ministerio de Fomento, 1923), that is, around 12% of the agricultural population (Beltrán, 2012: 512). These figures remained stable until the beginning of the Civil War in 1936. In the agrarian case, Catalonia did not predominate as clearly as with regard to urban cooperatives, which is not to say that agrarian cooperatives did not have an important presence in the region (Map 2). In 1933, there were 540 agrarian cooperatives in Catalonia (12.7% of a total of 4,266), second only to Castile and León (Ministerio de Agricultura, 1923). The present case study, therefore, analyses the Spanish region where

cooperativism developed earliest and where the cooperative movement played the greatest role until the late 1930s.

4. Data and sources

Before evaluating the strong presence of cooperativism in Catalonia between 1860 and 1938, we must present data and sources. Cooperativism is here measured on the basis of a binary variable that expresses the creation of new cooperatives in the 1,061 municipalities into which Catalonia was divided in the 1930s. Seven chronological periods will be defined, based on the publication of population censuses (1860-76; 1877-86; 1887-1899; 1900-1909; 1910-19; 1920-29; 1930-39). This variable is based on the cooperative atlas of Catalonia compiled by Celada (1989). In the late 1980s, this researcher undertook the consultation of numerous primary sources in public and private archives on the initiative of the *Confederació de Cooperatives Catalana* (Confederation of Catalanian Cooperatives). The purpose of this study was to carry out a census of cooperative associations and to define the geographical and chronological coordinates of cooperativism in Catalonia from a historical perspective.

These sources include the following information concerning cooperatives in Catalanian municipalities for the period 1860-1939: name of the cooperative; geographical area; type of association; date of creation (and dissolution, where applicable); and, date of the first and last documents pertaining to the association. The foundation and dissolution dates provide crucial information with regard to the longevity of these institutions; whenever the foundation and dissolution dates are not available (which is especially common concerning the date of dissolution), we have used the date of the first and last records.³ The time-period under consideration has been determined by the nature of our sources but also by the fact that, with the triumph of Francoism, these associations were forcefully integrated into the regime's corporatist structure, and the emergence of cooperatives was no longer spontaneous, but a state-driven process (Medina Albaladejo, 2015; Medina-Albaladejo and Menzani, 2017; Planas and Medina-Albaladejo, 2017).

However, the sources have shortcomings that cannot be ignored. For instance, some associations are mentioned in more than one record, but with slight changes in their name, which led Celada to regard them as two different organisations. In other

³ Of a total sample of 2,103 cooperatives, the date of the foundation is attested in 803 cases (38.2%), and only in 10 cases this date differs from the date of the earliest record. This demonstrates that the earliest and latest records are a reliable source to estimate the longevity of Catalanian cooperatives.

cases, the association changed its name, or was disbanded only to be reorganised at a later date. We have tried to minimise this problem. Another problem is that the records often provide no foundation or dissolution date, in which case the date of the first and last documents in which the association is mentioned is used as proxy. In addition to this, Garrido (1996, 2007) argues that agrarian cooperatives could be a poor indicator of the penetration of cooperativism, because Catholic activists, in order to spread anti-socialist propaganda, often made up ‘fictitious’ associations. We have tried to minimise this problem by regarding associations whose earliest and latest mentions fall in the same year, or simply in which one of the two dates is not mentioned in the record, as suspicious. Of the 870 agrarian cooperatives in the sample, only 148 (17%) have been thus identified; this problem does not invalidate the analysis, but it must nevertheless be taken into consideration. These associations have not been directly removed from the sample because there is no documentary proof that any of them was one of Garrido’s ‘fictitious’ cooperatives.

Table 1 presents the statistical summary. Celada’s data indicate that 2,235 cooperatives were created during the period under scrutiny, but after purging duplicates and removing associations which did not have a clear cooperative character, we obtain a final figure of 2,103. The final sample includes 2,093 associations, because 10 cooperatives were impossible to pin down geographically. Of the total, 870 (41.6%) cooperatives had an agrarian nature and 1,223 (58.4%) were non agrarian; within this second group, the most common were consumers’ cooperatives (38.8%), production cooperatives (11.7%) and housing cooperatives (2.2%).

Table 1. Statistical summary

Period	Total cooperatives		Agricultural coops		Other cooperatives	
	Total	Sample	Total	Sample	Total	Sample
1860-76	26	26	0	0	26	26
1877-86	19	19	0	0	19	19
1887-99	172	172	27	27	145	145
1900-09	280	279	102	101	178	178
1910-19	657	655	348	346	309	309
1920-29	402	395	176	174	226	221
1930-39	547	547	222	222	325	325
TOTAL	2.103	2.093	875	870	1.228	1.223

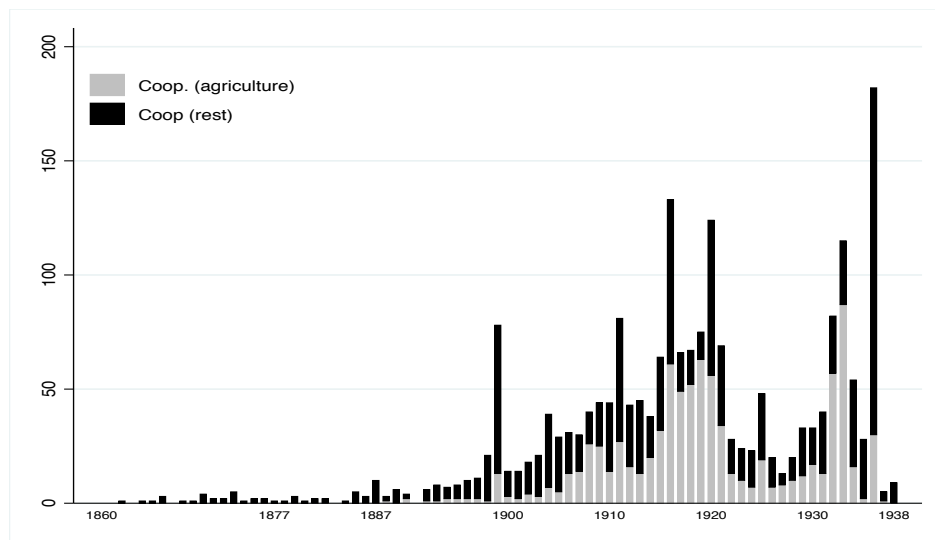
Source: Celada (1989).

Figure 1 illustrates the creation of cooperatives in Catalonia during our time period. In general, we can speak about two major phases. The first, between the late 19th

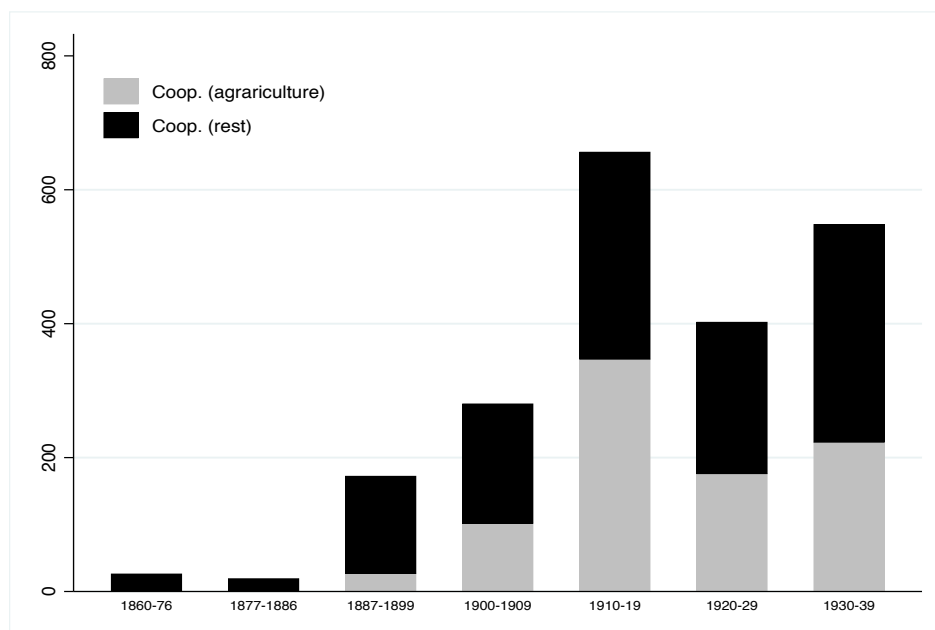
century and the 1920s, and especially after World War One, was a trend that mirrors developments in the rest of Europe. The scarcity and inflation brought about by the war led to the deterioration of living conditions and a reduction of purchasing power, incentivising the creation of cooperative associations (Brazda and Schediwy, 1989: 17). This trend affected urban and rural (or agrarian) cooperatives equally, although the first urban cooperatives predated the emergence of the earliest agrarian cooperatives by nearly three decades.

Figure 1. New cooperatives created in Catalonia, 1860-1939, by years and census periods.

1a Years



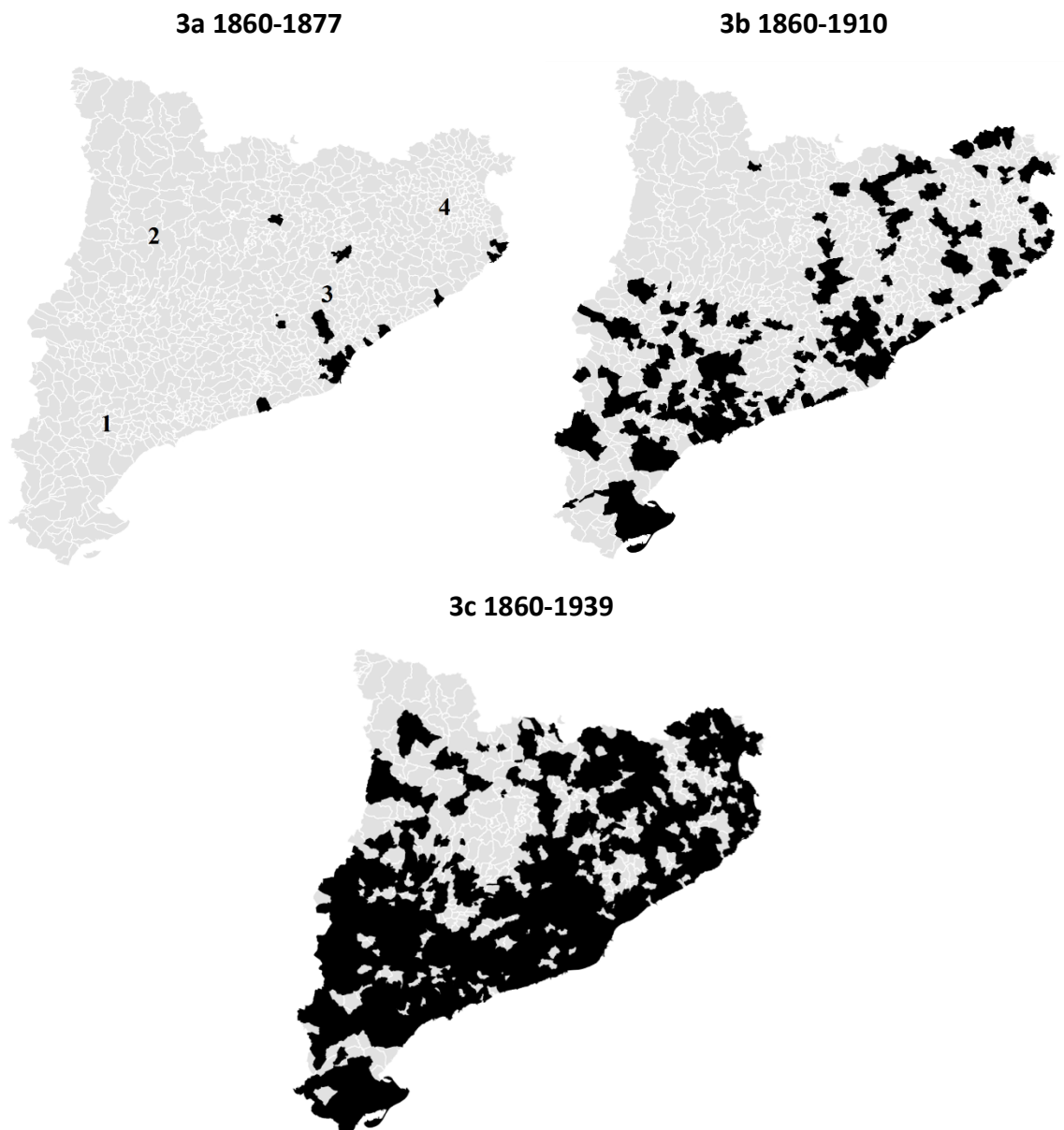
1b Census periods



Source: Celada (1989).

This trend of growth came to an end between 1921 and 1931, a period characterised by the consolidation of cooperatives founded in the previous period, rather than by the creation of new associations, this including Catholic agrarian cooperatives. The second wave took place during the 1930s, in a context of economic crisis and the proclamation of the Second Republic, a period during which left-wing parties and trade unions held substantial power, contributing to the formation of Republican cooperative associations.

Map 3. Spread of the cooperatives in Catalonia, 1860-1939, by municipalities.



Note: The maps show the current municipalities, while the data has been worked following the municipal structure of the Spanish Second Republic (1931-1936). So they have been adjusted to the different municipal changes produced since the 1930s until today, especially in the Pyrenean counties of the provinces of Lérida and Gerona.

Catalonian provinces: 1 (Tarragona); 2 (Lérida); 3 (Barcelona); 4 (Gerona).

Source: Celada (1989).

Map 3 presents municipalities in which at least one cooperative was created between 1860 and 1939. The map confirms that cooperatives were especially common in the coastal and metropolitan areas of Gerona and Barcelona. From there, cooperativism expanded towards the hinterlands of Barcelona, Gerona and Tarragona, while the number of cooperatives in Lérida remained low. We shall make a quantitative analysis of this data shortly.

5. Methodology

Given the nature of our data, we estimate a non-linear model where the dependent variable is a binary indicator. Specifically, we use a random effect probit model, which models the impact of different variables on the probability that at least one cooperative will be created in a given municipality during one census period. The model is expressed by the following equation:

$$P(Y_{it} = 1 | Z_{it}) = \Phi(\alpha + Z_{it}\gamma + c_i) \quad (1)$$

where Y_{it} takes the value of 1 if at least one cooperative is created in municipality i during the period t , and 0 otherwise. Z_{it} is a vector of observable characteristics of the municipality, c_i the individual effect that does not change over time (non-observable heterogeneity) and Φ is the normal distribution function. The time-waves have been defined according to census dates (Junta General de Estadística, 1863; Dirección General de Instituto Geográfico y Estadístico, 1883, 1891, 1902, 1913, 1922, 1932).

Explicative variables

Among the observable characteristics of the municipality, the model takes into consideration local variables that may affect the ability of local inhabitants to act collectively by creating cooperative associations. These variables include male population density (*Popden*), the percentage of illiterate men (*Illiteracy*), the altitude of the municipality, in logarithmic terms (*Altitude*) and, per capita wealth (*Wealth*). The data concerning male population and illiteracy has been extracted from population censuses. Only men have been considered, as the vast majority of cooperative-members were male and women-members were generally the widows or daughters of deceased members. Altitude and size of urban area data have been extracted from the official website of Catalonia's statistical office⁴. Low population density, high illiteracy and

⁴ <https://www.idescat.cat/emex/?lang=es>

high altitude are detrimental to collective action, hampering the formation of cooperatives. Low population density and high altitudes are conducive to isolation, making the spread of knowledge and information more difficult. These conditions also reduce agrarian productivity and increase production costs, disincentivising the formation of cooperatives where there was not enough critical mass for these organisations to be profitable and offer good returns to their members, due to the high initial investment required. Greater distance to urban centres would also result in higher transportation costs (Simpson, 2000). Low levels of human capital hindered the diffusion of information and participation in cooperatives, whose members needed to be able to read in order to participate actively and meaningfully in the management of the association (Henriksen, 1999; Svendsen and Svendsen, 2004; Martínez-Soto *et al.*, 2012).

Wealth per capita (*Wealth*) has been calculated on the basis of the land tax paid by each landowner. These data have been extracted from the official gazettes of the provinces of Barcelona, Gerona, Lérida and Tarragona. High per capita wealth may have been indicative of the concentration of large properties, urban or rural, in a few hands. This disincentivised cooperation, as cooperatives were largely joined by industrial workers (consumers' and production cooperatives) and small-and-medium landholders (agrarian cooperatives) (Simpson, 2000; Garrido, 1996, 2007). Large landowners had neither the incentive nor the need to cooperate to improve their access to basic products or to obtain better prices for their products, as they were in a strong negotiating position at the local market level, in contrast with industrial workers and small-and-medium landholders.

Distance and communication indicators are also used as explanatory variables: the walking distance to Barcelona (*Hours_bcn*) in logarithmic terms. Barcelona stands as the major urban centre and main maritime harbour in the region, in which cooperativism began earliest and with greatest intensity (Frígola, 1824)⁵. Moreover, we include the log of the distance in kilometres to the rail network (*Dist_rw*) in each of the periods under analysis (Franch-Auladell *et al.*, 2013, 2014). The railway was one of the main means of communication with urban centres. We have also calculated the possible spatial peer-effect. More specifically, this variable (*Peer effect*) represents the percentage of municipalities in the same county⁶ in which at least one cooperative was

⁵ The data provided by Frígola (1824) have been complemented with data extracted from Google Maps (<https://www.google.es/maps/>).

⁶ The spatial unit of analysis that we use here is “comarca”. A “comarca” is a group of municipalities, which is equivalent to a US or UK “county”.

created in any given period. A lagged factor will be applied, in order to reflect that this peer-effect and diffusion of information in general are not immediate processes.

Various variables have been used to measure the stock of social capital: following Beltrán (2012) and Garrido (2014), we have used data on common-pool resources (*commons*) or irrigation systems (*Irrig. system*) managed by collective institutions, such as irrigator communities in the late 19th and early 20th centuries (ICONA, 1993; La Gaceta de Madrid, 1897; Junta Consultiva Agronómica, 1918). The evidence on commons presents several problems. For instance, it relates to a period following processes of confiscation that saw some municipalities lose their common land to private owners throughout the 19th century. In addition, measuring ‘traditional social capital’ through the identification of communal property is riddled with other problems that must not be ignored, especially in Catalonia. Publicly-owned rural land included in the public-property registers was not necessarily free to use, as local oligarchies might have secured privileged access to the resource. That is, not all common land was publicly available. Conversely, some privately-owned land might have been publicly available for certain uses. The catalogue of common rural land of 1901 (ICONA, 1993) includes some examples of State- or privately-owned land, the use of which was open to the community,⁷ and it is very likely that more examples exist. The lack of visibility of these communal practices, which involved the exercising of traditional rights not supported by documents, is related to the evolution of property rights over time. As argued by Congost, Pellicer and Serrano among others, from the 18th century onwards the Real Audiencia authorised the enclosure of common land in favour of the emerging elites, leading to the reduction and even the suppression of collective rights; this process of land appropriation had to face the opposition of local communities (Bosch, Congost and Gifre, 1999; Congost, 2007; Pellicer, 2007; Serrano, 2016). At any rate, the absence of references to publicly-owned land in Catalanian municipalities does not mean that some resources were not exploited collectively. As such, it is likely that communal property existed that is not expressed in the record.

⁷ This register lists several rural areas owned by the state in Lérida (n° 4, 14, 16 and 17) in the municipalities of Ars, Pallerols and Tardente, which could be used by the residents for grazing, firewood and timber. In the municipality of Claverol, Mount Bayarri (n° 221) was listed as belonging to the town of Sosis, but the right-of-use was owned by the Dukes of Medinaceli, who received an annual fee paid by the residents. The register also records that the towns of Peramea and Pujal held rights over firewood and grazing, but the livestock were not allowed to stay overnight on the land (ICONA, 1993: 431). In the municipalities of Vilech and Estaná, Mount Llobateras (n° 313) was listed as belonging to Obra Pia de la Seo de Urgell, but the residents of the two towns could walk and graze their animals there, as well as collecting firewood and timber (ICONA, 1993: 443).

Table 2. Descriptive statistics of explanatory variables.

Variable	Mean	Std. Dev.	Min.	Max.
<i>Local conditions</i>				
Popden	0.408	0.873	0.009	15.222
Illiteracy	0.535	0.187	0.081	0.979
Altitude (logs)	5.526	1.245	1.099	7.339
Wealth (logs)	4.628	0.514	2.286	8.076
<i>Diffusion variables</i>				
Hours_bcn (logs)	3.056	0.675	0.262	5.501
Dist_rw (logs)	2.405	1.251	0	5.038
Peer effect (logs)	0.121	0.157	0	0.857
<i>Social capital</i>				
Royal jurisd. [0,1]	0.355	0.479	0	1
Irrig. system [0,1]	0.287	0.453	0	1
Commons [0,1]	0.186	0.389	0	1
Crc_1859	2.067	0.738	0.670	5.530
Cic_1862	10.278	7.540	0.690	58.820

Source: see text.

In order to overcome these problems, we have tried to complement this information with other indicators, such as the kind of jurisdiction which applied to each land-holding (royal, secular lordship or ecclesiastical lordship) (Frígola, 1824). A dummy variable (*Royal jurisd.*) follows the hypothesis that land which did not belong directly to the crown was more likely to pass from public to private hands, reducing the stock of social capital and, therefore, the propensity to cooperate. On the other hand, while the jurisdiction of a secular lord did not necessarily lead to private appropriation, the claim of the *Real Audiencia de Cataluña* (Royal Audience of Catalonia) ('No land without lord', rather than 'No lord without deed') played to the advantage of lords, both under ecclesiastical (e.g in Cervià de Ter, as analysed by Congost) and aristocratic jurisdictions. This drove the land into the hands of lords, regardless of whether communal rights applied (Congost, 2000, 2002). Summing up, land which did not belong directly to the crown was more prone to become private property, but could remain open to the use of local residents.

In addition, as factors influencing the probability to form a cooperative we also consider the number of criminal (*Crc_1859*) and civil cases (*Cic_1866*) per 1,000 male

inhabitants in the second half of the 19th century (Ministerio de Gracia y Justicia, 1859, 1866). It is assumed that areas with less conflict had more social capital (Fernández, 2014a). Ideally, we should have been able to use a variable to calculate urban social capital, for instance the number of guilds in existence before the collapse of the *Ancien Régime*, but this information is yet not available for the Catalan provinces.

Finally, in a second specification we estimate a dynamic model, in which the probability of a cooperative emerging in a given period depends on its previous history. This determines whether the spatial distribution of cooperativism is persistent over time. Table 2 illustrates the descriptive statistics of the explicative variables.

6. Results

Table 3 presents the econometric results for different specifications of the equation (1). Alongside the average marginal effects, the table presents standard errors. The estimated marginal values represent the effect of an infinitesimal change in the explanatory variable on the probability that in a municipality at least a new cooperative emerged during one time-period. In addition to the variables described above, all specifications, although not reported, include dummies for province and census-periods. The former captures specific effects affecting all municipalities that belong to the same province, and the latter try to capture cyclical shocks affecting all municipalities within the same time period.

Model 1 estimates the effect of local conditions on the probability that at least one cooperative is created in a municipality in a given period. High population densities, high literacy rates and lower altitudes increase the probability of cooperatives being created. Conversely, higher wealth per capita decreases the probability of cooperatives being founded.

Model 2 considers knowledge dissemination-related variables in addition to local conditions. The nearer municipalities are to either Barcelona or the railway network (which expanded substantially during the period under consideration), the more likely they are to witness the foundation of a cooperative. Model 3 also incorporates the peer effect. It is interesting to assess whether the creation of cooperatives in a given county during a given period increases the probability of cooperatives being created in other municipalities of the same county in the following period. The results of Model 3 suggest that the peer-spillover effect played a significant part in the dissemination of cooperativism.

Table 3: Determinants of the creation of new cooperatives in Catalonia, 1860-1939

	Model 1	Model 2	Model 3	Model 4	Model 5
	dy/dx (se)	dy/dx (se)	dy/dx (se)	dy/dx (se)	dy/dx (se)
<i>Local conditions</i>					
Popden	0.022*** (0.006)	0.018*** (0.005)	0.022*** (0.006)	0.021*** (0.006)	0.022*** (0.006)
Illiteracy	-0.156*** (0.036)	-0.132*** (0.036)	-0.149*** (0.040)	-0.172*** (0.041)	-0.171*** (0.041)
Altitude (logs)	-0.035*** (0.004)	-0.023*** (0.004)	-0.025*** (0.005)	-0.023*** (0.005)	-0.024*** (0.005)
Wealth (logs)	-0.084*** (0.010)	-0.088*** (0.010)	-0.096*** (0.011)	-0.095*** (0.011)	-0.097*** (0.012)
<i>Diffusion variables</i>					
Hours_Bcn (logs)		-0.032*** (0.010)	-0.028** (0.011)	-0.026** (0.011)	-0.027** (0.012)
Dist_rw (logs)		-0.022*** (0.005)	-0.022*** (0.006)	-0.019*** (0.006)	-0.020*** (0.006)
Peer effect (logs)			0.116*** (0.038)	0.115*** (0.037)	0.120*** (0.038)
<i>Social capital</i>					
Royal jurisd. [0,1]				-0.0002 (0.011)	-0.0003 (0.011)
Irrig. system [0,1]				0.035*** (0.013)	0.035*** (0.013)
Commons [0,1]				-0.023 (0.017)	-0.023 (0.017)
Crc_1859				0.006 (0.009)	0.006 (0.009)
Cic_1862				-0.003*** (0.001)	-0.003*** (0.001)
<i>Persistence</i>					
Y _{t-1}					-0.018 (0.016)
Province effects	Yes	Yes	Yes	Yes	Yes
Time effects	Yes	Yes	Yes	Yes	Yes
Observations	7.365	7.365	6.313	6.313	6.313
Chi2	842.2	922.3	836.2	852.9	801.7
Log likelihood	-2254.01	-2230.86	-2176.06	-2167.52	-2166.76

Note: All estimates include the corresponding temporal and provincial dummy variables. Y_{t-1} represents the dependent variable lagged by one period. Standard errors are robust.

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

Source: see text.

Model 4 also incorporates the effect of social capital on the geographical diffusion of cooperatives in Catalonia. Of the five social capital-related variables, only two are statistically significant: the presence of irrigation systems managed by collective institutions (such as irrigator communities of the late 19th and the early 20th century) increases the probability of cooperatives being created. Conversely, a high number of civil legal cases in a given municipality decreases the probability of

cooperatives being created. However, the presence of communal land in the municipality, the applicable jurisdiction of application in the municipality and the number of criminal cases have no significant impact on the probability of cooperativism.

Finally, the last column on Table 3 illustrates Model 5, which incorporates the lagged dependent variable. The aim of this specification is to assess whether cooperativism was persistent over time, that is, whether the creation of a cooperative in a municipality during a given time-span has any effect on the creation of cooperatives in the same municipality in subsequent periods. As the table suggests, the marginal effect of this variable is not statistically significant, so we may conclude that the diffusion of cooperativism in Catalonia was not a persistent phenomenon.

7. Discussion

As the section on results shows, local conditions are an important explanatory factor of cooperativism. High population densities, high literacy and low altitude incentivised cooperativism. Consumers' and production cooperatives were largely created in urban and industrial areas, where there was a high population density and socioeconomic conditions were conducive to the formation of cooperatives. These municipalities were characterised by a high proportion of low-income industrial workers, who joined cooperatives in order to increase their purchasing power and access better food and healthcare, cultural and recreational services, which they could not count on the public administration to provide (Robertson, 2010, 2012; Samy, 2012; Medina-Albaladejo and Pujol, 2014; Jackson, 2016; Watts, 2017; Medina-Albaladejo, 2017). Also, agrarian cooperatives emerged preferentially in areas with a high population density and lower altitude in the provinces of Barcelona and Tarragona. These were more fertile areas, less geographically isolated and better connected to major urban centres (Frígola, 1824; Dirección General de Agricultura, Industria y Comercio, 1891). This encouraged the creation of cooperatives; agricultural production sufficed for these organisations to be profitable, despite the high initial investment required, while lower transport costs provided better access to urban markets (Simpson, 2000). This explains the smaller impact of cooperativism in the province of Lérida (see Map 3), especially in the higher areas of the Pyrenees, where agricultural yields were lower than in the coastal areas during the 19th century (Dirección General de Agricultura, Industria y Comercio, 1891).

Wealth per capita is a significant variable. Concerning urban cooperatives, low per capita wealth may reflect a high proportion of low-income industrial workers, the social group more likely to join consumers' and production cooperatives, a consequence of the process of urbanisation and industrialisation undergone by Catalonia during the period under consideration.⁸ Concerning agrarian cooperatives, as pointed out by various authors (Simpson, 2000), cooperatives were more common in the areas in which small and medium holdings predominated, as they guaranteed the sale of produce, exploited economies of scale and improved the bargaining position of agriculturalists (Simpson, 2000).

Literacy levels also appear to have been a significant factor, as argued by Henriksen (1999), Martínez-Soto *et al.* (2012) and Garrido (2014). Literacy facilitated cooperation; cooperativism was a new associative model, which required members to understand and get involved in decision-making. Management cadres were not professional, but were constituted by members, and some decisions, such as the distribution of dividends, social assistance and – in the case of agrarian cooperatives – negotiations concerning the price of raw materials required a minimum level of literacy and mathematical skills.⁹

One variable related to local conditions that deserves deeper analysis is the stock of social capital. Authors such as Beltrán (2012) paved the way for this line of research, by emphasising the important role played by pre-existing collective institutions, such as irrigator communities, for the management of common-pool resources. At the local level, the existing stock of social capital was a crucial variable explaining the propensity to cooperate. This reflects the positive and statistically significant correlation between the existence of irrigation systems and the formation of cooperatives. The correlation is not so clear concerning communal property. This difference may be explained by Catalonia's peculiar circumstances, already mentioned in the methodological section, and by the fact that the sources used provide information about common land only in

⁸ For example, some of the most important consumers' cooperatives in Barcelona. 70% of the new members of the cooperative Pau i Justícia in the period 1900-1934 were industrial workers, miners, small farmers and construction workers. In La Vanguardia Obrera (Barcelona), between 1894 and 1930, 57% of members belonged to these categories, compared to 75% in Cooperativa de Súria (Barcelona, 1916-1938) and 93% in El Respeto Mutuo (Hospitalet de Llobregat, Barcelona, 1910-1937). Archivo Municipal de Barcelona (AMB), Cooperativa Pau i Justícia, *Registro de socios*; Archivo de la Fundació Roca i Galés (AFRG), Cooperativa la Vanguardia Obrera, *Registro de socios*; Archivo Municipal de Súria (AMS), Unió de Cooperadors de Súria, *Registro de Socios*; Archivo Municipal de L'Hospitalet de Llobregat (AMLL), Cooperativa El Respeto Mutuo, *Registro de socios*.

⁹ Nearly all (94%) new members of the consumers' cooperative Pau i Justícia (Barcelona) in the period 1900-1934 could read and write. The figures for Vanguardia Obrera (Barcelona) are very similar. AMB, Cooperativa Pau i Justícia, *Registro de socios*; AFRG, Cooperativa la Vanguardia Obrera, *Registro de socios*.

the aftermath of the confiscation processes that affected collectively managed properties in Spain during the 19th century. As a result, most of the remaining common properties were located in high-altitude areas in the province of L rida, which suffered from higher illiteracy rates, were more sparsely populated and had less access to urban markets.

The problems involved in measuring social capital have been tackled by incorporating new variables. The type of jurisdiction that applied to each municipality does not seem to have affected the presence of common land, and therefore the propensity to cooperate. However, the number of civil and criminal cases (per 1,000 inhabitants) in the second half of the 19th century seems to be a more significant variable. Other authors have used similar variables, such as the number of homicides (Fern ndez, 2014a), at the national scale, with interesting results. The number of criminal cases seems to have had little effect on the foundation of cooperatives, but that of civil cases appears to be more significant in this regard. In criminal cases, owing to their seriousness, the victim did not have the option not to bring the matter to court. These cases were, in addition, more common in urban areas, which may bring an element of distortion to the analysis. Civil cases, on the other hand, were fully voluntary, where the litigants chose to put a conflict forward to arbitration by the court system. Fewer such cases may reflect the existence of interpersonal relationships (social capital) that allowed for conflicts to be resolved without the need to appeal to external arbitration. In summary, the results suggest that pre-existing social capital was conducive to a greater propensity towards cooperativism.

The human capital variable can also be used to indirectly measure social capital, as literacy rates can be directly related to the availability of communal goods and services. Until the 1900s, education expenditure in Spain depended on local authorities (teachers' salaries, school buildings, school equipment), and often these expenses were met with the revenues generated by communal property (Iriarte, 2001; Beltr n, 2013).

In summary, local conditions, including the stock of existing social capital, are crucial variables for understanding the diffusion of cooperativism in Catalonia. However, if the penetration of cooperativism had depended solely on local factors, it would have emerged simultaneously in different locations, and no difference would exist between urban and rural areas. Map 3 illustrates that this was not the case, and that the process of expansion of cooperativism followed a very clear pattern, in well-defined stages; the first cooperatives to emerge, in the coastal areas of Barcelona and the south of Gerona, were consumers' and production cooperatives, which rapidly expanded to the metropolitan areas of the provincial capital and the industrial and urban districts.

Cooperativism (in the shape of agrarian cooperatives) only reached the rural areas of the interior three decades later. The process of diffusion was radial, the peer-spillover effect playing a crucial role in the expansion of the model towards the interior, with urban centres acting as main transmission nodes. That is, starting in Barcelona and the coast, cooperativism expanded towards the interior through the provincial and district capitals.

The three knowledge spillover variables of the model yield similar results. The distance between the municipality and either Barcelona or major communication routes (railways) is a key factor to explain the probability that a cooperative would be founded in a given municipality. Also significant is the percentage of municipalities with cooperatives in the same district, leading to what we have defined as the peer-spillover effect. Before committing to cooperate, consumers, workers and agriculturalists needed to know what cooperatives were and what options they presented. As such, the transmission of information and the transference of knowledge from urban to rural areas was another key factor in the process of dissemination of cooperativism. Municipalities which were closest to urban centres, other municipalities where cooperatives already existed or to major communication routes, were those in which cooperatives emerged earliest, owing to the diffusion of knowledge and the existence of the necessary local conditions. Conversely, people living in more isolated municipalities presented less propensity to cooperate, even if the local conditions were favourable, mainly because external ideas and people did not arrive so easily.

The persistence variable is not statistically significant, that is, the fact that a cooperative organisation existed in a given municipality during one period does not affect the probability of a cooperative being created in that municipality in the following time-span. It may be argued that this is because new associations were not needed because there were already one or more consolidated cooperatives in place. That is, in municipalities whose residents had a greater propensity towards cooperation, cooperatives were not only founded but remained active over time. This suggests that the diffusion process was mainly determined by geographical, rather than chronological factors.

Finally, we should mention migration from the rural to the urban setting. Research has shown that the areas in which communal property was most common in Catalonia in the late 19th century were the rural districts of northern Lérida, which were also the districts in which cooperativism had less presence. In these years, characterised by the acceleration of industrialisation and urbanisation processes, there were important movements of population between the rural areas of Catalonia's interior and other

Spanish regions and the urban and industrial centres of Barcelona (Silvestre, 2005). These people had a propensity to cooperate, as they came from areas with a high stock of social capital, but they may not have previously taken part in the cooperative movement owing to unfavourable local conditions or, simply, a lack of knowledge of the cooperative model. However, after emigrating, they may have cooperated as a way to adapt to unfamiliar urban conditions, after learning about the possibilities offered by the new associative models that had emerged in Europe and were rapidly penetrating Catalan urban and industrial centres.¹⁰

8. Conclusions

In recent years, the literature has emphasised the importance of various factors in the emergence of cooperatives, and therefore in the greater propensity to cooperation in some areas over others. Historiography has largely focused on agrarian cooperatives, establishing that the proportion of small and medium landholdings, literacy rates, distance to major markets, institutional factors and the stock of social capital played a crucial role in the diffusion process of cooperativism. For this reason, in order to examine the development of cooperativism in Catalonia between 1860 and 1939, we have analysed these factors quantitatively while testing other variables with which to gain a better understanding of the issue. The analysis has focused on the local level, and has taken into consideration all cooperatives, irrespective of type, as any kind of associative organisation reflects the population's propensity to cooperate.

Our first conclusion is that local conditions, especially of social and human capital, are a key factor in the population's propensity to cooperate and, therefore, in the foundation of cooperatives, as previous studies already suggest. However, it needs to be taken into consideration that the process of expansion of cooperativism was chronologically, geographically and typologically uneven, which means that local conditions were not the only factor at play.

As we have had the opportunity to analyse at length, the diffusion of cooperativism in Catalonia took place progressively, following a radial pattern. The movement emerged around the city of Barcelona and extended towards the coastal and metropolitan areas; these were the most thoroughly urbanised and industrialised regions in Catalonia (and in Spain), and cooperatives had an urban nature (consumers' and

¹⁰ In the period 1900-1934, 55% of the members of the cooperative Pau i Justícia (Barcelona) were from other regions of Catalonia and Spain, especially Aragon and Valencia. In a cooperative created in Súria (Barcelona), a small mining town, the proportion of non-local members was of 75%. AMB, *Cooperativa Pau i Justícia, Registro de socios*; AMS, *Unió de Cooperadors de Súria, Registro de Socios*.

production). Nearly three decades later, cooperativism began expanding towards the interior, with the emergence of the first agrarian cooperatives, with provincial and district capitals acting as catalysts of the peer effect. For consumers, workers or farmers to join a cooperative, first they needed to know what it was and how it worked, so municipalities that were closer to and better connected with larger centres were more likely to host a cooperative than were relatively isolated areas, to which the transmission of external ideas, knowledge and people was more difficult. Once the idea of cooperativism spilled out of the urban centres into the rural areas, local conditions determined the propensity of the local population to cooperate. Once information and knowledge about the new collective model had spread, local conditions came into play. Local conditions and knowledge transfer are closely related to the expansion of cooperativism.

In conclusion, the urban and rural areas did not operate in isolation from one another, but there was a close connection between the two, so local conditions were not the only variables that affected the presence of cooperatives. Other significant variables were the geographical location of the municipality and the communication routes with the main urban centres where cooperativism had emerged earliest. This process of transmission of knowledge, therefore, also played a crucial role in the dissemination of cooperativism, and was an important factor in the propensity to cooperate presented by the inhabitants of a given municipality.

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