The configuration of a status based model of economic actors: the case of Spanish government debt market

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Abstract

This paper analyses the social structure of the government debt market in Spain from a social network analysis approach. The relational analysis has been limited to the case of the syndicate issuances that took place between 2002 and 2015 and the process whereby lead manager banks choose their partners to underwrite the issue. The main contribution of this paper is the identification of social tie patterns between market participants and their structural equivalence in the market. Furthermore, it reveals how status operates in the market, conferring advantages on those actors with optimum positioning.

Keywords:

Status, Government debt market, social networks, structural equivalence

Highlights:

The government debt market is socially structured in terms of status positions

Regular patterns of social relationships shape status positions

The Spanish government debt market shows an oligopolistic structure

Government debt market performance reproduces a Matthew Effect trend

The state plays a crucial role in selecting positions of market influence

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1. Introduction

Economic sociology has been long interested in the problem of what Granovetter (1985) called the "embeddedness of markets". During the seventies and eighties, various scholars have demonstrated that economic actions are embedded within networks and in concrete and ongoing systems of social relations (White, 1981). Similarly, social structure is conceptualized as a series of social relationship networks; a set of regular interactions among individuals or social groups that form a particular market structure in which the notion of status constitutes a central element. Status can be defined as a position within a social structure that confers prestige and privileges upon an actor according to ascribed and achieved criteria. Actors' position in this hierarchy affects others' perceptions and actions towards them and thereby the opportunities and constraints they face in the market (Jensen 2008; Jensen and Roy 2008; Podolny 1994).

The objective of this paper is to examine the status hierarchy of market makers in the Spanish public debt market. More specifically, this paper analyses the process whereby market participants collaborate in syndicate bond issuances and the consequent emergence of a particular structure of influence and prestige positions that are consistent and stable over time. Syndicated public debt issues are specific formulae to sell public debt in the market and an alternative to ordinary Treasury auctions. In the case of syndicated issuances the Treasury issues a new bond and in order to sell it, hires a small group of investment banks that receive direct instructions from investors wishing to acquire Spanish debt. In addition to this select group, other banks are involved as co-leaders. They are selected by the former in order to underwrite the entire issuance. In the light of recent difficulties experienced by the governments of Spain and other peripheral Eurozone countries to access market financing under economically sustainable conditions, syndicate issuances are playing an increasingly important role in financing the government deficit, thereby generating public debt. Our analysis identifies the social structure and the sequential aspects of this type of bond issuance that is highly significant in terms of the monetary amount auctioned.

The article offers a comprehensive analysis of the Spanish public debt market structure and public debt ownership within world financial sector. It provides crucial yet hitherto unavailable evidence for relational data about status positions of financial corporations in the public debt market, and its relations with the ownership structure of the public debt. In analysing the social status of the Spanish public debt market we are reconsidering Marx's notion of a financial aristocracy (1994 [1867]), which in this case refers firstly to a number of financial

institutions that dominate access to and the conditions under which the State accesses market financing and secondly to the steadily growing concentration of government debt ownership among a small number of creditors. In contrast to more recent studies into government debt markets (see Hager, 2015; Lemoine, 2013), this article provides a breakdown of the details of the participants in this market and public debt security holders.

The accumulation of government debt in OECD member countries has acquired an unprecedented significance in the social, economic and political spheres of advanced capitalist societies. Indeed, the concept of the 'debt state' reflects a process characterised by the steady rise in government debt, that began in the 1980s in all rich capitalist democracies. This situation requires a review of the micro-mechanisms employed by states in order to finance their deficit, as posited in this article.

The case studied in this article is relevant for the following reasons. Firstly, Spain's government debt market follows a pattern that in general terms is similar to other European countries, the result of process of convergence in operations and the types of securities exchanged (Blanco García, 2015). Specifically, the syndicated process shares similar patterns in Europe and the rest of the world (Lemoine, 2013; Francke et al., 2012; Podolny). It can therefore be claimed that the case under study is representative of all European countries. Nevertheless, and drawing on MacKenzie (2009), there is a need for comparative studies that highlight the diverse nature of government debt market institutional and technological structures and their impact on state financing systems. A further aspect for consideration, as explained later, is that government debt markets have varying degrees of financialization depending on the nature of actors participating therein and the breakdown of their micro-structure. (Hardie, 2011).

Secondly, the relevance of the case under study also stems from its innovative nature and the lack of research carried out in the fields of Sociology, Political Science and Law into government debt market micro-structures that shed light on the participating nodes and the way their relationships are structured. In this sense, we believe that this paper can contribute to revealing the suitability of social network analysis as a means of assessing syndicated issuance mechanisms, which, although they remain relatively scarce -despite the key contributions of Podolny (1993, 1994); Baum et al (2005) or Li and Rowley (2002)-, offer an insight into the relational patterns of influence and prestige shown by financial institutions on public debt markets, as well as financial markets in general.

Thirdly, identifying a social structure for the government debt market, defined as the presence of regular patterns in relationship (Wasserman & Faust, 1997), and its impact on the

par amount acquired by each actor, provides a description of how the market works, moving beyond the principles of neoclassical theory and its efficiency model. Indeed, the article describes a market segmented by status positions that allows for the comparative advantage of the most favourably positioned actors in terms of access to debt in conditions that are clearly more beneficial.

The main thesis of this article is that the issuance network models the advantages of the key participating actors in accordance with their structural social position. More specifically, we have examined two hypotheses that operationalise the so-called Mathew Effect (Merton, 1968), whereby actors with higher status obtain greater recognition and reward for performing a given task, whilst lower-status actors received correspondingly less.

The remaining of this paper is organized into six sections. Section two offers a general theoretical framework for status in markets and financialisation of public debt markets. A specific analysis of the mechanisms of syndicate issue and a presentation of the case is introduced in section three. Section four introduces the methodological design used to undertake a longitudinal analysis of status positions in financial markets from a relational viewpoint, using Pajek software. This is followed by the calculation of the various status measures to prove the convergence of the results and the validity of our hypotheses. The paper concludes with a discussion of the major findings and directions for future research.

2. Theory and hypothesis

2.1. The notion of status under discussion

Status is a central concept in social stratification theory. According to Weber (1987), status denotes the relative position of an actor in a publicly recognized hierarchy of social worth. Parsons (1951) went on to define the concept of "status-role" as a position within a social structure that confers prestige and privileges according to ascribed and achieved criteria.

This article considers a relational conception of status applied to the understanding of financial markets performance. Likewise, and as shown below, the article is based on a conceptualisation of markets as social structural patterns that emerge from the embedded interaction of social actors (Baker, 1984). The idea of markets as roles' structures was introduced by White (1981) in the eighties. Swedberg (2005) considers White's research on markets (White, 2002) to represent a bold attempt to create a totally new and totally sociological theory of markets based on the notion that markets are embedded in social networks. In his most recent work on markets, White (2002) explains how particular market structures or spaces emerge. He posits that the way market actors manage uncertainty produces a role structure,

shaped and formed by extensive mathematical modelling. Baker's (1984) research on the stock options market in the 1980s can be considered another important and early network study of markets. In his view, markets may be seen as social rather than exclusively economic structures, with demonstrable effects on the determination of prices.

More recently, Podolny (1993) introduced the analytical concept of status order to name the macro level view of markets as regular patterns of interlinkages between producers, consumers and third parties. Actors' positions in this hierarchy affect the perceptions and actions of others towards them and therefore the opportunities and constraints they face in the market (Jensen 2008; Jensen and Roy 2008; Podolny 1994). These definitions highlight that the concept of status is not a static attribute of an actor insofar that it denotes a producer's position in relation to its competitors. The relational character of status means that it is formed in accordance with the network of relationships between market participants.

Status is valuable in markets because it functions as a signal of quality, influencing not only how firms are perceived but also the activities they engage in, and the decision to collaborate with other firms (Podolny, 1993). Defining status as perceived quality means that it functions as a signal based on the perception others hold of an actor's current and past performance. However, Jensen and Roy (2008) introduced the difference between status and reputation, arguing that the former is the prestige accorded actors because of their social positions and the latter, the prestige accorded them based on their previous performance.

Status influences an extensive range of market outcomes, as Sauder et al (2012) insightfully showed in their review of the current state of the field. These include market segmentation (Phillips and Zuckerman 2001; Podolny 2001), price formation (Baker, 1984; Podolny, 1993), the formation and dissolution of exchange ties (Podolny, 1994, White, 2002), or exchange partner choices (Jensen and Roy, 2008; Granados and Knoke, 2013; Baum et al, 2005).

Whilst the concept of status tied to market social structure has been amply developed by Network Analysis, mention must also be made of Bourdieu and Fligstein's contributions to economic sociology regarding markets as fields – namely   as a structure of actual and potential relations (Bourdieu, 1997, 2000). In the opinion of Bourdieu, each field is defined in accordance with its own logic and interest, conditioned by the appropriation and distribution processes of varying types of economic, cultural or symbolic capital among the various actors. Like Bourdieu and Weber, Fligstein (2001) emphasizes the role of struggles in the market. He posits that social structure of a field is a cultural construction that enables dominant firms to develop tactics and

strategies that reproduce their position over challenger firms. Fligstein considers that the social structures of markets are « fundamentally systems of power » (2001: 69). These systems are grounded on a structure of understandings about what makes one set of organizations dominant. These cultural and cognitive frames are intrinsically dimensions of the structured exchange between market participants.

Whilst Bourdieu explicitly distanced himself from the stances adopted by Mark Granovetter and Harrison White, claiming that both authors failed to consider the impact of structure on economic action (Bourdieu, 2005), we believe that the conceptualisation of the market as a network of structurally unequal positions in terms of access to information, does indeed shed light on the way power relation patterns between actors emerge, shape themselves and materialise. Similarly, and in line with Mackenzie (1988), we believe that the analysis of social networks prevents the anonymization of markets and structures that are separate from the nodes that form them and the relations between them.

In the light of the previous contributions, status can be considered a function of market structure and market participants.

Firstly, investor characteristics are important criteria that explain ascribed and achieved status. Attributes such as experience and prior performance (Li and Rowley, 2002), nationality or market share aspirations (Baum et al, 2005) have been considered important factors in explaining partner choices by investment banks in underwriting syndicate issuances, in scholarly literature. The extent to which nationality, seen as an attribute of financial institutions, can explain status positions in the government debt market, is an interesting issue, as the market is closely interlocked with State interests and therefore supposedly with the countries' financial elite (Lemoine, 2013). However, recent analyses of interlocking directorates in Spain (De Andrés, 2014; Cárdenas, 2012; Sicilia & Sallan, 2008) reveal a loss of centrality by national banks in favour of non-financial companies, partly attributable to the internalisation of the Spanish banking system and the globalisation that has led to an influx of foreign capital, with the consequent reduction in the weight and influence of traditional groups in the Spanish network. Analysing the extent to which this trend is echoed in the government debt market is therefor of major interest.

Secondly, as Fligstein pointed out, the institutionalization of a particular exchange model is produced through the creation and reproduction of a set of written and non-written regulations of cooperation and competition in the market, specific agreements among actors, strategies of competition or cooperation and actors' local knowledge regarding the way markets operate.

The specificity of the market we are dealing with lies in the close cooperation between the Treasury and private banks (Lemoine, 2013). It is precisely through this cooperation that the public debt market is structured in regulatory terms by the financial and political elites. Under the imperative of liquidity (Carruters and Stinchcombe, 1999) those elites have built up a regulation that favours, explicitly, albeit not transparently, those banking entities that are considered to be strategic due to their activity in the government debt market, or due to their capacity to spread Spanish government debt securities to secondary markets and foreign investors.

Most studies on status have shown the mechanisms whereby status positions confer advantages for markets (see Jensen, 2008; Benjamin and Podolny, 1999; Sauder et al., 2012) and constraints on actors' behaviour (Phillips and Zuckerman, 2001). In this respect, status can be considered a position shaped and built by the reproduction of the Mathew Effect, a dynamic of broad interest within Sociology (Sauder et al., 2012). According to Correll et al (2011), the first step of the Mathew Effect consists of a socially endogenous inference whereby high-status actors are evaluated and thus rewarded more positively than lower status actors for a given contribution. Similarly, a socially endogenous investment process occurs, transforming recognition into resources that encourage market participants to become involved in higher quality operations and therefore boost their status. Indeed, the applicability of the Matthew Effect to the analysis of the government debt market reveals the reproduction of the virtuous circle whereby the most advantageously positioned financial institutions, namely market markers, can obtain further benefit merely by participating in this type of issuances, receiving large commissions paid by the Treasury and participating in the most important operations in terms of the amount borrowed in the market.

2.2. Hypothesis

In the light of the contributions above mentioned, hypothesis one of this article (H.1) refers to an emerging market structure shaped by the regular patterns of interactions among market makers. According to Dass, Reddy and Iacobucci (2014), interactions between Government, underwriter leaders and co-leaders reveal a pattern of status positions that shape a network structure of prestige and influence. As a result, a particular market structure emerges, determined by the dynamics of the partner choice process, the role played by the actors, and its frequency. The resulting status positions confer advantages to those actors better positioned in the networks. As a result, a relational pattern based on the amount of the investors' accumulated public debt securities is likely to emerge, following the Mathew Effect whereby actors with a higher status

obtain greater rewards whilst lower status actors received correspondingly fewer. We thus hypothesize that:

H.1 Status positions, shaped by the regular patterns of interactions among market markers, are strongly associated with the amount of bonds held by the various actors.

Secondly, and closely linked to the previous hypothesis, the status structure of the government debt market may be linked to attributive elements such as the nationality of financial institutions, which in turn can be associated with certain advantages in this market, such as the choice of exchange partners, or the amount of bonds held by each of the participating actors.

The presence of foreign investors is considered a relevant indicator of government debt market financialisation. Existing studies (Andritzky, 2012) have provided evidence for the relationship between the investor base and yields, which suggests that an increase in the share of securities held by non-residents is associated with a decline in yields, but an increase in the level and volatility of yields.

The number of foreign market markers in the Spanish government debt securities market stands at 50% of the total. This percentage is significantly high, particularly considering that although the share of non-resident holdings has increased sharply during the last decade in all G-20 countries with the exception of Canada and Japan, this trend slowed down in 2007, and was even reversed in the case of the southern European countries (Andritzky, 2012).

In addition to these issues we argue that the government debt market is not geographically segmented, showing the weakness of national boundaries when it comes to considering the investment strategies of financial corporations and the globalization of financialised public debt markets. Therefore we expect that:

H.2. Government debt market will be weakly structured in terms of national origin of financial corporations showing the globalized nature of financial relations.

3. Presentation and contextualisation of the cases studied

This section introduces the research case within a broader contextualization referred to the main transformations affecting the European public debt markets. This is followed by a presentation of the mechanisms of syndicate issuances from which the data for this study were obtained, and the general characteristics of market participants. Both are key elements in understanding how market participants interact with one another in a collaborative network that allocates status positions involving differential access to material and symbolic rewards.

3.1. Public debt markets in Europe: financialisation and sovereign debt crisis.

As will be seen below, the analysis of the social structure of the government debt market in

Spain requires a brief insight into the institutional, technological and regulatory framework of government debt in Europe and its most recent developments, marked by processes of financial deregulation and innovation. Although a comparison of the institutional structure of government debt markets goes beyond the objectives of this article, a series of general characteristics and change processes that fall within the umbrella term of financialisation must be addressed (see van de Zwan, 2014).

Financialisation is the concept used to define the increasingly significant role played by financial systems in contemporary societies. It is understood here as a profit growth strategy developed by financial corporations from the 1970s onwards in core capitalist economies. This strategy drives and is driven by complex change processes such as deregulation, globalization and financial innovation (Engelen, 2008). At the centre of this strategy lies risk management, a central tool for the financial industry, and an essential instrument in order to generate business opportunities. For operational purposes, financialisation will be defined following Hardie's (2011) approach 'as the ability to trade risk; both taking and trading the risk on the performance of an asset' (143). The breadth and depth of financialisation depends on the characteristics of national market structures, the financial instruments traded in that market and the type of investors that participate in it.

In the case of government debt markets, financialisation has to do with an intense process of deregulation and financial innovation that began in the 1980s in most European countries. The financialisation of government debt markets depends on the legal restriction related to borrowing and short selling[2], and on the existence of a variety of authorized transactions ensuring liquidity and reducing credit risks

The recent sovereign debt crisis suffered by southern European countries, especially Portugal, Italy, Greece and Spain, is attributable mainly to the institutional and technological structure of these markets, which enabled investors to speculate with different types of sovereign risks. Evidently, the banking crisis of 2007, together with a set of structural internal imbalances affecting the components of public deficit and external debt, explains the progressive rise of public debt since 2008. However, these alone cannot explain the worsening of the borrowing conditions imposed by markets, between 2011 and 2012, when in the case of Spain, the sovereign spread, measured by the difference between the yield of 10-year Spanish bonds and 10-year German bonds, stood at 637 basic points (see Massó, 2016).

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[2] Short selling is the sale of a security that is not owned by the seller, or that the seller has borrowed. Short selling is motivated by the belief that a security's price will decline, enabling it to be bought back at a lower price to make a profit. Short selling may be prompted by speculation, or by the desire to hedge the downside risk of a long position in the same security or a related one.

The financialisation of the Spanish government's debt market structure is linked to a variety of properties which can be defined from a series of features such as high trade density, a predominance of repo transactions, a high volume of sovereign CDS trading, and a debt composition characterised by a high rate of non-resident debt holders and market makers. This type of structure has been designed to favour market liquidity, a constant concern for the Spanish government due to its structural deficit problems. However, in a context of economic uncertainty, these properties can also worsen borrowing conditions, as trading sovereign risk offers attractive business opportunities, resulting in increased volatility and undermining debt sustainability.

The analysis put forward in this article must be seen within the context of this general framework. As stated above, the aim is to examine the emerging social structure of the government debt market, using data obtained from a specific debt issuance mechanism, namely syndicate issuance.

3.2. Syndicate issuance: general features

Syndicate issuance is an alternative and extraordinary government mechanism for issuing debt. It consists of a bond auction whereby a temporary group of investment banks and broker-dealers is brought together to acquire the entire issuance at an agreed price. The underwriter syndicate is formed by a group of syndicate leader managers that are responsible for organizing, managing, subscribing and distributing ('placing') the bond in the secondary market. The leader managers choose the rest of the syndicate co-managers' group members. These financial institutions assume the risk of buying the entire new security issues and reselling them to investors.

An underwriter syndicate is usually formed when an issue is too large for a single firm to handle. The syndicate is compensated by the underwriting spread, which is the difference between the price paid to the issuer and the price received from investors and other broker-dealers.

Despite the growing relevance of this financing mechanism, there is no specific regulatory procedure that dictates when the State may apply said mechanism, the specific requirements the debt underwriters must comply with, or the value of the commissions payable by the State to each in exchange for selling the entire issuance. The existence of confidentiality clauses forces financial institutions to guarantee the privacy of the entire process and prevents the publication of these data.

As for the market participants in syndicate issuances, they are chosen from the group of

most active market makers. They are a group of financial companies whose ultimate objective is to boost the liquidity of the secondary public debt market and cooperate with the General Secretariat of the Treasury and Financial Policy in the diffusion of Government Debt domestically and abroad.

As shown in Figure 1, an initial distinction can be drawn between market members (account holders) and non-members (third parties). Account holders are financial institutions authorised to acquire and hold book-entry registered public debt in accounts opened on their own behalf in the Book-Entry System. The account holders include Management Institutions, which manage the accounts of participants that are not authorised to operate directly through the Book-Entry System. For these purposes, they hold a global account in the Book-Entry System, which covers those accounts exactly at all times and are known as third party accounts.

Figure 1. Government debt market actors
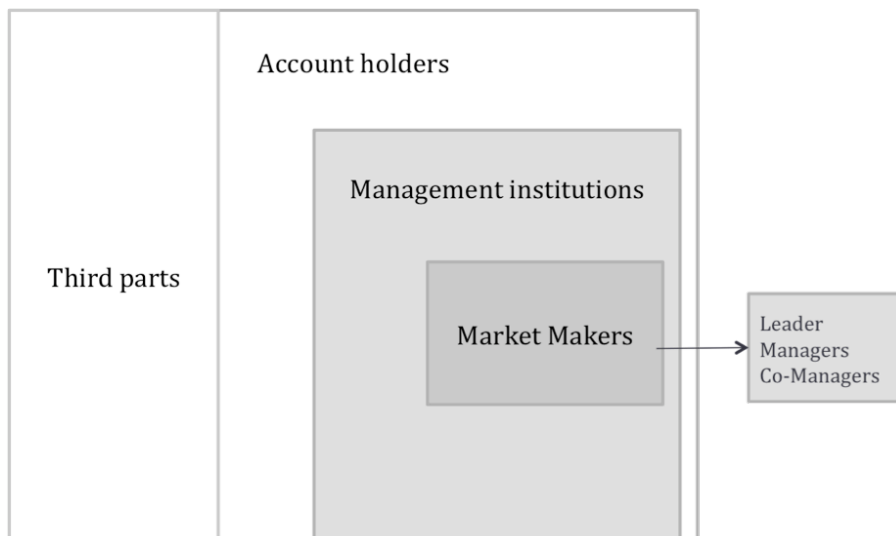
Source: author's own

Following Carruthers and Stinchcombe (1999), the existence of market makers is one of the conditions for liquidity, together with continuous auctions in which a number of knowledgeable buyers meet a number of knowledgeable sellers, and the homogenization and standardization of commodities. Market makers help to conduct continuous auctions by abiding by the norm of participating in all public debt issues in a more favourable or unfavourable conditions.

In the case of the Spanish public debt market, the figure of the market maker is relatively

recent, dating back to 1999. According to the Treasury General Directorate resolution of 20 July 2012, which establishes the role of the market maker in the Spanish public debt market, and its subsequent modifications, significant entry and exit barriers are imposed by the Treasury in order to secure and maintain the role of the market maker. To this end, the Treasury carries out monthly assessments on market maker activity in relation to debt security underwriting and participation in different types of operations in the primary and secondary market. In this respect, it can be seen how liquidity does not emerge on its own, nor does it flow out of a kind of economic state of nature, characterised by the absence of interventions or regulations. Instead, its development depends on specific institutional features and organizational activities (Carruthers and Stinchcombe, 1999: 358).

Similarly, syndicate issuances are a relatively recent phenomenon in Spain. The first was held in 2002 and, according to data provided by the Treasury, as of 1 January 2015, the total number stood at just twenty-three.

Table 1. Issue details

Year	ISIN	Original issue Amount (EUR)	Total issue Amount (EUR)	Total price to public	Price	Yield	Maturity Date	Issue Date	S&P rating
2015	ES00000126Z1	9,000,000,000	17,742,830,000	8,953,020,000	99.478	1.656	27/01/2015	27/01/2015	BBB
2014	ES00000124W3	10,000,000,000	21,186,212,000	9,963,800,000	99.638	3.845	30/04/2024	29/01/2014	BBB
2013	ES00000123U9	7,000,000,000	18,282,208,000	6,999,370,000	99.991	5.403	31/01/2023	29/01/2013	BBB
2011	ES00000123B9	6,000,000,000	24,042,834,000	5,953,980,000	99.233	5.604	30/04/2021	24/01/2011	BBB
2010	ES00000122T3	6,000,000,000	18,670,120,000	5,989,980,000	99.833	4.874	31/10/2020	13/07/2010	BBB
2009	ES00000121L2	7,000,000,000	21,368,777,000	6,972,140,000	99.602	4.6	30/07/2019	10/02/2009	BBB
2008	ES00000121A5	5,000,000,000	19,581,410,000	4,960,700,000	99.214	4.1	30/07/2018	19/02/2008	BBB
2007	ES00000120N0	4,000,000,000	13,605,380,000	3,986,200,000	99.655	4.9	30/07/2040	20/06/2007	BBB
2006	ES00000120J8	5,000,000,000	21,829,147,000	4,977,300,000	99.546	3.8	31/01/2017	18/10/2006	BBB
2005	ES0000012932	6,000,000,000	27,843,698,000	5,931,000,000	98.85	4.2	31/01/2037	17/01/2005	BBB
2002	ES0000012783	5,000,000,000	21,349,582,000	4,972,900,000	99.458	5.556	30/07/2017	11/03/2002	BBB

Source: Thomson Reuters

Table 1 contains basic information about a sample of eleven issues, the most significant in terms of the monetary amount issued by year. The average amount borrowed stands at

20,500,199,818 euro, and the original issue amount is 6,363,636,364, a difference of 14,136,563,455 million euros, which is indicative of the investors' interest in business opportunities offered by Spanish public debt securities. Likewise, the average price and annual coupon yield are 99.5 and 4.413, showing an increasing trend during the central years of the crisis in Spain between 2010 and 2013.

4. Methods and data.

The syndicate issuance data were obtained from information provided by the Thomson Reuters Security Data Corporation (SDC). This database contains information about all government bond issues, including the basic issuance details (price, yield, amount, identity of managers and co-managers) and information about the investor holdings of syndicate bonds, the percentage of the total amount outstanding that is managed by the holder and the par amount, i.e., the reference bond value in the secondary market.

In order to draw up the database, ISIN[3] codes were used to identify the syndicated issuances between 2002 (the year of the first issue) and 2015. In those years when more than one issue was carried out, the one with the largest amount of public debt was selected.

This database was then used for the social network analysis using Pajek (see de Nooy, Mrvar and Batageli, 2005). The choice of this software is due to the intention of carrying out a longitudinal media analysis that would provide us with the resulting status structure for each year, as well as the structure produced by the combination of the various years. In order to do this, a relational database was drawn up in order to obtain the one-mode network, which can be defined as follows:

- The vertices, corresponding to the 31 banks that participated in the Spanish Government's syndicated issuances between 2002 and 2015. Of these 31 institutions, only 25 were taken into consideration, as they participated in at least one of the issues included in our study.

- The arcs, directed relations used to refer to the choice of co-managers by the leader manager group for each issue.

- The edges, bi-directed relations used to refer to leader-leader relations.

Likewise, a series of non-relational attributes were considered, such as the geographical and economic characteristics of the network vertices. As Nooy et al. (2005) pointed out, the attributes enhance our interpretation of the network structure and enable us to study subsections of the

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[3] An alphanumeric identification code for the set of issues. Mention must be made of the difficulties involved in accessing this information as the public debt values are not included in the corresponding issue leaflet.

network. For the purpose of our analysis we created a qualitative attribute relating to nationality and another relating to the 'par amount' in millions of dollars held by the various bond holders[4]. This attribute represents an innovation in the field of social science research as it provides a breakdown of the data in the form of an ordinal variable.

5. Status analysis

5.1. Degree status

To convert the position of Banks in the network into a measure of status, we first analysed the

structural prestige by measuring the indegree of each vertex *k*, represented by: $C_d(a_k) = \sum_{i=1}^{n} (a_i, a_k)$

where (a_i,a_k) =1 if and only if a_k is the final arc node (a_i,a_k), i.e., the number of choices each vertex receives, either as a leader or co-leader. This measure essentially indicates co-manager prestige as it takes directed relations only into consideration, thereby indicating the frequency with which an actor is chosen to complete issue underwriting as a co-manager. As Table 2 below shows, Santander, together with Barclays, BBVA and Deutsche Bank, are included in the top 4% (see Cum Freq %) of the total list of banks that have 43 inputs or more. It must be stressed that although the size of each issue should be taken into consideration, we opted not to weight the data, as the larger the group of underwriters, the more complex it would be to reach agreements in the case of those banks acting as leaders, and therefore the choice of a specific bank as co-leader would be more significant.

Table 2. Input degree listing in the Spanish syndicate bond market (Top 10)

Input Degree Partition of N2 (31)					
Inputs	Freq	Freq%	CumFreq	CumFreq%	Representative
47	1	3.2258	31	100.0000	Deutsche Bank
43	3	9.6774	30	96.7742	Santander, Barclays, BBVA
42	1	3.2258	27	87.0968	Société Générale
39	1	3.2258	26	83.8710	Salomon Brother(Citigroup)
30	1	3.2258	25	80.6452	Crédit Agricole
29	1	3.2258	24	77.4194	Crédit Suisse
28	1	3.2258	23	74.1935	Caixabank
27	3	9.6774	22	70.9677	Goldman Sachs int., Caja Madrid, HSBC France
19	1	3.2258	19	96.7742	Calyon
18	1	3.2258	18	61.2903	JP Morgan
Sum	31	100.0000			

[4] We have been unable to access the amount of debt underwritten by each actor in the issuance but we did have access to the amount of debt held by participating actors at a given time after trading the syndicated bond in the secondary market.

Likewise, the ten most prestigious banks in the Spanish government debt market are Goldman Sachs[5], Caixabank, Credit Suisse, Credit Agricole, Citigroup, Société General, Barclays Bank, Santander, BBVA and Deutsche Bank (Table 2).

Secondly, influence was analysed by the outdegree of each vertex k represented by:

$$C_d(a_k) = \sum_{i=1}^{n} (a_k, a_i)$$

where (a_k, a_i) =1 if and only if a_k is the initial vertex of the arc (a_k, a_i), given that the number of times an actor participates in an issue as a leader, thereby selecting the co-leader group, is an indicator of influence. As table 3 shows, Citigroup, Santander, and to a greater degree, Société Générale, Barclays and BBVA are the banks with the highest rate of participation as leaders, and therefore select their partners for syndicated debt underwriting. It must also be remembered that it is the State, via the Treasury Secretary's Office, that selects the financial institutions included in the most active market makers that will lead each issue and therefore select the other partners.

Table 3. Output Degree Listing in the Spanish syndicate bond market

Outputs	Freq	Freq%	CumFreq	CumFreq%	Representative
105	1	3.2258	31	100.0000	BBVA
101	1	3.2258	30	96.7742	Barclays Bank
90	2	3.2258	29	93.5484	Société Générale
83	1	3.2258	28	90.3226	Santander
70	2	3.2258	27	87.0968	Salomon Brother(Citigroup)
39	1	3.2258	26	83.8710	Calyon
21	1	3.2258	25	80.6452	Goldman Sachs int.
16	1	3.2258	24	77.4194	Crédit Agricole
11	2	3.2258	23	74.1935	Caixabank
10	1	3.2258	21	67.7419	BNP PARIBAS
6	2	6.4516	20	64.5161	Deutsche
5	1	3.2258	18	58.0645	JP Morgan
0	17	54.8387	17	54.8387	Estado
Sum	31	100.0000			

It can therefore be claimed that 13% of the most influential financial institutions have selected 70 or more partners in the total number of Treasury issues, thereby holding a clearly dominant position over the remaining entities, with a total of 31 points separating them from the next financial institution.

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[5] In accordance with the indegree ranking, Goldman Sach holds eleventh position, HSBC twelfth and Caja Madrid thirteenth.

The centrality measures have been completed with the calculation of the Bonacich index (1987) which maintains that an individual's status varies in accordance with that of the persons he/she is connected to:

> The proposal offered here is for a family of centrality measures $c(\alpha,\beta)$ generated by two parameters, α and β. Parameter β reflects the degree to which an individual's status is a function of the statuses of those to whom he or she is connected. If β is positive, $c(\alpha, \beta)$ is a conventional centrality measure in which each unit's status is a positive function of the statuses of those with which it is in contact (Bonacich 1987: 1170)

The figure below illustrates the Bonacich index value, highlighting the five institutions with the highest values. These nodes coincide with those that have the highest output degree, as shown in Table 3.

Figure 2. Market maker power network according to the Bonacich index calculated using Pajek.
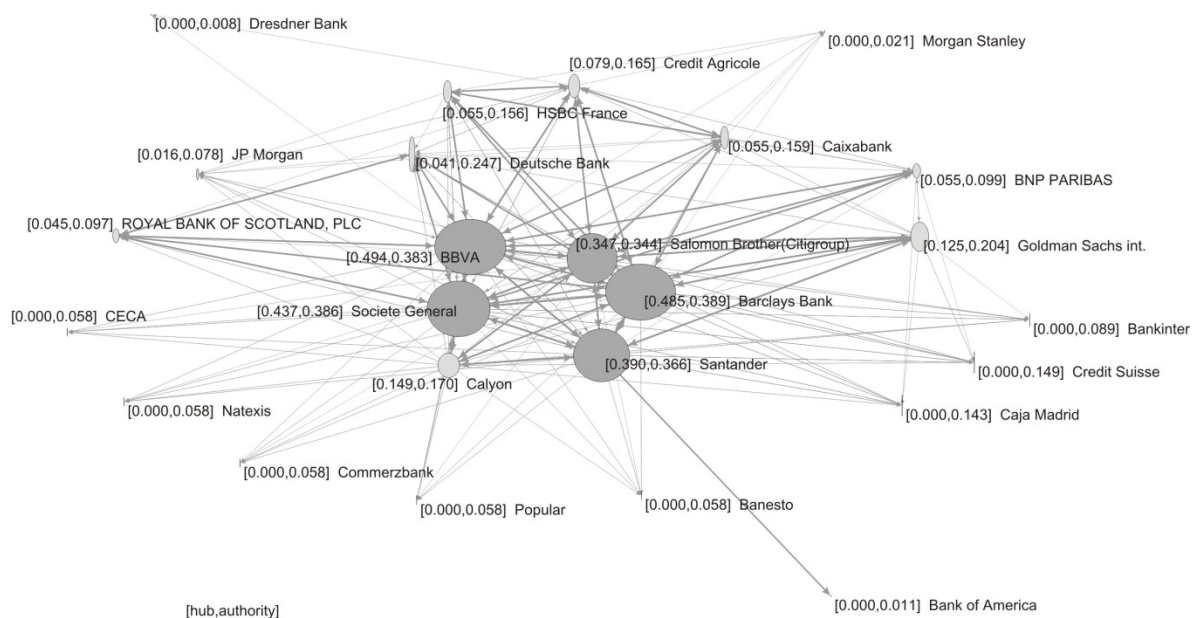
Drawing on Bother et al. (2010), the Bonacich index reflects the centrality of a network vertex determined by the centrality of those it is connected with; in other words, not only the amount of deference received, but also the extent to which deference is directed from high status others. The Pajek command Hubs-Authorities applies this principle, allowing for the calculation of the eigenvector centrality (de Nooy et al. 2008: 153).

For the purposes of this article, degree centrality measures were used to determine status correlation and the amount of debt acquired by each actor and their nationality, as they allow for a distinction to be drawn between the concept of prestige, namely the frequency with

which an actor is selected to form part of the underwriters group, and influence, which focuses on actor activity as leaders of the issuance underwriting.

5.2.The evolution of the market marker network.

Analysing a network overtime implies a series of theoretical and technical challenges. These include the fact that actors' changing positions require a certain degree of stability in order to apply reasoning based on graphic visualisation (de Nooy, 2011). For the purpose of this paper, the method used consisted of generating an initial position for the actors based on the data provided. This led to the subsequent generation of further networks and the corresponding positions in each of the times stipulated t+1 (Gil-Mendieta et al. 1997; Nooy et al. 2005). The Frutcherman-Reingold algorithm (Fruchterman and Reingold, 1991) was used to calculate the positions, including details of size, density, weighted indegree and outdegree node as elements for analysis.

As for the evolution of the relations structure of the network of market makers that participated in syndicated issuances between 2002 and 2015, two clearly differentiated periods emerge.

The first took place between 2002 and 2007 when the network of market makers that underwrote public debt was formed by a small number of leader and co-leader vertices. During this period it is not possible to identify a regular relation structure for participating actors, with the exception of BBVA, which took part in all of them, on most occasions acting as a leader. This is due mainly to the innovative nature of the syndicated procedure which was first introduced in 2002.
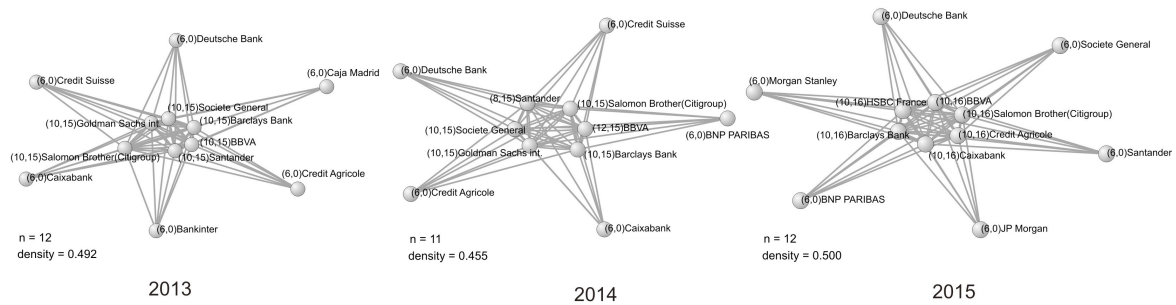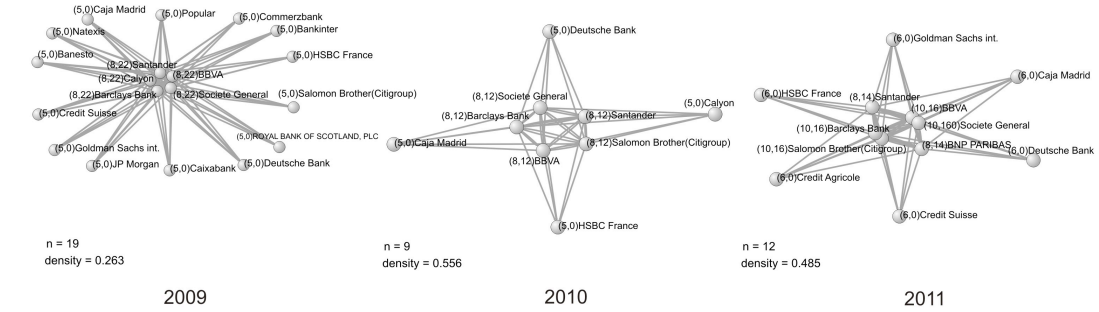
The second period, from 2008 onwards (see Figure 3), is characterised by a wider and denser structure of actors and relations in terms of dealings between managers or leaders and co-managers or co-leaders. This period saw the consolidation of a stable group of leaders made up of BBVA, Santander, Barclays, Citi Group and Société Générale which all participated on a regular basis, leading the issuance and selecting the group of co-managers. Naturally, and as will be seen later on, this core group of actors matches those identified as holding the highest and most influential positions of status in the general relational structure for the period in question.

As for the co-manager group, the second period is also characterised by the emergence of a group of regular participants, namely Deutsche Bank, HSBC and, albeit to a lesser degree, Crédit Agricole. One of the most noteworthy features of this group, which was consolidated from 2008 onwards, is that it does not include those actors previously defined as the most prestigious.

This is due to the fact that only those regularly chosen as co-leaders are taken into consideration, unlike the status positions defined in the case of prestige, which considers those actors chosen most often as either leaders or co-leaders. Another key feature of this period is the specific behaviour of 7 financial institutions (Banesto, Banco Popular, CECA, Bankinter, Commerzbank, Natexis and RBC Europe Ltd.) which only participated as co-leaders in the 2007 and 2008 issues, with the sole exception of Bankinter, which also appeared as a co-leader in 2013. This can be attributed to the high degree of interest this type of issue holds for both the State and the banking industry in a context of sovereign debt crisis.

Figure 3. The evolution of the market marker network[6]

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[6] Years 2003, 2004 and 2012 are not represented as there were no syndicated issuances during this period. The figure shows size, density and input-output centrality measures.

2002-2015

Bank of America
ROYAL BANK OF SCOTLAND, PLC
Credit Suisse
Caja Madrid
Bankinter
Natexis
Goldman Sachs int.
BNP PARIBAS
Santander
Banesto
Deutsche Bank
Societe General
Salomon Brother(Citigroup)
Barclays Bank
Calyon
Credit Agricole
BBVA
Morgan Stanley
Caixabank
HSBC France
Commerzbank
JP Morgan
CECA
Popular
Dresdner Bank

2002

(1,0)Credit Agricole
(2,6)Santander
(1,0)JP Morgan
(1,0)BBVA
(1,0)Deutsche Bank

n = 5
density = 0.200

2005

(2,0)Barclays Bank
(2,6)BBVA
(2,0)Santander
(2,0)Deutsche Bank
(2,6)Credit Agricole
(2,0)Dresdner Bank

n = 6
density = 0.333

2006

(5,0)Santander
(8,10)Barclays Bank
(8,10)ROYAL BANK OF SCOTLAND, PLC
(8,10)BBVA
Societe General
(8,10)Deutsche Bank
(5,0)Credit Agricole

n = 7
density = 0.714

2007

(4,0)Salomon Brother(Citigroup)
(6,8)Santander
(6,8)BBVA
(6,8)Barclays Bank
(6,8)Societe General
(4,0)Calyon

n = 6
density = 0.667

2008

(6,0)Caixabank
(6,0)Caja Madrid
(6,0)Banesto
(6,0)Credit Suisse
(6,0)Deutsche Bank
(10,23)Santander
(10,23)BBVA
(6,0)ROYAL BANK OF SCOTLAND, PLC
JP Morgan
(12,25)Calyon
(12,25)Salomon Brother(Citigroup)
(12,25)Barclays Bank
(12,25)Societe General
(6,0)Popular
(6,0)Commerzbank
(6,0)Natexis
(6,0)Goldman Sachs int.
(6,0)HSBC France
(6,0)Bankinter

n = 19
density = 0.327

2009

(5,0)Caja Madrid
(5,0)Popular
(5,0)Commerzbank
(5,0)Bankinter
(5,0)Natexis
(5,0)HSBC France
(5,0)Banesto
(8,22)Santander
(6,22)Calyon
(8,22)BBVA
(8,22)Barclays Bank
(8,22)Societe General
(5,0)Salomon Brother(Citigroup)
(5,0)Credit Suisse
(5,0)Goldman Sachs int.
(6,0)ROYAL BANK OF SCOTLAND, PLC
(5,0)JP Morgan
(5,0)Caixabank
(5,0)Deutsche Bank

n = 19
density = 0.263

2010

(5,0)Deutsche Bank
(8,12)Societe General
(5,0)Calyon
(8,12)Barclays Bank
(8,12)Santander
(6,12)Salomon Brother(Citigroup)
(5,0)Caja Madrid
(8,12)BBVA
(5,0)HSBC France

n = 9
density = 0.556

2011

(6,0)Goldman Sachs int.
(6,0)HSBC France
(8,14)Santander
(6,0)Caja Madrid
(10,16)BBVA
(10,16)Barclays Bank
(10,16)Societe General
(10,16)Salomon Brother(Citigroup)
(8,14)BNP PARIBAS
(6,0)Deutsche Bank
(6,0)Credit Agricole
(6,0)Credit Suisse

n = 12
density = 0.485

2013

(6,0)Deutsche Bank
(6,0)Credit Suisse
(6,0)Caja Madrid
(10,15)Societe General
(10,15)Goldman Sachs int.
(10,15)Barclays Bank
(10,15)BBVA
(10,15)Salomon Brother(Citigroup)
(10,15)Santander
(6,0)Caixabank
(6,0)Credit Agricole
(6,0)Bankinter

n = 12
density = 0.492

2014

(6,0)Credit Suisse
(6,0)Deutsche Bank
(8,15)Santander
(10,15)Salomon Brother(Citigroup)
(10,15)Societe General
(12,15)BBVA
(6,0)BNP PARIBAS
(10,15)Goldman Sachs int.
(10,15)Barclays Bank
(6,0)Credit Agricole
(6,0)Caixabank

n = 11
density = 0.455

2015

(6,0)Deutsche Bank
(6,0)Societe General
(6,0)Morgan Stanley
(10,16)HSBC France
(10,16)BBVA
(10,16)Salomon Brother(Citigroup)
(10,16)Barclays Bank
(10,16)Credit Agricole
(10,16)Caixabank
(6,0)Santander
(6,0)BNP PARIBAS
(6,0)JP Morgan

n = 12
density = 0.500

(input degree, output degree)

19

Figure 3 shows that on considering the overall data, no clear distinction can be drawn between the position of institutions based on their function as leader or co-leader within the structure. As the structure varies from year to year, it can be seen how institutions with leader-leader relations gradually position themselves at the centre of this structure, whilst those selected as co-leaders are positioned on the periphery.

5. 3. Structural equivalent analysis.

After analysing the individual status position of each actor in accordance with their node indegree and outdegree, the next stage consisted of analysing their network position for the entire period analysed by means of a structural equivalent analysis.   According to Wasserman and Faust (1997), the definition of structural equivalence specifies the precise formal conditions that must occur for actors to be equivalent. Structural equivalent actors have identical ties to and from identical actors in all R relations (Wasserman and Faust, 1997: 357; Lorrain and White, 1971). Therefore, actors with similar patterns of ties are said to be relationally equivalent, to constitute an equivalent class, or to occupy equivalent positions in the network (Nooy et al., 2005).

In algebraic terms, structural equivalence (Batagel and Ferligoj 1992) can be defined as follows: where X is a set of n elements and R a simple relation defined on X and its corresponding matrix $R=[r_{ij}]_{nXn}$, where: $R_{ij}=1$ if $x_i R x_j$, and $R_{ij}=0$ in any other case. x_i x_j can be considered structurally equivalent if:

1. $r_{ij}=r_{ji}$
2. $r_{ii}=r_{jj}$
3. $\forall k \neq i,j: r_{ik}=r_{jk}$
4. $\forall k \neq i,j: r_{ki}=r_{kj}$

This definition can also be applied to the case where r_{ij} are real numbers. This means that the concept of structural equivalence is also applicable to non-symmetric and valued matrices.

In order to analyse the structurally equivalent position, a statistical technique known as 'hierarchical clustering' was used. This technique is effective in representing positions in social network data (Wasserman and Faust, 1998). Its main advantage lies in the fact that it solves the need for transparent classification and structuring, and in general, for the creation of individual typologies based on their position within a specific relational network.   The procedure is explicit and the interpretation is clear. However, this technique places too much emphasis on the researcher's interpretation when choosing the dissimilarity measure and the number of clusters for the final solution. Indeed, the hierarchical clustering technique is accompanied by the use of the blockmodelling technique in order to confirm the results obtained, as both are intended to

identify positions of structural equivalence. As Dorian et al. state, "Blockmodelling provides a method and rationale for distilling the clusters of actors that share as much, as possible, common patterns of ties within and between the clusters" (2005).

The number of blocks was determined in accordance with the results of the hierarchical clusters analysis. Pajek was used to calculate the hierarchical clusters and blocks based on structural equivalence.

Following this framework, the analysis was organised as follows:

1) Choice of proximity, similarity or dissimilarity measure

As stated previously, we have attempted to identify structural equivalent positions determined by the dynamics of the partner choice process, and therefore we consider that who selected who, the direction of the relation, and the role played by each actor in each issuance in the period under study are vital elements that must be taken into account. Furthermore, it must also be remembered that the institutions act on occasions as leaders and on others as co-leaders. In this sense, and in order to differentiate between leader-leader and leader-co-leader relations, value 1 directed relations were drawn up in order to refer to leader – co-leader relations, and value 2 bi-directed relations to refer to leader-leader relations.

Given that the leader-leader relations were attributed a value of 2, and leader – co-leader relations a value of 1, we opted to apply a distance measure that would take into consideration directed relations and the multiple ties between the financial institutions, such as the Euclidean distance (D5) between vertices (u,v) (see Sneath and Sokal, 1973):

$$d_5(\mathrm{u,v}) = \sqrt{\sum_{\substack{s=1 \\ s \neq u,v}}^{n} ((q_{us} - q_{vs})^2 + 2(q_{su} - q_{sv})^2 + (q_{uu} - q_{vv})^2 + (q_{uv} - q_{vu})^2)}$$

A key factor for consideration is that based on the adjacency matrix Q, the program calculates the dissimilarity measure for the set of years analysed, not for each separate year. The chosen measure considers both the vertex neighbourhoods and the line values.

In line with the theoretical and methodological approach described in this paper, which distinguishes clearly between two relational models represented by values 1 and 2, D5 is the appropriate measure to estimate the structurally equivalent positions of status.

As discussed above, the relationship between market structure and status is derived from the relational nature of this concept whereby status is understood as an actor position within a network of relationships that form a market structure.

2) Choice of classification method

The Ward descendant hierarchical clustering method was used, the default option in the Pajek program. With this method, each phase combines two elements that represent the minimum loss of inertia; in other words, two groups are joined in an attempt to minimise the variance within each group (Aldenderfer and Blashfield, 1984).

3) Classification of the financial institutions into groups and calculation of the number of groups

By applying the D5 dissimilarity measure based on the Euclidean distance, we obtained a solution of three clusters that clearly indicate structurally different positions in the public debt market based on the dual definition of status and the capacity for influence and prestige, as explained below.

Table 4. Cluster composition

Cluster 1 'Dominant market members'	Cluster 2 'Most prestigious co-managers'	Cluster 3 'Occasional co-leaders market members'
Sub-tree of 100022 [20.08] (5)	Subtree of 100021 [18.32] (10)	Subtree of 100019 [13.37] (10)
(code 6) BBVA	(code 9) Caixabank	(code 1) Banesto
(code 16) Barclays Bank	(code 19) HSBC France	(code 3) Popular
(code 14) Société General	(code 5) Credit Agricole	(code 7) CECA
(code 2) Santander	(code 20) Deutsche Bank	(code 17) Commerzbank
(code 11) Salomon Brother (Citigroup)	(code 23) BNP PARIBAS	(code 22) Natexis
	(code 25) Royal Bank of Scotland, PLC	(code 4) Bankinter
	(code 8) Caja Madrid	(code 10) JP Morgan
	(code 18) Credit Suisse	(code 12) Dresdner Bank
	(code 21) Goldman Sachs int.	(code 13) Morgan Stanley
	(code 24) Calyon	(code 15) Bank of America

Firstly, and as shown in Table 4, we obtained a structurally equivalent group in terms of leadership positions in the public debt market. This group is made up of those institutions with a high degree of participation in syndicated issuances, with an average of 8 participations as leader per institutions, notably BBVA and Barclays, and mainly as leaders of said issues. The group is therefore highly influential as its members are responsible for organising the issue and selecting the co-leaders.

The second group comprises institutions with a high degree of participation in the public debt market, albeit somewhat lower than the previous group, as well as a high degree of participations as issue co-leaders. This group is extremely uniform, although Deutsche Bank stands out as the most frequently selected partner and therefore the most prestigious. Also worthy of note is the close equivalence between the positions of Caixa Bank and HSBC France on the one hand, and Credit Suisse and Caja Madrid on the other, all with an average

participation rate of 5 issues. These institutions rank immediately behind Deutsche Bank in terms of market prestige. They are followed by the remaining institutions with a lower level of participation.

Finally, Table 4 shows a third group, characterised by their low level of participation in the auctions and particularly in their role as co-leaders.

The process whereby the clusters are formed is shown in Table 5, with the application of the D5 similarity measure in which the arc value is taken into consideration, as mentioned before. The table includes the dissimilarity value for each cluster analysis solution. When considering the two clusters, each formed by 10 nodes, the dissimilarity value is higher (55.58) than the value of each separate cluster (18.32 and 13.37), which indicates that there are clear differences between the two clusters. When all three clusters are considered together, the dissimilarity value is almost five times higher (258.61), revealing a high degree of intra-group homogeneity and heterogeneity between the three clusters.

Table 5. Hierarchical Clustering Solutions

Total number of resulting clusters	Cluster (C)	Dissimilarity value	Number of actors included in cluster
3 Clusters	C. 1	18.32	10
	C. 2	13.37	10
	C. 3	20.08	5
2 Clusters	C.1	55.58	20
	C. 2	20.08	5
1 Cluster	C1	258.61	25

The Frutcherman and Reingold (1991) algorithm was used to determine the structure of the network in which the actors' position is defined by their structural equivalence and theoretical distance. Their position in the Euclidean plane was based on their physical location, with structurally equivalent actors occupying positions of proximity, whilst their position in terms of other groups of actors was determined in accordance with their theoretical distance.

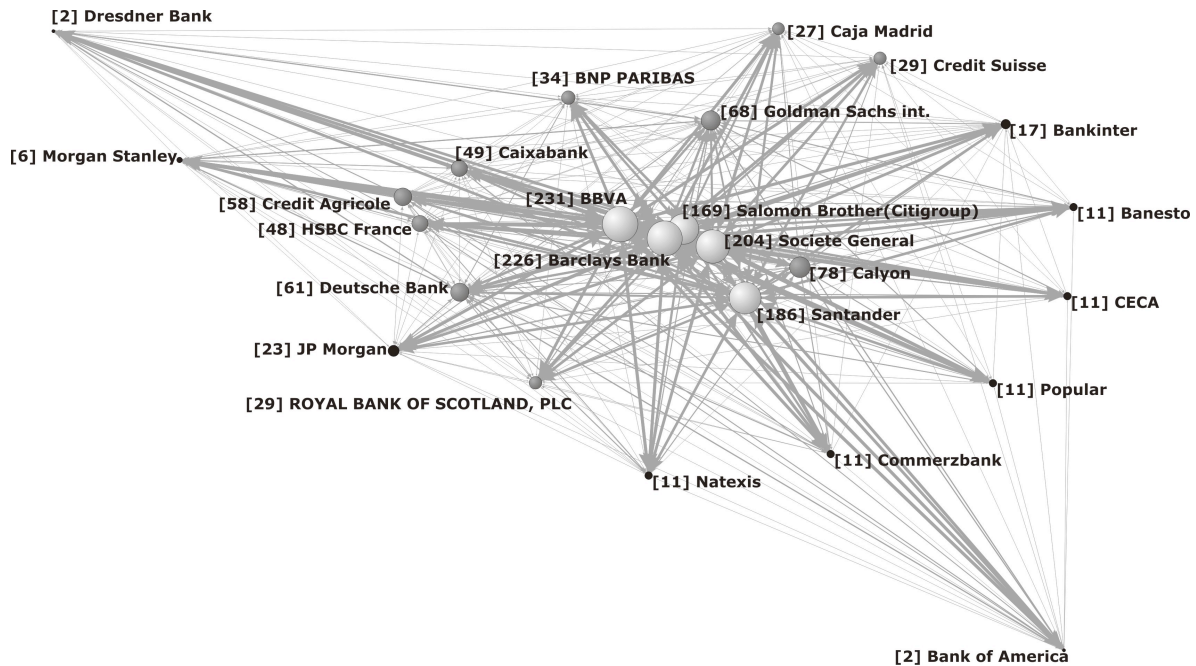Figure 4. Structural Equivalence positions in syndicate bond issuance

Figure 4 shows a group that is clearly defined by the market-dominant institutions that belong to cluster 1 (in light grey); followed almost immediately by a second group made up essentially of relation recipients, including the 10 institutions that constitute the second cluster (in grey); and a third peripheral group that includes the remaining institutions (in black). In order to provide a graphic representation of the node relevance in the network, the valued centrality was calculated: namely the sum of the tie values, which is also a status indicator. This value was used to calculate the node diameter, as shown in the graph.

5.4. Correlation analysis of status scores and amount and nationality partition

After examining the relational patterns between the financial institutions by means of an analysis of prestige and influence, the next stage was to analyse the correspondence between indegree and outdegree ranking, as status position indicators and their correlation with 1) a variable that defines participants' identity, such as the banks' nationality and 2) the debt amount in millions of dollars held by the various institutions for each issue over a specific period of time.

Regarding the first point, the aim was to observe the extent to which essentially advantageous status positions in the public debt market are related to the participants' nationality, creating a stratification of the market determined by the geographical origin of the participating institutions. In this sense, we have calculated Cramer's V coefficient, derived from Pearson's chi-squared test.

Let a sample of size n of the simulteneouly distributed variables A y B for i = 1, …, r; j=1,…, k; be given by the frequencies n_{ij} = number of times the values (A_i, B_j) were observed. Cramer's V is computed by taking the squared root of Pearson´s chi-squared (x^2) divided by the sample size and the minimun dimension minus 1:

$$V = \sqrt{\frac{(x^2/n)}{\min(k-1, r-1)}}$$

Regarding the second point, our objective was to establish the degree of association between structural market status positions and the ownership of bonds issued in this market by the various financial institutions. The amount of debt has been grouped together in a total of seven intervals in order to transform the original vector variable into a new ordinal variable, using the command partition which, according to Pajek software, enables us to simplify the Spearman rank-order correlation, providing a suitable association measure for ordinal variables of the type we are concerned with here. Consequently, considering two size n samples, ranks x_i y y_i based on values X_i, Y_i were calculated first. The coefficient is calculated as: $r = 1 - \frac{6\sum_{i=1}^{n}(x_i - y_i)}{n(n^2-1)}$, where $x_i - yi$ is the difference between ranks.

Table 6. Spearman Correlation[7].

Partitions	Amount Partition and Indegree ranking Partition of N2 (31)	Amount Partition and Output Degree ranking Partition of N2 (31)	Amount Partition and All Degree Partition of N2 (31)	Nationality and All Degree Partition of N2 (31)
Spearman Rank Correlation Coefficient	0.673	0.663	0.680	
Cramer's V				Chi=130.42962963 V Cramer =0.725

---

[7] A table of 95% critical values was used for the Spearman rank correlation coefficient. The results showed that the critical value for an n=31 sample is 0.368 and the highest values are 0.673, 0.663 and 0.680. These are significant, unlike the value of the Cramer's V coefficient, which at 0.0958 is not significant.

As shown in Table 6, there is a strong and positive correlation between input and output degree ranking, understood as an indicator of status, and the amount of bonds held by the different actors in millions of euros. This strong association indicates that these investors are the most powerful and influential, and hold a greater number of bonds in their own portfolios, instead of distributing them among their clients. This is because the price and interest terms and conditions of syndicated issuances are more beneficial for investors than those obtained by the standard auction procedure, and therefore act as an incentive for those institutions that regularly play an active role in the public debt market. Therefore, when placing bonds acquired during the issue to third parties, priority is given to requests for their own portfolio, even when this is not in line with the objectives of this type of issue mechanisms, whose function, as discussed earlier, is the international dissemination and promotion of public debt bonds.

Secondly there is a statistically non-significant association between nationality and status operationalised as input, output and all degree. It is not possible to talk about market segmentation in terms of nationality, which is significant considering that it is one of the most important market mechanisms in providing the Government with access to credit and liquidity. The irrelevance of nationality in shaping status positions would appear to confirm the strategic importance of foreign investors on government debt markets for state governments, to the detriment of the national elite.

Contrary to expectations of economic and financial research, the results confirm the existence of a social structure for the government debt market, with demonstrable effects on the concentration of bonds held by a limited number of financial institutions. The outcomes of this social structuration of the market in status positions illustrates the Matthew Effect (1968) whereby recognition is transformed into unequal access to economic resources.

6. Conclusions

This paper has analysed the micro social structure of Spain's government debt market, considering essentially the positions of status held by the various financial institutions included in the group of market makers and that took part in the syndicated issuances held between 2002 and 2015.

The syndicated issuance model analysed here reveals the institutional micro-structure whereby the State attempts to cut the transaction costs associated with its finance model for government debt markets. Access to credit is guaranteed by the creation of a network of financial institutions responsible for organising the auction and supposedly distributing the securities on international markets

The research suggests that the mechanism used by states to finance their deficit is not a narrow 'economic' phenomenon, but rather a holistic political and social one (Baker, 1984; Hager, 2015). The case analysed exemplifies the debt consolidation concept posited by Streeck (2015) in order to describe the profound modifications to major democratic institutions, stemming from the subjection of government policies to a series of institutional measures and arrangements designed to secure creditors' ongoing confidence in the solvency of sovereign states and their access to credit under sustainable conditions (see Massó 2016). In an incentive-based institutional pattern, this takes the form of a market arrangement for the acquisition and dissemination of government debt, guaranteeing a two-fold advantage for financial institutions in exchange for a considerable influx of cash for the state, by securing the totality of the issue for participating banks. This twofold advantage comes firstly from the commissions received for taking part in this type of issue, and secondly, from the fact that price and interest rates of syndicated issuances are more profitable than those obtained by the standard auction procedure.

The effect of debt concentration on a limited set of domestic and foreign financial institutions is significant in the shaping of a new financial aristocracy. This must be seen within the context of a financialisation process (van der Zwan, 2014) in which the state and supranational organisations have played an active role in the institutional design of the global financial order. Drawing on Streeck (2015), the recent sovereign debt crisis experienced in southern European countries and the model of fiscal austerity aimed at boosting market confidence in the sustainability of the countries involved, reflects the shift from the activist-interventionist state of post-war democratic capitalism towards a lean state that is receptive to market pressures.

The research shows that the State plays a crucial role in selecting positions of influence in the market. It selects the participating financial institutions in accordance with financial criteria, as well as their trade capacity or debt market potential, positioning them as leaders for a specific issuance. Over time, the interaction of these organisations in selecting their underwriting partners shapes a relational framework for status positions that we have defined as a social market structure.

In line with Podolny (1993), the status positions of the market members affect the additional advantages they enjoy in the market. These advantages reproduce the so-called Matthew Effect (Merton, 1968) whereby actors with a higher status obtain greater recognition and greater rewards that allow them to consolidate their advantage.

This research shows that the market maker network is not rooted in national business communities. Instead, it confirms the transnational embeddedness of the Spanish government debt market through the concentration of debt securities in a complex and national heterogeneous structure. This conclusion converges with recent research on Spanish interlocking directorates (De Andrés, 2014; Cárdenas, 2012; Sicilia & Sallan, 2008).

Finally, the natural progression of this study would be to examine the role played by market regulations in the configuration of status positions. Elements such as entry and exit barriers and fiscal policy are key institutional mechanisms that may affect the social organization of the market. This provides major insights into the role of the State as a status producer.

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