

DOCUMENTS DE TREBALL
DE LA FACULTAT D'ECONOMIA I EMPRESA

Col·lecció d'Economia

E09/234

An investment social network beside the Banco de Barcelona, an unusual case?¹

Raimon Soler, Yolanda Blasco, Marc Badia-Miró, Sergi Lozano

Adreça correspondència:

Raimon Soler
Facultat d'Economia i Empresa (UB)
Diagonal 640, 08040, Barcelona. Spain.
Phone: +34934021868, Fax: +34934024594. E-mail: raimonsoler@ub.edu

Yolanda Blasco
Facultat d'Economia i Empresa (UB)
Av. Diagonal 640, 08040, Barcelona
Universitat Internacional de Catalunya. Facultad de Ciencias Económicas y Sociales
(ADE) Inmaculada 22, 08017, Barcelona. Spain. E-mail: yblasco@unica.edu

Marc Badia-Miró
Universitat Oberta de Catalunya.
Av. Tibidabo, 39-43. 08035. Barcelona. Spain.
Phone: +34932542139. E-mail: mbmiro@tinet.org

Sergi Lozano
ETH Zurich, Swiss Federal Institute of Technology, UNO D11, Universitätstr. 41, 8092
Zurich, Switzerland.
E-mail: lozano.sergi@gmail.com

¹ We are very gratefully with the collaboration of the *Departament d'Història i Institucions Econòmiques de la Universitat de Barcelona* for his help and for to make possible to look up the database *Empreses i Empresaris*, which was indispensable in that research. We also be gratefully to the financial support of the project SEJ2005 - 02498 / ECON leadeb by Jordi Catalan and SEJ 2005 - 02869 / ECON leadeb by Carles Sudrià, and for the comments in the APHES congress, in Lisbon, and the suggestions in previous works of C. Sudrià, Lluís Castañeda, Alfonso Herranz, Josep Maria Benaul and Marc Prat.

Abstract

The extension of banking activities during the XIX century was mainly led by certain social groups related to commerce, which took profit from their experience and knowledge to spread their influence among the credit world. In the Spanish historiography, there are some works specifically focused on these people, but very few of them make a classification of the economic groups who led the financial modernization of Spain along the mid 19th century.

The main objective of our work is the analysis of the social group which constituted the *Banco de Barcelona* between 1844 and 1854. This institution was as important for the financial and banking history of Spain as a pioneer in their credit activity; moreover its experience served as a base for the constitution of the modern Spanish financial system.

In a society like the Catalan in mid 19th century, the confidence is an important factor to explain the investment. The appearance of new companies and its investment requirements transformed the previous guidelines. How was the behaviour of the potential investments? Did a powerful investing group grow around the bank and ascended economically throughout the central years of the 19th century? The result shows how the members of the board administration of the *Banco de Barcelona*, were concentrated in some of the groups of the whole of the Catalan economy.

Keywords: Social networks, banking formation, Barcelona. JEL Codes: N23, G21

Resum

L'extensió de les activitats bancàries al segle XIX va ser liderat per alguns grups socials connectats amb el comerç, que van treure profit de la seva experiència i coneixement per estendre la seva influència al voltant del món del crèdit. A la historiografia espanyola, hi ha un conjunt de treballs que s'han centrat en aquesta gent, però en molts pocs casos s'ha fet una classificació que permeti detectar el conjunt de grups econòmics que han liderat el procés de modernització financera de l'Espanya de mitjans del segle XIX.

El principal objectiu del treball és l'anàlisi dels grups socials que van formar el *Banco de Barcelona* entre 1844 i 1854. Aquesta institució va ser important per a la història financera i bancària d'Espanya per ser pionera en la seva activitat creditícia i d'emissió: a més, la seva experiència va servir com a base en la constitució d'un sistema financer modern a Espanya.

En una societat com la catalana de mitjans del segle XIX, la confiança era un factor important per explicar la decisió d'invertir. L'aparició de noves companyies i les seves necessitats d'inversió van transformar el comportament previ. Quin va ser el comportament dels inversors potencials? Va ser el grup que hi havia al voltant del banc el que va ascendir econòmicament en els anys centrals del segle XIX? La resposta és prou clara, els membres del consell d'administració del Banc de Barcelona formaven un grup apart dins dels grups que sorgeixen a l'economia catalana en el seu conjunt.

Paraules clau: Xarxes socials, formació bancària, Barcelona. Codis JEL: N23, G21

Introduction

The new possibilities opened by the industrialization, the development of the capital markets and their internationalization, incentivated the appearance and diffusion of the banks and the extension of the financial instruments. The investment, one of the central factors to stimulate and to consolidate the economic growth, turned out to be boosted. One of the elements that stimulated the investment was the adoption of the principle of limited responsibility. It favoured a broad participation of the investors in the constitution of firms, besides facilitating the accumulation of capital and limiting the risks. Before that, in Spain, the constitution of corporations was strongly restricted during the first half of the 19th century, being liberalized gradually from 1850. This is the framework of this paper.

The social, economical and political conditions of the 19th century, with a given level of information and communication technologies, made the investment choice to be ruled through confidence relations among investors. The economic players obtained the information through the existing social networks. Naomi Lamoreaux in her study on the impact of bank activities over industrial development, highlighted the importance of links between bank boards to explain the diffusion of the credit and the capital accumulation. These endogenous practices of insider lending, seem to play an important role in the extension of the investment and in the development of business entrepreneurship in New England at mid 19th century¹. Thus, these networks of economic and personal relations are indeed a key element to explain the development of the economy.

A social network is a social structure composed by nodes, corresponding to organizations or individuals, which are linked through different proximity variables that cover a broadly range of familiarity or economics connections.

¹ Lamoreaux (1994).

Alternatively, social networks can be understood as networks of information flows circulating through different organizations, institutions and informal spaces, which are especially significant in highly uncertain contexts facilitating the decrease of information costs².

The formation of investment networks during a period when the Spanish economy was making a huge modernization effort is very relevant. The development of the different kinds of corporations in mid 19th century had an important ally in those networks, which also had a huge influence on the characteristics of the business weaving.

Our objective is to analyse the investment social network around the members of the administration board of the *Banco de Barcelona* between 1844 and 1854 (*BB net*, from now on)³, and observe their role within the investment network resulting from the links of the most important investors in Catalonia during the first half of the 19th century (*G net*, from now on). We believe that the *BB net* was important in a double sense. It reduced the cost of information in the investment choice and made easy the control and the monitoring of their client's operations. We also think that *BB net* was a compact network and it was participated by the most important investment groups of the Catalan's economic society. In that direction, Blasco et al. (2007) had studied how the members of the *Banco de Barcelona* oriented their investment through non-industrial sectors, hypothesis corroborated by other authors⁴.

² Granovetter (1973), Wasserman and Faust (1994), Molina and Marsal (2002), Bogartti and Foster (2003)

³ We stop in 1854 because of a huge modification of the analysis framework due to important legal changes. More concretely, the laws on railroads (1855), and issue banks and credit societies (1856), pushed up the investment. Making difficult any kind of comparison with previous years.

⁴ Carles Sudrià, gathering the thesis about the role placed of the banks in the industrialization, pointed out the weakness of the banking system in Catalonia (Sudrià, 1982). New research on it uncovers that the huge industry funding were, actually, auto-funding. The bank system played a secondary role as Jordi Nadal and Enric Ribas have been said. Nadal y Ribas (1992), Soler (2000) y Prat (2006).

The use of joint investment made by two players as a criterion to draw a link among them, in the configuration of a social network is not new⁵. Certainly, this assumption on investments in public limited companies could be considered weak because the economic responsibility is limited, and the owners changed quickly. In the Catalan economy of mid 19th century, investment choices were conditioned by the reputation firms' managers and directors of the directives of the firms. Social control and confidence relations were strong to impede the investment choice as an individual act. The methodology used is similar to that one applied on the studies of the links between firms among the members of board meetings (Interlocking Directorates)⁶ that, in some cases, also study the role played by banks⁷. In fact, the study of the businesses networks formed among their board meetings, and the related power relations, have been reported in the literature on analysis of social networks for several decades,⁸.

Our main sources are the original documentation of the *Banco de Barcelona (Actas de las Juntas de Accionistas, Dirección y Gobierno)*, the printed *Memorias* of the institution and other sources of those years (basically newspapers). To identify the investments of the members of the boardroom of the bank we have used the *Base de Dades Empreses i Empresaris a la Catalunya del segle XIX del Departament d'Història i Institucions Econòmiques (Universitat de Barcelona)* (BDDHiE-UB as follows). It is built from the collection of notary's documentation of those years. We know the number of shares which were paid by the shareholders when the societies were inscribed at the notary. The notary districts of Barcelona, Girona and Tarragona between 1815 and 1866 were analysed to identify the shareholders who registered the

⁵ Similar example of linkage criteria can be found in Kramarz and Thesmar (2006), who use the *Grand Ecole* membership of the boardroom of the most important french firms, and Casson (2005) who considers market relations between firms.

⁶ Mizruchi (1996); O'Hagan y Green (2004).

⁷ Mariolis (1975); Gogel y Koenig (1981).

⁸ Allen (1974); Burt (1978); Koenig y Gogel (1981).

society and their initial investment. The resulting database includes the name of the society, the name of the first shareholders, the capital of the society and their distribution among the participants. This source has been refined many times. The result allows us to identify the same firm along the years, estimate the investment, and the new shareholders⁹. The persons and firms went to the notary for two reasons. First when the firm was funded and, later on, every time they made changes in the capital or in the social name. Thought the authors of the database built up an investment series of annual data¹⁰, we have utilised a sample in two different years (1844 – 1854). By this research, we also know who were the main investors between 1815 and 1866. To our purpose, we have selected individuals whose investments were larger than 500,000 pesetas. They were seventy-five people and investment societies (societies which invest in other societies). To build the *BB net* from investment links, we have considered all the firms where the members selected had invested, including public limited societies. Thought this criteria could be weak nowadays, we should consider that the formation of the public limited societies in the 19th century needed the promotion of renowned persons with they own investment networks.

The paper is organized as follows. In the first part, we defined the social network, its construction and its analysis. The second part presents and compares the two networks that we want to analyse (*G net* and *BB net*). Finally, we list with the main conclusions.

Social Network Analysis

Networks obtained from this sort of data are normally called bipartite networks. These kinds of networks are composed by two types of elements: Individuals and projects or organizations they belong to (or where they meet at).

⁹ A broadly description about the construction of the *Base de Dades Empreses i Empresaris a la Catalunya del segle XIX* can be found in Soler (2003).

¹⁰ Sudrià, Pascual, Castañeda (1992); Sudrià, Pascual (1999).

In our particular case, these types of elements correspond to the members of Bank directorates and the companies they decided to invest in. The most common procedure to manage with these sorts of networks is to separate them into two new networks (one for each kind of element). Consequently, we obtain two networks from our data, one of investors and another of companies. Since our goal in this work is to study the social networks between investors, we have focused on the first network.

All networks are formed by vertices (or nodes) and links (or edges). In our particular case, nodes correspond to investors, and a link between two nodes means that the connected individuals has decided to invest in the same company, at least, once. Such definitions of the edges correspond to the trust links existing between investors referred above in the introduction of the paper. Note that these trust links reveal not only a certain level of confidence, but also uncover possible information flows between investors.

Once we have built up the networks of investors corresponding to the different historical moments described above, we have analyzed them by means of methodologies borrowed from Social Network Analysis. More concretely, we have represented both networks graphically and have calculated different kinds of nodes centrality.

Graphical representations have been made using Pajek, a computational utility which is able to draw complete graphs from a list of edges between vertices. In order to reach more intuitive representations of the networks, we have drawn the links in such a way that their width indicates the intensity of the relationship between nodes (the thicker the link between two investors, the more companies they have invested in jointly). Moreover, we have used an option of Pajek which represents the less connected vertices at the periphery of the network, leaving the most connected ones in the core.

Regarding node centrality measurements, we have applied the three ones described by Freeman in (1978) namely: degree, closeness and betweenness

centralities. Although all three of them give information about the importance of vertices' position in the network, each one of them provides particular information that is worth to mention here.

First, degree centrality of a vertex is calculated by counting how many 'neighbours' does it have, that is, the number of vertices it is connected to. Looking to our networks of investors, an individual with a high degree centrality (a 'popular' investment partner) could have a privileged global vision of the economical scenario, because of his connections to very different people.

Second, to calculate betweenness centrality, we first have to obtain the shortest paths between all pairs of vertices of the network. By the shortest path we mean the shortest list of intermediaries needed to connect two nodes. For instance, if two nodes are directly connected, their shortest path has no intermediaries at all. Once all shortest paths are defined, betweenness centrality of a certain node is calculated as the ratio of critical paths he belongs to over the total critical paths existing in the network. In our case, investors with a high betweenness centrality occupied an strategically position in relation to information flows management, because their intermediate location gave them the opportunity to notice (and, probably, control) which information had arrived to whom, how and when.

Third, the closeness centrality measures the 'physical' centrality of each node in the network. The node with the highest closeness centrality is the one with the shortest (in average) paths to all other nodes in the network. In a network where linkage is strongly related to trust, like our network of investors, closeness centrality can be associated to individual social capital (seen as those potentialities of each individual due to his relationships). An individual with a high closeness centrality is 'close' to other individuals, he can easily reach them (to obtain information, ask them for a favour or propose a business, for example) involving a little number of intermediaries in the operation.

One characteristic feature of social networks is that they present a community structure, i.e. they are composed by groups or communities of individuals that are more densely connected among them than with the rest of the population. The community structure of a social network can provide useful information, not only at a strictly structural level (who are the members of each one of the communities) but also about the relation between structure and dynamics (for instance, who are the ‘gatekeepers’ of a certain community, that is, the individuals that control the interactions of the community with the rest of the network). From the large variety of methods to determine the community structure of networks such as social ones (Danon et al., 2005), in the present work we have used an algorithm proposed by Duch and Arenas in (2005).

Finally, we have also compared two networks in terms of their density. In order to do that, we have calculated two different indicators of density: Link density (Number of links divided by the total possible number of links) and clustering coefficient, which measures the density of triangles in the network (the number of neighbour that are also neighbours of a common third individual).

The investment network composed by the main actors of the Barcelona's economic society, at mid 19th century

In this part we focus in the network resulting of the main investors. We want to analyse the investment network resulting by the investment links of a random choice of persons with important investment capabilities and, in that case, study the characteristics of the network. This could allow us to see the investment behaviour of the main players of the Catalan economy, and detect

the possible existence of compact groups. The results of this exercise will be compared with the characteristics of the *BB net* studied before¹¹.

The selected group is formed by the main investors in firms of the mid 19th century¹² (we do not consider the not unipersonal firms as *Girona Hermanos*, *Catalana General de Crédito*, *Crédito Mobiliario Barcelonés o Prosperidad Catalana*¹³). The coincidence in an inversion in a firm by one or more persons is the criteria used to build the social network¹⁴.

The *G net* of the highest investors of the Catalan economy shows a usual structure in this kind of analysis (see Illustration 1). A densely nucleus with the main actors of the system. An outer ring formed by others members connected with the main actors with less densely links. A third group of persons, with weak connections, which maintains some links with the net. And, the last group, formed by the persons with no connections.

The observation of the network also emphasizes the low number of personages that do not share any investment (only a 13% of the total), that enlarges to the 33% if we are stricter and we only consider the links among individuals that share two or more investments (Illustration 2), revealing a large quantity of weak links (which only has a common investment).

¹¹ A detailed study of the investment network around the members of the board administration of the *Banco de Barcelona* see Blasco, Y.; Lozano, S. y Badia-Miró, M. (2007).

¹² Notice that the most important investor could not mean the richest one.

¹³ In this case we assign the investments of these firms to their shareholders.

¹⁴ Though Casson (2005) focused their analysis in the social networks around the markets, he thinks that the confidence among different persons could be nexus which link the parts of the network.

random explanation of all this relations. For example, Pablo Soler Morell was born in Vilanova i la Geltrú, not far from Barcelona, as José Ferrer Vidal, and the investment coincidence were in the firms participated by Ferrer's (a cotton and a water public service company). The Jover and the Herreros Buj were commercial partners in a company which sold weaves in Castilia (Moreno, 2003).

Table 1 - Index of degree, closeness and betweenness

Degree		Closeness		Betweenness	
		TINTORER		TINTORER	
VIDAL RIBAS, JOSE	0,522	PASTOR, PABLO MARIA	0,583	PASTOR, PABLO MARIA	0,074
TINTORER				SIRVENT	
PASTOR, PABLO MARIA	0,507	VIDAL RIBAS, JOSE	0,562	URGELLES, MARIANO	0,061
FABRA ILLAS, GIL		GIRONA		GUELL FERRER,	
BUENAVENTURA	0,507	AGRAFEL, IGNACIO	0,556	JUAN	0,050
GIRONA		FABRA ILLAS, GIL		LLEO TORROJA, JUAN	0,047
AGRAFEL, IGNACIO	0,478	BUENAVENTURA	0,556	GIRONA	
GIRONA		GIRONA		AGRAFEL,	
AGRAFEL,		AGRAFEL,		MANUEL	0,043
MANUEL	0,449	MANUEL	0,543		
		SIRVENT			
JOVER SANS, JOSE	0,435	URGELLES, MARIANO	0,537	FERRER VIDAL, JOSE	0,037
GIRONA					
AGRAFEL, CASIMIRO	0,435	SERRA, JOSE MARIA	0,531	SALA BRUGUES, RAMON	0,037
SIRVENT		GIRONA			
URGELLES, MARIANO	0,420	AGRAFEL, CASIMIRO	0,531	JOVER SANS, JOSE	0,035

SERRA, JOSE		JOVER SANS,		VIDAL RIBAS,	
MARIA	0,420	JOSE	0,525	JOSE	0,030
		ASCACIBAR DE		GIRONA	
CLAVE ESPAÑA,		VILLOTA,		AGRAFEL,	
MIGUEL	0,406	CELEDONIO	0,519	IGNACIO	0,029
ASCACIBAR DE				FABRA ILLAS,	
VILLOTA,		CLAVE ESPAÑA,		GIL	
CELEDONIO	0,377	MIGUEL	0,513	BUENAVENTURA	0,028
SELLER HUGUET,		SELLER HUGUET,		SERRA, JOSE	
JOSE	0,377	JOSE	0,502	MARIA	0,028
		TORRENS			
SAFONT LLUCH,		MIRALDA,		COMA, CIURO Y	
JAIME	0,362	CARLOS	0,497	CLAVELL	0,026
TORRENS				GIRONA	
MIRALDA,		SAFONT LLUCH,		AGRAFEL,	
CARLOS	0,333	JAIME	0,492	CASIMIRO	0,023
				ASCACIBAR DE	
FERRER VIDAL,		FERRER VIDAL,		VILLOTA,	
JOSE	0,319	JOSE	0,487	CELEDONIO	0,021

Source: Own elaboration from the analysis of social network. In black we consider the members of the boardroom of the *Banco de Barcelona* which, also are in the list of the main investors of the economic society at mid 19th century. Notice that Juan Güell Ferrer had low indexes in the first columns.

Though the visual study of the network permits us to have a first idea of the social connections in the network, is necessary the construction of some type of numerical indicator that facilitate the identification of the main personages inside it, that is to say, the indices of centrality presented further up.

Table 1 shows the fifteenth persons with higher indexes of centrality in this investment network. Is not strange that we find similar names in the three columns (grade, centrality and betweenness) because all this indexes indicate the

central persons of the sample, but the differences in the ranks are so interesting for the different nuance that this mean. Specially, the most important persons in the third column are in secondary places in the first and the second column. This is due to the specific role played for some persons who link different investment groups among them.

José Vidal Ribas, Pablo Maria Tintorer Pastor, Gil Buenaventura Fabra Illas, Ignacio Girona Agrafel and Manuel Girona Agrafel lead the centrality list (as an indicator of the number of neighbours of every node), that is to say, those are the persons which share a higher number of investors. We also find, in an important place, the other Girona Agrafel brother, Casimiro, and other members of the board administration of the *Banco de Barcelona* as José Maria Serra and Celedonio Ascacibar de Villota (as well as Manuel Girona Agrafel). Juan Güell Ferrer, an other member is placed in a lower rank (in the first ring of the system). Those persons were important in the Catalan economy of mid 19th century. With no doubt, the most important were the Girona brothers', a family of merchants who evolve to financial and banking activities, though they participate in a lot of different type of business as the *Herrería Barcelones*, the *Ferrocarril de Barcelona a Zaragoza* or the *Canal de Urgell*. Juan Güell Ferrer, had amassed his fortune in Cuba and then went to Barcelona, at mid 30s in 19th century where he became an cotton businessman. Gil Buenaventura Fabra Illas was a Barcelona's merchant who worked in the waves sector. His nephew was the founder of an important weaves firm, *Fabra & Coats*. Pablo Maria Tintorer, José Maria Serra and Celedonio Ascacibar are not as recognised as the others but their centrality shows their importance. Jose Maria Serra and Jose Vidal Ribas, for their importance in the network and for the amount of their investment we believe that he needs a broader research of their biography¹⁶.

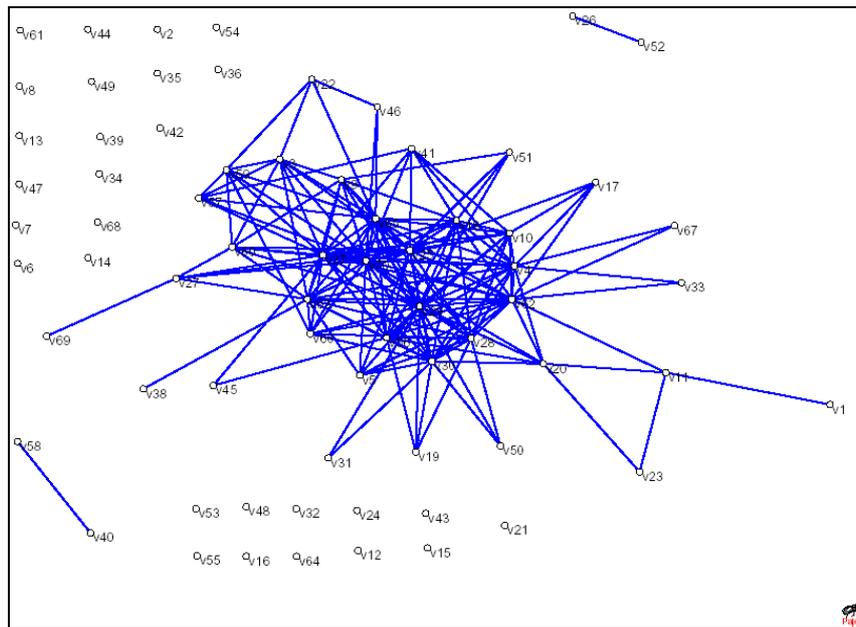
¹⁶ See Vicens y Llorens (1983), Solà (2006), Rodrigo (2006), Blasco (2006).

The column of the closeness index shows a similar ranking with the important persons in the higher places (this index is an indicator of them who were placed in the best position of the network). The differences are in the order of the ranking. Pablo Maria Tintorer Pastor and José Vidal Ribas exchanged their places, as well as Ignacio Girona Agrafel and Gil Buenaventura Fabra Illas. Manuel Girona Agrafel is in the same position but José Maria Serra and Celedonio Ascacibar de Vellota raise some positions, lost by José Jové Sans and Casimiro Girona Agrafel.

The betweenness index, used as an index of connections between the persons, who do not share investments, show more differences in the ranking. The two most important persons are also important in the previous indicators: Pablo Maria Tintorer Pastor and Mariano Sirvent Urgelles. In the third position we find the first surprise, Juan Güell Ferrer, member of the board administration of the bank up to 1948, but a secondary person in the *G net*. The explanation is that he allows that Juan Oliveras and Joaquín Gurri were connected to the network. A similar case is José Ferrer Vidal, who is also in an important place in the ranking. We have to point out that this is the indicator where the members of the boarding administration of the bank had better positions.

If we filter the initial network considering that two people will be connected only if they have two or more joint investments, the results obtained are quite significant. With this approximation we want to analyze a representative network of more intense linkages among their members (see Illustration 2).

**Illustration 2 - G net, formed by the main 75 contributors of Catalonia
(with two or more joint investments)**



Source: Own elaboration from the *BDDHiE-UB* through Pajek.

In this case, the number of persons with no links is higher. It also appears two groups with no connections with the main network but with some links among them. The first one is the group formed by Antonio López López and José Samà Mota. The second one includes José Ferrer Vidal and Fernando Puig Gibert. The second group is so interesting because puts José Ferrer Vidal in a secondary place and out of the main network. This result stress the importance in study the global network and the weakness of it. This result could be explained because they were in an early stage in their personal course. Antonio López had arrived to Barcelona in 1855, few years later were a member of the higher bourgeoisie of Barcelona and his daughter was married with Joan Güell's son. José Samà, was the manager of a firm in La Habana at the end of 1850. José Ferrer Vidal was working in Vilanova i La Geltrú between 1844 and 1854, and he finally established in Barcelona at mid 50s. The connection between López and Samà could be explained for their coincidence in the colonial trade¹⁷.

¹⁷ See Rodrigo (1998) y (2000) y Soler (2006).

In this new network appeared other secondary persons as Sebastián Aballí Prats who is linked through Salvador Bonaplata, Bartolomé Vidal Nadal linked through Pedro Juan Garriga Soler and Juan Lleó Torroja through Mariano Sirvent Urgelles.

Table 2 - Degree, closeness and betweenness centralities (two or more connections)

Degree		Closeness		Betweenness	
Vidal Ribas, José	0,333	Vidal Ribas, José	0,386	Serra, José Maria	0,043
Girona Agrafel, Ignacio	0,304	Girona Agrafel, Ignacio	0,365	Vidal Ribas, José	0,035
Jover Sans, José	0,290	Serra, José Maria	0,359	Girona Agrafel, Ignacio	0,029
Fabra Illas, Gil Buenaventura	0,290	Jover Sans, José Fabra Illas, Gil	0,359	Tintorer Pastor, Pablo Maria	0,023
Serra, José Maria	0,275	Buenaventura	0,359	Sirvent Urgelles, Mariano	0,023
Tintorer Pastor, Pablo Maria	0,275	Tintorer Pastor, Pablo Maria	0,346	Jover Sans, José	0,023
Girona Agrafel, Manuel	0,261	Girona Agrafel, Manuel	0,346	Fabra Illas, Gil Buenaventura	0,019
Sirvent Urgelles, Mariano	0,246	Sirvent Urgelles, Mariano	0,340	Colomer, José	0,019
Ascacibar de Villota, Celedonio	0,246	Ascacibar de Villota, Celedonio	0,340	Ascacibar de Villota, Celedonio	0,019
Safont Lluch, Jaime	0,217	Safont Lluch, Jaime	0,329	Girona Agrafel, Manuel	0,017

Source: Own elaboration from the analysis of social network. In black we consider the members of the boardroom of the *Banco de Barcelona* which, also are in the list of the main investors of the economic society at mid 19th century. Notice that Juan Güell Ferrer had low indexes in the first columns.

But the most interesting result in this new network is the greater role played by Jose Maria Serra. We should remember that he was a member of the board administration of the bank and, at the same time, a central member in that network.

The next step is to look the structure of the network and test the existence of some compact communities inside it, to see their characteristics (see Illustration 3). To perform the analysis and to have more reliable results, we work on the network of two or more links (the outcome of this network is stronger than in the whole network). We have been able to unbundled 70 characters into seven groups (six groups with the persons of the network, and one with the rest). The six groups are quite different between them in terms of number of members. The largest was composed of 16 members six of whom were also central members of the *G net* (José Jover Sans, Juan Lleó Torroja, Jose Seller Huguet, Mariano Sirvent Urgelles, Maria Tintorer Pablo Maria Tintorer Pastor Shepherd, Carlos Torrents Miralda and Jose Vidal Ribas).

The second group, also in terms of number of members, was composed by 10 members and would include three of the four members of the *Banco de Barcelona*. We have already talked about Celedonio Ascacibar de Villota, Juan Güell Ferrer and Jose Maria Serra. The third group was formed by the Girona's brothers, their father (Ignacio Girona Targa), and other four persons (eight persons in total). The fourth group, much less extensive, is formed by four members where the main ones were Bonaplata Salvador and Jose Colomer. Finally, we find two couples which were no connected with the main network. On the one hand, the couple formed by Antonio Lopez López and Jose Samà Mota, and on the other hand, the coupled formed by Jose Ferrer Vidal and Fernando Puig Gibert.

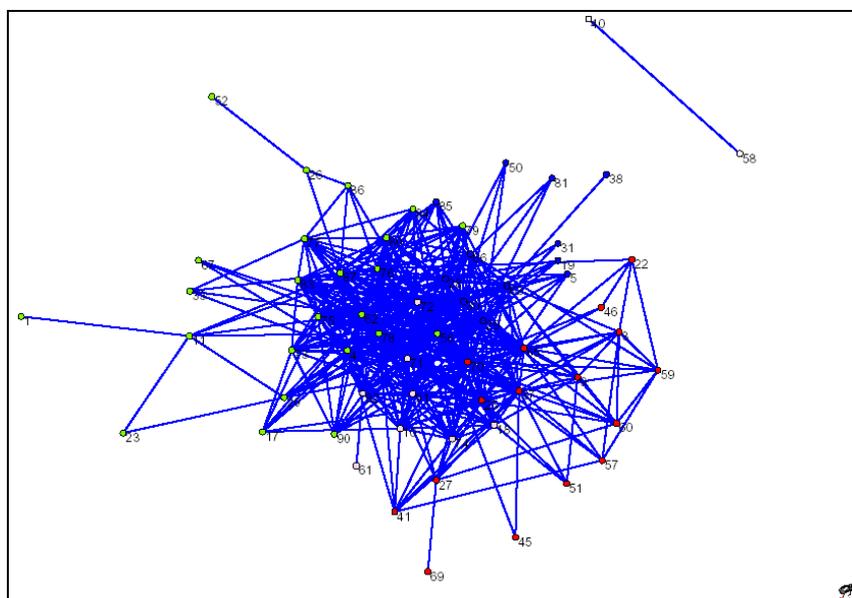
Ascacibar. The new group is composed of 24 members, 15 of whom were members of the board of *Banco de Barcelona* (three already in the network of the major contributors and twelve were new). This result shows the significant investment group that was generated around the Bank.

Another relevant data is that the group of the previous network with members of the Bank maintained his isolation, despite the inclusion of new characters. None of them seemed to have joint investments with the new members. In this case, the number of members of the group remains but there are some movements of characters. Juan Lleó Torroja, Mariano Sirvent Urgelles and Carlos Miralda Torrents had moved toward the group of Girona's brothers and Gil Buenaventura Fabra Illas, Miguel Martorell Peña and Joaquin Prats Roquer had come from the group of Güell, Ascacibar and Serra.

In the other three communities, we want to stress that Girona's brothers were still forming a compact group where the three characters came from the larger one, plus two other members of the network of the *Banco de Barcelona*, Juan Plandolit and José Montagut. The other group, which contain the remaining members of the *Banco de Barcelona* (Jose Amell, Jaime Badia, Manuel Compte, Jose Parladé and Ignacio Villavecchia), is composed of eight members, of whom more than half belongs of the new network. It is remarkable that the two of the three members of the network of the largest investors, came from the group of Serra, Güell and Ascacibar, and the third one was not part of the main network. This reinforces the important role of these three group members as an umbrella for the other ones.

At the end, we can see the couple formed by Antonio López López and José Samá Mota had not got connections with the other members of the net. Otherwise, the other couple who was alone has changed and now it is part of the group of Serra, Güell y Ascacibar (we are talking about José Ferrer Vidal and Fernando Puig Gibert).

Illustration 4 - Community analysis to the network formed by the *G net* and the members of the administration board of the Banco de Barcelona (only links with two or more joint investments)



Source: Own elaboration from the *BDDHiE-UB* through Pajek.

Based on the foregoing, we can say that the members of the *Banco de Barcelona* are not distributed randomly among the different groups emerging from the network formed by the 70 largest investors. They are grouped into two groups arising from whole network. On the other hand, there is a group formed by central figures in the overall network as Jose Vidal Ribas, Jose Jover Sans or Pablo Maria Tintorer Sans, which do not maintain joint investment with the people's Bank of Barcelona. There we also found Carlos Miralda Torrens, which sought the establishment of a financial institution after the crisis of 1848 which affected the *Banco of Barcelona*, but it ended in a bankruptcy¹⁹.

¹⁹ Arxiu Històric de la Biblioteca de Catalunya, Fons Junta de Comerç, JC XCIII 923-948.

The *Banco de Barcelona* and its investment network

In Barcelona, prior to the authorization obtained by the *Banco de Barcelona*, only three public limited companies had been formed: *Sociedad de Navegación e Industria*, established in 1841, which came from a company called *Compañía Catalana de Buques de Vapor*, formed in 1833; the *Compañía Barcelonesa de Seguros Marítimos* which was established in April of 1838 and the *Sociedad Catalana del Alumbrado por Gas* in 1843. None of them had more than 10 million pesetas of social capital, at the beginnings. The starting authorization to the *Banco the Barcelona* in 1844 marked a significant change in the scenario described above. The first evidence of this change was the magnitude of capital of the bank, which was formed by 20 million pesetas divided into 5,000 shares which enabled almost half a hundred shareholders to participate in the establishment of a bank. Its directors opted for a consensus strategy on their constitution, and to engage in its board administration at least two industrialists. Its statutes required that any shareholder would have on his property more than 100 actions, and the vote on the Boards of Shareholders was per person and not by amount of shares. This package ensured, apparently, the participation of a significant segment of the population in the constitution and operation of the Bank.

The Bank's organizational design was defined by three boards: Shareholders, the government and Management. In the first one all the Bank's shareholders voted but if they owned up of five shares. This Board elected the members of the Governing Board, which is responsible for the Bank's activity and decide its evolution. The Board of Directors elected three directors, responsible for executive tasks of the entity.

The hard core of the Bank was composed of his Presidency, 15 members elected at the General Meeting. In this first period this group was fairly compact, and also remained in the time: in 10 years 10 councillors were changed by the death, resignation or no re-election by shareholders. The significant initial

participation of shareholders, made clear that the elected persons had good reputation in the city and they enjoyed the confidence of approximately 70 to 80 shareholders who came to vote.

Tabla 1 – Members of the administration board of the *Banco de Barcelona*, 1845 – 1856

1	AMELL CARBONELL, JOSÉ	14	MONTAGUT, JUAN
2	ASCACIBAR DE VILLOTA, CELEDONIO	15	PARLADE, JOSE
3	BADIA, JAIME	16	PASCUAL INGLADA, SEBASTIAN ANTON
4	COMA MIRO, TOMAS	17	PEYRA MACH, AGUSTIN
5	COMPTE, MANUEL	18	PLANDOLIT, JOSE
6	FLAQUER PADRINES, MARIANO	19	RICART GUITART, JAIME
7	GATELL, ESTEBAN	20	ROIG ROM, MIGUEL
8	GIRONA AGRAFEL, MANUEL	21	SERRA FARRERAS, JOSE
9	GONZALVEZ DE FARIA, SERAFIN	22	SERRA FARRERAS, LEODEGARIO
10	GUELL FERRER, JUAN	23	SERRA MUÑOZ, JOSE MARIA
11	LERENA, MANUEL DE	24	TRESSERA, JUAN ANTONIO
12	LLUCH GARRIGA, MARIANO	25	VILLAVECCHIA VIANI, IGNACIO
13	MARTÍ CODOLAR, JOAQUÍN		

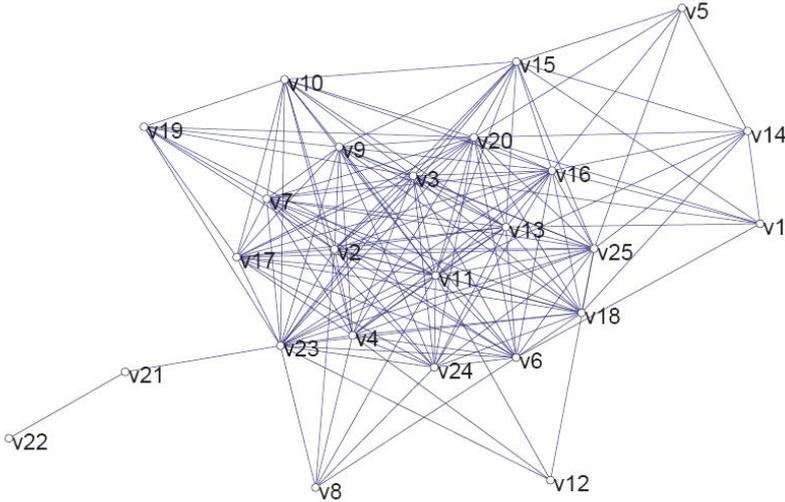
Source: Banco de Barcelona. Actas Juntas de Accionistas del Banco de Barcelona. Arxiu Històric Nacional de Catalunya. We have included all the persons who were members of the Junta de Gobierno of the Banco, though some of them were it only for some months, as Montagut.

In this paper we built a representation of the social network, from the information related to the investment participation of these people, and we have studied it through their analysis techniques. We have established that a link between two persons appears when they have made, at least, a joint investment in a single company (different from the *Banco de Barcelona* which is not

considered because it could bias the exercises). As the first exercises, this is a first step and we should study other kind of relations among the members of the economic society and filter by other characteristics as the different types of existing business, or other relationships of trust such as the sharing of the boards of administration in other companies.

To build the network investment, we considered all the persons who had been members of the Board of the Bank and the investments that performed together on the same criteria that followed in the construction of the earlier network.

Illustration 5 – Investment network of the members of the Board Administration of the *Banco de Barcelona*, 1854



Source: Own elaboration from the BDDHiE-UB through Pajek.

In Illustration 5 we can see the network emerged for joint investments by members of the Board of Directors of the Bank. From Blasco et al (2007) we can see the evolution of the network and compaction of their investments. They detect the importance and centrality of some persons, sometimes forgotten as Jose Maria Serra (also a member of the network of the largest investors), Miguel Roig i Rom and Manuel de Lerena. We also find, at preferential places,

Celedonio Ascacibar, while Juan Güell and Manuel Girona are placed in secondary positions.

Tabla 2 – Indexes of the members of the Board Administration of the *Banco de Barcelona*

Degree	Closeness	Betweenness
Lerena, Manuel	Serra, Jose	Serra, Jose
de	0,830 Maria	0,192 Maria 0,860
Roig Rom,	Serra Farreras,	Lerena, Manuel
Miguel	0,830 José	0,083 de 0,830
Serra, Jose	Lerena, Manuel	Roig Rom,
Maria	0,830 de	0,049 Miguel 0,830
Pascual Inglada,	Roig Rom,	Pascual Inglada,
Sebastián Antón	0,790 Miguel	0,049 Sebastián Antón 0,800
Ascacibar de		Ascacibar de
Villota,	Villavecchia,	Villota,
Celedonio	0,750 Ignacio	0,042 Celedonio 0,770
	Pascual Inglada,	
Badia, Jaime	0,750 Sebastián Antón	0,038 Badia, Jaime 0,770
Villavecchia,	Comas Miró,	Villavecchia,
Ignacio	0,750 Tomàs	0,021 Ignacio 0,770
Comas Miró,		Comas Miró,
Tomàs	0,710 Parladé, José	0,020 Tomàs 0,750
González de		González de
Faria, Serafín	0,710 Badia, Jaime	0,018 Faria, Serafín 0,750
Martí Codolar,	Flaquer Padrines,	Martí Codolar,
Joaquín	0,710 Mariano	0,018 Joaquín 0,750
	Ascacibar de	
Flaquer Padrines,	Villota,	Flaquer Padrines,
Mariano	0,670 Celedonio	0,017 Mariano 0,730
	Martí Codolar,	
Gatell, Esteban	0,670 Joaquín	0,012 Gatell, Esteban 0,730
Peyra Mach,	0,670 Plandolit, José	0,008 Peyra Mach, 0,730

Agustín			Agustín		
		González de			
Plandolit, José	0,630	Faria, Serafín	0,007	Plandolit, José	0,710
Tresserra, Juan		Tresserra, Juan		Tresserra, Juan	
Antonio	0,630	Antonio	0,006	Antonio	0,710
Güell Ferrer,				Güell Ferrer,	
Juan	0,540	Montagut, Juan	0,005	Juan	0,670
Parladé, José	0,540	Gatell, Esteban	0,004	Parladé, José	0,670
Ricart Guitart,		Peyra Mach,		Ricart Guitart,	
Jaime	0,380	Agustín	0,004	Jaime	0,600
		Güell Ferrer,			
Montagut, Juan	0,330	Juan	0,003	Montagut, Juan	0,560
Amell Carbonell,		Amell Carbonell,		Girona Agrafel,	
José	0,290	José	0,002	Manuel	0,550
Girona Agrafel,				Amell Carbonell,	
Manuel	0,250	Compte, Manuel	0,000	José	0,530
		Girona Agrafel,		Lluch Garriga,	
Compte, Manuel	0,210	Manuel	0,000	Mariano	0,520
Lluch Garriga,		Lluch Garriga,			
Mariano	0,170	Mariano	0,000	Compte, Manuel	0,510
Serra Farreras,		Ricart Guitart,		Serra Farreras,	
José	0,080	Jaime	0,000	José	0,490
Serra Farreras,		Serra Farreras,		Serra Farreras,	
Leodegario	0,040	Leodegario	0,000	Leodegario	0,330

Source: Banco de Barcelona. Actas Juntas de Accionistas del Banco de Barcelona. Arxiu Històric Nacional de Catalunya. We have included all the persons who were members of the Junta de Gobierno of the Banco, though some of them were it only for some months, as Montagut. In black we find the members which also appear in the network of the most important investments.

These results stress the importance of José Maria Serra in the overall Catalan Economy at the time, also as an investor in the network that was formed around the *Banco de Barcelona*.

Similarities and differences between the two investment networks

The analysis of the two investment systems highlights a relevant fact. The network of *Banco de Barcelona* is significantly more compact than the network built among major investors in the Catalonia in the mid-nineteenth century (see Table 5). This is a stronger proof of the importance of the *BB net* as a special case.

Tabla 3 – Indexes among networks.

	Link density²⁰	Clustering coefficient
BB	0,335	0,772
CAT (up to one joint investment)	0,185	0,604
CAT (up to two joint investment)	0,073	0,368

The two indices of Table 5 shows as the values for the *Banco de Barcelona* are higher, even considering the Catalan network without restrictions, that is, considering the network up to a common investment. The links density shows higher values in the *Banco de Barcelona* network (approximately 1.8 times higher). The differences in the clustering coefficient are lower but remained the stronger compaction of the of *BB net* (1.3 times). As expected, in the network filtered by two or more links, the differences in the rates of compaction between the two networks are even lower (4.6 times and 2.1 times the density for clustering coefficient).

This fact confirms what we have already found in a qualitative sense. The members of the Board Administration of the Bank were grouped as a

²⁰ Number of existing linkages (without considering the number of joint firms)/all of possible links (without considering the number of joint firms).

community of investors and their investment network were compact. For next studies we have to analyze the characteristics that define each group, those who are part of the network of the Bank, and those who are outside and detect possible common features among them.

Conclusions

During the early stages of the globalization and given the level of economic, social and information technologies, we would expect that the capital market would operate around social networks that minimize information costs. The existence of certain groups with reputation and financial capabilities, which maintained trade, proximity or familiar relations with those who had economic capacity, should encourage the movement of capital towards the investment in the industry, the trade or the transport sectors. The emergence of modern financial institutions affected, of course, this situation. However, it did not always influence as one would expect from economic theory: attracting private capital to reinvest it later. The *Banco de Barcelona* and the Catalan banking system of the 19th century are an example of how financial institutions do not always go hand in hand with the industrial development and with the economic development in general. In that sense we have to ask ourselves about their role. To do that we have compared the persons who were part of the Board Administration of the *Banco de Barcelona* and the group formed by the largest investors in corporations in the 19th century Catalonian economy, using the quantitative methodology of the social network analysis commonly used in other areas.

One of the main results of our analysis has a direct impact on the role played by the Bank in the overall economy. It seems clear, as the literature has established so far, that this financial institution had no direct impact on the industrial and the commercial investment. After the establishment of the Bank,

businesses continued to fund their fixed assets through reinvestment of profits while they had to finance the capital requirements, they use to turn to their own shareholder's credit. Even in the short-term credit market, the Bank had a fairly relative weight. Instead of, the bank was important as an issuing institution, although this is not relevant here. Thought the fact that the bank accepted the share of the commercial and industrial firms, as a guarantee of a loan, push up the development of the public limited companies.

Our analysis shows that the social network formed around this institution helped to link several isolated networks that were either scattered or in process of formation. This argument is reinforced by the analysis of the structure of the investment network. The group with no members of the bank was formed by people who had a stake in other financial institutions²¹. Thus, José Jover was linked to the family Herrero who had a trade's house, and since the 1850s their financial activities were dominant over the strictly commercial activities. On the other hand, Carlos Torrents Miralda was the representative of the English engineer established in Belgium, John Cockerill, and we know that he had his own adventure in the financial world before the foundation of the *Banco de Barcelona*. To end the checking of this group, Pablo Maria Tintorer attended in the *Caja Catalana Industrial y Mercantil*.

Beyond the *BB net*, the analysis of the network and its structure allows us to show how, in the context of a dynamical economy, as was the Catalan economy between the period over the end of the Napoleonic Wars and the crisis of the cotton hunger, a social network was structured and became the hard core of the Barcelona bourgeoisie until the Civil War of 1936-39.

So, after the demonstration of the existence of several investment networks we have analyzed their structure. We have deduced the existence of several groups of different typologies. On the one hand, there is a group of

²¹ Anes and Otazu (1987)

investors who had their roots in the trade and manufacturing sector of mid 18th century, had born at the end of this century and towards 1840 were mature. This was the case of Salvador Bonaplata and Josep Colomer, partners in the adventure of *El Vapor*, the first firm of yarn and cotton with a steam engine²².

Secondly, we would be faced with that group who would be coming into full maturity, but they had not got relationship with the traditional bourgeoisie of the 18th century. That includes José Jover, Juan Lleó, José Seller, Mariano Sirvent, Pablo Maria Tintorer, Carlos Torrents and José Vidal which were born out of Barcelona²³ and their first business steps in the trade sector. The last group, called the "new investors", it is formed for persons who had born after 1800 and we can found persons as the Girona's brothers, leaded by Manuel, and the "Indians" as Celedonio Ascacibar, Juan Güell and José María Serra²⁴. In this group of "new investors" we must consider those who joined the Barcelona's bourgeoisie after the founding of the bank. We are talking about Antonio Lopez, Juan Samà, José Vidal Ferrer and Fernando Puig, which had been born in mid 1810s as Manuel Girona, and were linked with the "Indians" through familiarity relations, who had landed or were landed in Barcelona after 1830. We have already mentioned the case of Ascacibar, Güell and Serra. Antonio Lopez and Juan Samà also had come back to Barcelona after a stay of several years in La Havana. Jose Ferrer Vidal came from a village with great tradition of emigration to America and ended up marrying with a woman born in La Havana (Soler, 2006). Manuel Girona, also married with an "Indian's" daughter (Carolina

²² Nadal (1983)

²³ José Jover (Copons), Juan Lleó (Reus), José Seller (Maó), Mariano Sirvent (La Havana), Pablo Maria Tintorer (Tarragona), Carlos Torrents (Manresa) and José Vidal (Sant Feliu de Llobregat).

²⁴ We understand as an Indian all the persons who went to the Spanish colonies in Latin America (o who were born there), and after then, they participate in the colonial trade sector and then come back to Catalonia, with more or less money. Celedonio Ascacibar, José Maria Serra was born in Santiago de Chile. Juan Güell was born in Torredembarra (near to Tarragona), he had gone to Veracruz and, before he came back, he went to La Habana (Rodrigo, 2006).

Quadras) born in Venezuela and member of one of the most important families in the economy of mid 19th century in Barcelona. Only Fernando Puig could not be classified in this typology.

To sum up, the analysis of the investment networks shows that, in the fast growing economy of Barcelona in mid 19th, there were several networks that helped to channel funds into inversion. We have also detected a group, called "new investors", which would be consolidated and became the dominant elite of the Catalan economy until the outbreak of the Civil War in 1936. It was in this network, where the *Banco de Barcelona* played a key role in the consolidation and compacting of the groups who were formed around it.

Bibliography

Anes, R. y Otazu, A. (1987), *El Banco Herrero. 75 años de Historia, 1912-1987*, Banco Herrero, Oviedo.

Blasco, Y. (2006), "Manuel Girona Arafel [1816-1905]", in Cabana, F., coord., *Cien empresarios catalanes*, LID Editorial Empresarial, Madrid, pp. 87-94.

Blasco, Y.; Lozano, S. and Badia-Miró, M. (2007). "The emergence of a social investment network around an issuing bank: El Banco de Barcelona 1844-56". Proceedings of the annual conference of the Economic History Society. Exeter, United Kingdom.

Bogartti, Stephen P.; Foster, Pacey C. "The network paradigm in organizational research: A Review and Typology". *Journal of Management*. Vol. 29 Núm. 6 (2003).

Casson, M. (2005). *Economic Analysis of Social Networks*. X Symposium of Economic History "Analysis of Networks in Economic History.

Danon, L.; Díaz-Guilera, A.; Duch, J. and Arenas, A. (2005). "Comparing community structure identification". *J. Stat. Mech.* P09008.

Duch, J. and Arenas, (2005). *A. Phys. Rev. E.* 72.

Lamoreaux, N. (1994). *Insider Lending: banks, personal connections and development in industrial New England*. CUP.

Granovetter, M. (1973), "The Strength of Weak Ties". *American Journal of Sociology* 68: 1360-80.

Kramarz and Thesmar. (2006). "Social Networks in The Boardroom". Working Paper Series CEI Working Paper Series, No. 200620. Center for Economic Institutions.

Molina, J.L. y Marsal, M. (2002). *La gestión del conocimiento en las organizaciones*. Libros en red, Colección Negocios, Empresa y Economía

Moreno Lázaro, J. (2003), "Historia de una quimera. La industria algodonera en Castilla La Vieja, 1846-1913", *Revista de Historia Industrial*, 23, pp. 173-196.

Nadal, J., (1983), "Los Bonaplata. Tres generaciones de industriales catalanes en la España del siglo XIX", *Revista de Historia Económica*, I-1, pp. 79-95.

Nadal, J. and Ribas, E. (1992): "Una empresa algodonera catalana. La fábrica de la Rambla, de Vilanova, 1841-1861", in Nadal, J., *Moler, tejer y fundir. Estudios de Historia Industrial*, Ariel, Barcelona, pp. 211-239.

Prat, M. (2006). *Fabricantes, comerciantes y banqueros. Las estructuras comerciales de la industria algodonera en el mercado español (1840 – 1936)*. IUE Thesis, Florence.

Rodrigo, M. (1998): "Con un pie en Cataluña y otro en Cuba: la familia Samà de Vilanova", *Estudis Històrics i Documents dels Arxius de Protocols*, XVI, pp. 359-397.

Rodrigo, M. (2006), "Joan Güell Ferrer [1800-1872], in Cabana, F., coord., *Cien empresarios catalanes*, LID Editorial Empresarial, Madrid, pp. 53-59.

Solà, A. (1996): "Comerciants catalans un xic especials. Anada i retorn dels catalans a 'les Castilles'", in Pérez Picazo, M.T; Segura, A., & Ferrer, L. (1996), *Els catalans a Espanya, 1760-1914*, , Barcelona, pp. 47-62.

Solà, A. (2006), "Camil Fabra Fontanills [1833-1902]", in Cabana, F., coord., *Cien empresarios catalanes*, LID Editorial Empresarial, Madrid, pp. 157-160.

Soler, R. (2000), *Estratègies empresarials en la indústria cotonera catalana. El cas de la Fàbrica de la Rambla de Vilanova, 1833-1965*, Ph D dissertation, Barcelona Universitat de Barcelona (mimeo).

Soler, R. (2003), "Problemas de homogeneización en la información registral", in Martín .Rodríguez, M.; Garrués Irurzun, J.; Hernández Armenteros, S. (dirs.), *El Registro Mercantil: una fuente para la Historia Económica*, Editorial Universidad de Granada, Granada, pp. 18-29.

Soler, R. (2006), "Josep Ferrer i Vidal: industrial, empresari i burgès (1817-1893)", *Estúdis Històrics i Documents dels Arxius de Protocols*, XXIV, 275-316.

Sudrià, Carles (1981): "Desarrollo industrial y subdesarrollo bancario en Cataluña, 1844-1950". *Investigaciones Económicas*, 16, Madrid, pp. 137-176.

Sudrià, C., Pascual, P. and Castañeda, L. (1992): "Oferta monetaria y financiación industrial en Cataluña, 1815-1860", *Revista de Historia Industrial*, 1, pp. 189-209.

Sudrià, C. & Pascual, P. (1999): "Financing a railway mania: capital formation and the demand for money in Catalonia, 1840-66", a *Financial History Review*, 6, pp. 127-145.

Tortella, G. (1968). "El principio de responsabilidad limitada y el desarrollo industrial de España: 1829-1869". In *Monedas y Crédito: Revista de Economía*. 104. pp. 69-84.

Vicens Vives, J., Llorens, M. (1983): *Industrials i polítics (segle XIX)*, Ed. Vicens-Vives, Barcelona.

Wasserman, S., Faust, K. *Social Networks Analysis: Methods and Applications*. New York: Cambridge University Press. (1994).

Annex 1

Table 4 - 70 main investors of Catalonia.

1 ABALLI PRATS, SEBASTIAN	36 JORDA (VDA. DE E HIJOS)
2 ACHON MEURON, JUAN	37 JOVER SANS, JOSE
3 ALBAREDA VALLES, JOSE	38 LLEO TORROJA, JUAN
ASCACIBAR DE VILLOTA,	
4 CELEDONIO	39 LLOPART LLEO, JUAN
5 BALTA, JOAQUIN	40 LOPEZ LOPEZ, ANTONIO

- | | |
|------------------------------|------------------------------|
| 6 BATLLO BARRERA, FELIO | 41 MARTORELL PEÑA, MIGUEL |
| 7 BATLLO BARRERA, JACINTO | 42 MASRIERA VIDAL, JOSE |
| 8 BATLLO BARRERA, JUAN | 43 MASRIERA VIDAL, JUAN |
| 9 BOADA VILOMARA, MIGUEL | 44 MIRALLES GIL, JORGE |
| | MUNTADAS CAÑELLAS, |
| 10 BOFILL PINTO, JUAN MANUEL | 45 BERNARDO |
| 11 BONAPLATA, SALVADOR | 46 NADAL Y RIBO |
| 12 BOSCH LABRUS, PEDRO | 47 ODENA PUJOL, JOSE |
| 13 BUXEDA CREUET, MIGUEL | 48 OLIVERAS, JUAN |
| CANTALLOPS BARNOLA, | |
| 14 MIGUEL | 49 PAUL PIMONT, EDUARDO |
| | PLANAS COMPTE, JOSE |
| 15 CAPMANY CARRERAS, JUAN | 50 MANUEL |
| 16 CARBONELL SANS, MANUEL | 51 PRATS ROQUER, JOAQUIN |
| 17 CERIOLA CASTELLA, JAIME | 52 PUIG GIBERT, FERNANDO |
| 18 CLAVE ESPAÑA, MIGUEL | 53 PUIGMARTI MATAS, RAMON |
| 19 CLAVE VIDAL, JUAN BTA. | 54 RIBAS BOIX, RAMON |
| 20 COLOMER, JOSE | 55 ROMA, JOAQUIN DE |
| 21 COLOMER, JUAN | 56 SAFONT LLUCH, JAIME |
| 22 COMA, CIURO Y CLAVELL | 57 SALA BRUGUES, RAMON |
| 23 ESPARO, VALENTIN | 58 SAMA MOTA, JOSE |
| 24 FABRA FONTANILLS, CAMILO | 59 SANTALO VIÑALS, RUPERTO |
| FABRA ILLAS, GIL | |
| 25 BUENAVENTURA | 60 SELLER HUGUET, JOSE |
| 26 FERRER VIDAL, JOSE | 61 SERRA FRANCH, JOAQUIN |
| 27 GARRIGA SOLER, PEDRO JUAN | 62 SERRA, JOSE MARIA |
| 28 GIRONA AGRAFEL, CASIMIRO | 63 SIRVENT URGELLES, MARIANO |
| 29 GIRONA AGRAFEL, IGNACIO | 64 SOLER MORELL, PABLO |
| | TINTORER PASTOR, PABLO |
| 30 GIRONA AGRAFEL, MANUEL | 65 MARIA |
| 31 GIRONA TARGA, IGNACIO | 66 TORRENS MIRALDA, CARLOS |
| 32 GRIMALDI, JUAN DE | 67 TOUS MIRALPEIX, NICOLAS |
| 33 GUELL FERRER, JUAN | 68 TOUS SOLER, FCO. |

34 GURRI, JOAQUIN

35 HERRERO BUJ, IGNACIO

69 VIDAL NADAL, BARTOLOME

70 VIDAL RIBAS, JOSE