

# DO BANKING RELATIONSHIPS IMPROVE CREDIT CONDITIONS FOR SPANISH SMES?<sup>1</sup>

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## **Abstract**

Small and medium-sized companies are extremely important for the Spanish economy. However, they face difficulties when trying to obtain financing (credit rationing). As a result, and given their limited possibilities to obtain finance in the capital market, they turn to the credit market, which is the main provider of funds for such companies. The main aim of this study is to provide an insight into the banking relationships that are developed in this market and their impact on credit rationing. Previous literature has studied this situation by focusing on price rationing and quantity rationing. This study furthers research into banking relationships by examining the effects that these relationships may have on compensation demanded for debt and the relationship with long-term credit rationing. After studying 386 SMEs listed in the *Spanish Guide of Exporting Companies*, the main conclusions drawn were as follows: i) SMEs working with larger numbers of financial entities and with longer relationships with these entities enjoy better access to credit; ii) SMEs that develop banking relationships by contracting financial products manage to reduce their credit costs; iii) SMEs that have longer banking relationships with banking entities benefit from better long-term credit conditions; and iv) the maintenance of banking relationships through the rendering of services reduces bank requirements in terms of guarantees in credit applications.

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## **KEY WORDS:**

Financing of SMEs - credit market – banking relationship – lending relationship - credit rationing

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<sup>1</sup> This study was partially supported with funding from the Spanish Ministry of Education and Culture (Directorate General of Research Projects), Project SEC2001-1169 and Project SEJ2004-01688.

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## 1.- Introduction

The financing of small and medium-sized companies (SMEs) has been attracting more and more interest among both European public authorities and academics, particularly in the case of Spain. Although little more than 500 companies access the capital market, more than 2,500,000 smaller-sized companies manage to finance their investment projects through financial intermediaries.

The existence of financial markets - the main mechanism for valuing and controlling companies listed on the stock market - is the required reference framework in order to analyze financial business decisions. In the case of SMEs, the application of valuation methods becomes more complex insofar as there is no mechanism that reflects investors' expectations. The functioning of the *credit market* and of the *banking relationships* developed therein is the first and almost only reference that can be used to determine the way in which fund providers value borrowers when granting, renewing or cancelling lines of credit. Banking relationships<sup>3</sup> offer an insight into the financial behaviour of SMEs and financial entities, since these relationships condition major investment and growth decisions. The study of the main characteristics of banking relationships reveals the existence of problems of information asymmetries in this relationship, and which in turn lead inevitably to credit rationing.

"Banking Relationships" (Boot, 2000) are defined as "the provision of financial services by a financial intermediary over time, enabling it to obtain specific, relevant and private information about the client, and evaluating the profitability of these types of investments". Boot asks whether such relationships create value for both parties and, if they do, what the costs of these relationships are.

This study attempts to answer certain questions regarding the credit market and aspects of the banking relationships that are developed therein.

The characteristics of the banking relationship will depend, on the one hand, on: i) the characteristics of the company - its size, the number of financial entities with which it works, the duration of the banking relationship, the financial products contracted with the institution in question; and, on the other: ii) the characteristics of the financial market in which the SME operates.

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<sup>3</sup> The term "banking relationship" is used as a synonym for "lending relationship", a term that is insufficiently defined in the literature on banking intermediation.

The importance of banking relationships may be determined by answering the following questions, namely: what strategies do firms adopt in order to obtain finance and avoid credit rationing?; must companies maintain long banking relationships with one or various credit institutions?; how does the number of credit entities with which a company works affect credit contracting terms and conditions (interest rates and collateral requirements)?; or, when attempting to obtain credit, how relevant is the contracting of other financial products such as direct crediting/debiting of salary payments or pension funds?

The study of bank intermediation not only highlights the ability of financial entities to obtain information from credit applicants; it also reveals the great emphasis on the need to develop a banking relationship that goes beyond purely contractual relationships. Pioneering research in this field has been carried out by Petersen and Rajan (1994, 1995, 2002) and Berger and Udell (1995). Following these studies, researchers have gradually begun to examine the impact of banking relationships on SME financing in certain European countries such as Germany, Italy, Belgium and Portugal.

In Spain, banking relationship studies have basically focused on large companies, analysing the impact of these relationships on the participation of banking groups in the capital of large firms, and vice versa, namely the presence of enterprises on boards of directors of financial entities. However, only a very small number of studies have discussed the relevance of the development of banking relationships in SME financing, despite the important contribution made by these types of enterprises to the Spanish economy.

In the case of SMEs, research in Spain has focused on theoretical aspects of credit rationing (Freixas, 1991; Caminal, 1995; López, Riaño and Romero, 1999), as well as on determining the structural factors of SME financing (Salas, 1996) and the use of guarantees in conditions of information asymmetry (Ramírez Comeig, 2003), among other aspects. Cardone, Longarela and Camino (1998) were the first to study the importance of banking relationships in the Spanish market. Variables such as company size and age, as well as the types of banking relationships they established with financial intermediaries, revealed certain effects on credit availability and credit costs. The present study aims to elaborate on the aspects addressed in this first study, since the latter only focused on one group of SMEs that are part of the Spanish reciprocal guarantee system.

Recently Hernández (2004) published a study on banking relationships using data corresponding to 182 companies listed in the *SME Economic Observatory of the Region of Murcia*. The results offered by this author coincide with those reported for other financial markets in terms of the benefits of the duration of banking relationships (Belgium, Germany and Italy), namely that longer banking relationships increase the availability of credit but also raise its cost. Another paper which studied a sample of 705 Spanish SMEs, analysed the determinants of the number of banks with which these firms worked. It showed that bigger enterprises, older companies and firms with higher leverage tend to request financing from a larger number of financial intermediaries. The explanation for this is as follows. As they grow, these companies become more complex and require more financial services; similarly, their exposure to more risks due to greater leverage prompts them to search for new lenders because they are normally rejected by institutions that are not willing to assume their risk.

Following on from this introduction, Section 2 analyses the problems deriving from the presence of SMEs in credit markets. Section 3 describes the main field studies performed in different financial markets, including Spain. Section 4 presents the data and methodology used in this study. Section 5 offers and discusses the main conclusions. And finally, Section 6 presents the bibliographical references.

## **2.- Effects of information asymmetries**

The existence of information asymmetries affects the behaviour of economic agents operating in the credit market, namely firms and financial institutions. The impact of these information asymmetries is stronger in the case of SMEs since these type of firms are unwilling to provide good quality information to lenders, and even less so when no regular control and valuation mechanisms are in place. The appearance of credit rating companies for SMEs in the very short term could reduce the problems of information asymmetries by introducing qualified information in the credit market. In fact, of the different theories that explain capital structure, Agency Theory is the one specifically based on the existence of information asymmetries in the credit market.

SMEs approach the market with insufficient and poor quality information, which increases the number of information asymmetries with respect to existing ones,

although according to Norton (1991), these information differences will depend on the “stages or life cycle” of the company at a given moment<sup>4</sup>.

The credit market begins to play a relevant role when companies realise that they are unable to access the capital market and when they are deterred by the high costs of obtaining information (in the early years of companies’ lives), coupled, as mentioned previously, with the lack of valuation mechanisms and incentives from analysts and credit rating companies.

Conflicts of interests between firms and financial institutions and information asymmetries inevitably lead to credit rationing; this is when companies applying for financing are denied credit, even when they are willing to pay higher rates of interest for this credit.

In the specific case of SMEs, it is the credit market that rations credit. Therefore, in addition to the penalties imposed due to the greater risk (Freixas, 1991), these firms may endure the following types of rationing: i) payment of higher effective interest rates as a consequence of the greater risk and analysis expenses in the operation (price rationing); ii) obtainment of fewer resources than those requested (quantity rationing); and in our opinion there is a third form of credit rationing; iii) the obtainment of very short-term financing (even if this has to be used to finance medium or long-term projects, which is achieved by periodical refinancing) (long-term credit rationing). Considering the financial market as a whole, credit rationing may be understood as the rejection of a credit application.

As regards financial institutions, once an optimum interest rate has been achieved, defined as the interest rate above which lenders’ profits will diminish, and after having rationed credit according to either the price or the amount of credit in the case of investment projects with *different levels of risk*, these will only finance projects that are less risky, broader in scope and longer in duration. When deciding whether to finance investment projects of *equal profitability*, they will consider the visible characteristics of the project (Calomiris and Hubbard, 1988).

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<sup>4</sup> Thus, during the i) *growth* stage, the financial markets (credit and capital) have little or no information about the SME. As a result, self-financing and very short-term indebtedness are the predominant sources of financing; ii) in the *development* stage, companies gradually consolidate their positions in both markets and the success or failure of their projects, as well as the fulfilment of their financial commitments, allow them to develop banking relationships with the financial institutions that provide them with access to the credit market in more advantageous conditions, forming capital structures based on longer term indebtedness; iii) in their *maturity* phase, companies access the capital market, and it is at this point that debenture issues, the development of projects through financial intermediaries and capital increases become important sources of financing.

The effects of credit rationing may be partially resolved by improving and consolidating banking relationships. In this sense, credit institutions may reduce or partially eliminate information asymmetries and generate information on the borrower themselves. Thus, the interest rates and collateral requested by lenders diminish as the banking relationship matures and is consolidated. Interesting research is developing on this subject. The papers by Berger and Udell (1992 and 1995) and Petersen and Rajan (1994, 1995 and 2003) offer relevant conclusions. These authors highlight three dimensions of the banking relationship: i) the duration of this relationship; ii) the amount of services received from a single financial institution; and iii) the concentration of loans with a single lender. According to these authors, the value of the banking relationship increases over time since the parties obtain more and more information on the debt contract, and at the same time the strength of this relationship reduces the effects of credit rationing.

Thus, closer and longer banking relationships foster *greater credit availability*, although this is not always accompanied by a *decrease in the price* of money. According to Petersen and Rajan (1995), competition and long-term banking relationships are not always compatible. If the credit market is concentrated, financial intermediaries will be more willing to offer lower interest rates in order to reap future income from financed projects. However, when the market is more competitive, credit entities charge high interest rates, initially because the likelihood that the credit relationship will last longer and be consolidated diminishes, preventing them from sharing in expected future profits. This would partly explain why younger companies prefer internal financing over external sources of funds because the former is less costly than the latter in highly competitive and relatively unconcentrated credit markets. In the USA, younger companies receive larger volumes of bank financing in concentrated markets than companies in more competitive markets. This difference is reduced as companies mature. Similarly, the financing of investment projects is also conditioned by characteristics such as the size of the actual lender (Peek and Rosengren, 1995a, 1995b).

Thakor (1996) analysed the effects of the increase in the number of banks with which firms work and discovered that the ex-ante probability of credit rationing increases due to the risk analysis costs that this entails.

The most noteworthy benefits of banking relationships are basically:

- i) reduced information asymmetry;

ii) higher interest rates, since these are offset by future interest rate reductions, as the transfer of information between the lender and the borrower gains momentum. This is relevant whenever the confidentiality of the data transmitted by the former to the latter is guaranteed (Bhattacharya and Chiesa, 1995)<sup>5</sup>. In turn, the lender is motivated to invest in the search for information on the borrower since this enables the relationship to be maintained in the future (re-usage).

Firms that are initially unknown in the market, particularly young and small companies, are penalised by being forced to bear higher interest rates than those that they would normally be expected to pay (Petersen and Rajan, 1994; Boot and Thakor, 1994), but which would be compensated in the future with interest rates below market rates. At the same time, banks are willing to charge lower interest rates at the beginning of a banking relationship if they believe they will obtain high cash flows in the future.

iii) banking relationships improve the terms and conditions of credit contracts; these become more complete due to greater flexibility for taking decisions based on "soft" information (non-verifiable or non-observable).

The main cost of the banking relationship is basically the fact that the borrower becomes informationally captured. Sometimes firms do not change bank, not because they feel particularly well treated but because the lending institution has information that it could share with a future client who is a competitor of the "captured" company. This hold-up problem was first recognized by Sharpe (1990).

### **3.- Banking relationships and previous research studies**

The field studies performed in different types of financial markets coincide in determining that the consolidation of banking relationships helps to increase the availability of credit for applicants, and avoids credit rationing. Whenever results do not coincide and diverse results are obtained, this is due to the effect of the banking relationship on the terms and conditions of the credit contract (interest rate and collateral requirements). Thus, while the studies performed with companies in the USA conclude that banking relationships improve credit conditions because enterprises obtain lower interest rates and are asked to present fewer guarantees, opposite conclusions have been reached in studies performed in European countries. The

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<sup>5</sup> Innovative companies prefer to go into debt before approaching the capital market in order not to disclose information.

information obtained by the credit institution by virtue of the banking relationship worsens the conditions of the loan instead of improving them, i.e. higher interest rates are charged and more guarantees are requested. This is due to the different characteristics of the financial systems in countries with market-based systems, such as the Anglo-Saxon model (USA and United Kingdom), and countries whose systems are based on banking intermediation or the continental model (Germany, France, Spain, Belgium and Italy). As a result, companies in these countries have fewer financing alternatives and must therefore yield to the discipline of the banks.

Previous research has analysed the impact of the duration and scope (number of financial services that link the parties) of banking relationships, and subsequently the changes presented in the competitive environment of the European market, such as de-regulatory processes, and merger and takeover processes. In this connection, Berger *et al.* (1998) analysed the impact of mergers and acquisitions in the banking sector on credit to SMEs. According to these authors, although mergers reduce bank loans, this effect is generally compensated by the reaction of other banks. Sapienza (2002) confirms this effect of mergers. This author noted that when banks grow, they reduce the credit they award to small borrowers and subsequently banking relationships between these institutions and their clients change. Salas and Saurina (2003) analysed the determinants that influence the number of financial entities with which these enterprises work and the effect that these have on credit availability (rationing) and debt terms and conditions (interest rate and guarantees requested). These findings seem to suggest that companies have to work with only one bank in order to maximise fund availability, and at most with two banks so that the original lender loses the monopoly, thus enabling the SME to achieve better credit conditions<sup>6</sup>.

#### Japan

Hoshi, Kashyap and Scharfstein (1990, 1991) demonstrated that investment by firms with close bank relationships appears to be less liquidity constrained than investment by firms without close bank ties. They interpreted this finding as evidence that bank ties tend to mitigate information problems in the capital market. They also focused on the investment behaviour of firms that have recently weakened their bank ties in favour of greater reliance on the bond market. Their results suggest that these firms

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<sup>6</sup> The non-uniform behaviour of SMEs in Europe (they tend to work with a large number of financial entities) may be explained by: i) company size; ii) lack of co-ordination on the part of banks; iii) the credit rating of the SME; iv) diversification of the banking relationship; v) level of indebtedness of the SME; vi) age of the SME; vii) size of the bank; viii) banks and securities markets (Hernández, 2004). In our opinion, other relevant factors include the sector in which the SME operates and whether or not the firm belongs to a family group.

are now more liquidity constrained. They provide a discussion of why firms would loosen their bank ties in light of these liquidity costs. They argue that monitoring and other costs associated with bank finance must be large.

#### United States:

Petersen and Rajan (1994) analysed the North American market and the effect on credit availability (rationing of the amount of credit) and interest rates charged (price rationing) on: i) the duration of the banking relationship measured over the number of years that both entities have worked together; and ii) the amplitude/scope of this banking relationship, measured according to the number of financial services demanded/offered by both parties<sup>7</sup>.

The number of financial entities with which a company works is another aspect to be analysed within banking relationships<sup>8</sup>. Petersen and Rajan (1994) found that firms working with more banks had to bear higher interest rates and had greater access to funds. The reason for this relationship is explained by the fact that: i) supervision costs increase; and ii) the market considers that if a company has more banking relationships, this is due to its low credit rating; as a result, and given the banks' refusal to provide financing, the firm in question must seek funds from other financial institutions.

In a later study, Petersen and Rajan (1995) analysed the relationship between the benefits of banking relationships and the level of competitiveness of the banking sector. They concluded that credit availability was directly related to the market power of banks and also to the duration of banking relationships and inversely proportional to the number of banks with which companies worked.

Berger and Udell (1995) studied the duration of banking relationships in order to determine whether this had an inversely proportional effect on interest rates and

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<sup>7</sup> According to Boot and Thakor (1994), the banking relationship directly influences the level of rationing to which the company is exposed. The authors demonstrate that credit availability increases with the "market power of the bank" and the longer the duration of the banking relationship, but decreases when companies begin to work with more banks. These measures (duration and scope) have a positive influence on credit availability but have no effect on interest rates.

<sup>8</sup> According to Diamond (1984), the optimal decision is it to borrow from only one bank in order to avoid cost duplication. At the same time, the lender has more incentives to supervise. If the provision of funds is shared with another bank, supervision must be shared and this is not something that banks are interested in. However, from the standpoint of the firm, the fact that the FE (financial entity) has private information in its possession means that competition is fostered between lenders and borrowers enjoy greater flexibility when changing of financial intermediary.

guarantees requested. They find that banks tend to charge lower interest rates and request fewer guarantees if they receive more information from the borrower.

According to Thakor (1996), working with a large number of banks may increase the *ex-post* probability of access to credit. Inversely, *ex-ante*, it would seem that credit entities are not willing to invest time and money in analysing the risks that this would entail.

Cole (1998), using the same database as the abovementioned authors, analysed the effect of the duration of banking relationships on credit availability and reached the conclusion that the duration of banking relationships was directly proportional to credit availability and inversely proportional to the number of credit entities with which companies worked.

As regards the number of financial entities with which companies work, studies focusing on the American market seem to conclude that the value of banking relationships increases as the number of entities financing companies from this market decreases.

#### Italy:

Angelini, Di Salvo and Ferri (1998) studied a sample of Italian companies. Their main conclusions were that companies that manage to maintain longer banking relationships eventually end up paying higher interest rates. These results contrast with those described previously and can be explained by the fact that banks exploit their informational monopoly ("hold up") by charging higher interest rates because they have more information about the company.

In terms of the number of financial entities, these authors reported that Italian companies working with fewer financial entities achieved better credit availability but bore higher interest rates. Evidently banks concentrate more privileged information, and at the same time take away negotiating power from companies with other lenders.

D'Auria, Foglia and Marullo-Reedtz (1999) described the wide variety of banking relationships maintained by Italian SMEs. This market is based on a continental-type financial system, characterised by the existence of many small financial entities which are subject to a limited concentration of risks and specialisation of financial products.

These are the main reasons why Italian SMEs obtain funds from many different providers.

Detragiache, Garella and Guiso (2000) analysed the factors that determine the number of financial entities with which SMEs do business. The main findings may be analysed: i) from the standpoint of the financial systems implemented in Italy; and ii) according to the characteristics of the SMEs themselves. Thus, firms tend to work with only one bank i) when: 1) they establish relationships with smaller banks; 2) there is a high probability that these banks will become insolvent; or 3) countries have efficient bankruptcy regulation systems; and SMEs tend to establish relationships with only one bank ii) when: 1) they are very small; and when 2) they develop very profitable projects.

### Germany

Harhöff and Körting (1998) studied the German market and confirmed the results reported by Cole (1998) in relation to the impact of the number of banks with which companies work.

Elsas and Krahnert (1998) considered the condition of the figure of the main financing bank. According to these authors, this bank is also a liquidity provider, in case the company suffers a financial crisis. Although the main liquidity provider does not charge interest rates above those offered by other financing providers, it does provide liquidity if the SME experiences financial problems. The relationship that develops between the main bank and SMEs, based on mutual trust, consists of the bank requesting fewer guarantees and offering lower interest rates and the company being more willing to supply information; these results were also confirmed by Harhöff and Körting (1998) and by Lehmann and Neuberger (2001).

As regards the effect on loan conditions, these authors found that German enterprises working with fewer banks had greater access to credit and were asked to present fewer guarantees by banking institutions. The interest rate was not affected by the number of banks with which the company worked.

A very important contribution was made by Lehmann and Neuberger (2001); these authors analysed banking relationships from the viewpoint of banks - in their capacity as lenders - and not from the perspective of borrowers, as in the case of the studies described previously. The survey was performed among managers of financial institutions. They found that the perception of the financial institution was that there

is no possibility of obtaining credit and requesting guarantees during the first two years of the banking relationship.

Germany is clearly a country in which SMEs tend to concentrate and develop good banking relationships, and reap benefits by consolidating these relationships.

### Belgium

The work performed by Degryse and Van Cayseele (2000) is currently the field study that has examined the largest number of companies. These authors concluded that companies that had longer (duration) banking relationships were charged higher interest rates by financial institutions, and companies that contracted a broader range of the financial products benefited from reduced costs in financial operations, at the same time as financial intermediaries requested more guarantees, given the larger amount of information available to them.

De Bodt, Lobez and Statnik (2001) focused on the relationship existing between the number of financial entities working with firms and credit rationing. They analysed how SMEs should analyse their relationships with banks, i.e. how they should determine on the number of banks with which to work, what types of institutions they should choose as their main suppliers, etc. This study provided a direct measurement of credit rationing, or at least how this was perceived by SMEs. These authors confirmed the existence of credit rationing in the Belgian market and of a positive relationship between credit availability and banking relationship, where the duration of banking relationships was a fundamental aspect of credit availability.

One of their main conclusions drawn by these authors was that Belgian SMEs did not adopt specific strategies when choosing the number of financial entities with which they wished to work, and that this decision basically depended on the type of main financial institutions with which they operated and on the size of the SME in question, which is related to the information they provide to financing entities (smaller SMEs tend to work with more institutions in order not to suffer credit rationing, whereas larger SMEs normally concentrate on small numbers of financial institutions, mainly local ones, with which they work in order to reduce the probability of rationing). The characteristics of the Belgian market are somewhere between the concentration found in Germany and the dispersion displayed in Italy.

### Europe

Ongena and Smith (2000) analysed the behaviour of companies from different

European countries when optimising the number of banks from which to request financing. In Mediterranean countries (countries from southern Europe), enterprises sometimes work with up to 15 financial entities, whereas companies in northern European countries tend to concentrate their debts with a single bank. The number of financial institutions used by these companies is determined by the characteristics of the financial system (greater fragility, fewer financial entities), the existing legal framework, the size of the companies and their levels of debt.

### Portugal

Farinha and Santos (2002) analysed the determining factors that prompt Portuguese companies to increase the number of financial entities with which they work. These factors included: the duration of the company's banking relationship with a single bank; the size of the company; and its growth opportunities. These determining factors were positively related with banking relationships.

### Spain

In Spain very few studies have been performed in this field. One of the most important reasons is that until recently available databases did not have the information necessary to undertake research of these characteristics<sup>9</sup>.

Cardone *et al.* (1998) studied this issue by performing a survey among a group of companies whose data were provided by "SGRs" (*Sociedades de Garantía Recíproca* – (RGCs) Reciprocal Guarantee Companies)<sup>10 11</sup>. The contribution of this study consisted in the analysis of the financial situation of SMEs as a function of age; the duration of the banking relationship and the mediation or non-mediation of financial intermediaries in the credit market, as is the case of RGCs (*Sociedades de Garantía Recíproca* – Reciprocal Guarantee Companies). The study had two objectives: i) to study the importance of the age of the companies, the duration of the banking relationship and the mediation of RGCs as factors that help to reduce information

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<sup>9</sup> The databases that have traditionally been used are the following: the Financial Information Office of the Bank of Spain; the National Statistical Survey; the Survey on Business Strategies (ESEE); data from the *Fundación Empresa Pública* and Ministry of Industry and Energy; the database of the Institute of Tax Studies, and the SABI (*Sistema de Análisis de Balances de Empresas Ibérico* – Iberian Company Balance Sheet Analysis System). These hardly have the necessary information to perform an analysis of banking relationships. The SABI only has details of the number of financial entities with which SMEs work.

<sup>10</sup> Of the 189 valid responses received, 12 companies were not endorsed by an RGC; 55 companies had a guarantee in force at the time of the survey; 2 had never requested any guarantees; the rest - 120 companies - could not be identified.

<sup>11</sup> In Spain around 40,200 SMEs access the credit market through the reciprocal guarantee system (Cardone, 1995), hence the company the object of study fulfilled two criteria: (i) it was an SME; and (ii) it had accessed, or not accessed, either in the past or at present, the credit market with the financial endorsement of an RGC.

asymmetry existing in debt contracts; and ii) to study whether these factors were among the determinants of the debt costs borne by SMEs.

The results confirmed that the duration of banking relationships and the mediation of financial intermediaries (providers of guarantees in this case) were factors that only enhanced credit availability but did not reduce debt costs.

The most noteworthy conclusions were that companies valued banking relationship insofar as, even when working with various financial institutions, they continued to maintain strong links with the entities with which they first established contacts. The authors found that the duration of the banking relationship was not a priority factor for financial entities when awarding credit. The mediation of an RGC was valued more by micro and small young companies.

For summary purposes, Table I below presents the main studies published and commented above.

Country	Authors	No. of companies	Database	Main Conclusions
JAPAN	Hoshi, Kashyap and Scharfstein (1990, 1991)			Investment by firms with close bank relationships appears to be less liquidity constrained than investment by firms without close bank ties.
USA	Petersen and Rajan (1994)	3.404 SMEs	1988-89 NSSBF <i>National Survey of Small Business Finance</i>	The duration and scope of banking relationships is directly proportional to credit availability, but this does not affect interest rates. SMEs working with more banks bear higher interest rates and benefit from greater credit availability.
	Berger and Udell (1995)	3.404 SMEs	NSSBF	The duration of the banking relationship is inversely proportional to interest rates and guarantees requested.
	Cole (1998)	5.356 SMEs	1993 NSSBF	The duration of banking relationships is directly proportional to credit availability, and inversely proportional to the number of credit entities with which the SMEs work.

ITALY	Angelini, Di Salvo and Ferri (1998)	6.164 SMEs	1995 <i>Central Credit Register</i>	Long banking relationships lead, over time, to the payment of higher interest rates. SMEs working with fewer banks enjoy greater credit availability and higher interest rates.
	Detragiache, Garella and Guiso (2000)	1.849 SMEs	<i>Survey of Manufacturing Firms</i>	Determinants of the number of financial entities with which SMEs work.
GERMANY	Harhoff and Körtig (1998)	1.509 SMEs	1997	Long banking relationships lead, over time, to the provision of fewer guarantees. SMEs working with fewer banks enjoy greater credit availability and are asked to provide fewer guarantees. Interest rates are not affected by the number of banks.
	Elsas and Krahen (1998)	92 SMEs	Loans granted from 1992 to 1997 by financial entities	The duration of banking relationships is not relevant when pricing credit. What is relevant is not the duration but the intensity of the banking relationships.
	Lehmann and Neuberger (2001)	1.200 Financial entities	1997 Survey on financial entities	Perception of the financial institution: no possibility of obtaining credit and requesting guarantees during the first 2 years of the banking relationship.
BELGIUM	Degryse and Van Cayseele (2000)	17.429 SMEs	1997 Analysis of the conditions of granted loans	Longer banking relationships are accompanied by higher interest rates. Greater scope entails lower interest rate.
	Bodt, Lobeze and Statnik (2001)	296 SMEs	1998 Survey	Longer banking relationships afford greater credit availability. The effect of the number of banks depends on the size of the lender and of the borrower.
PORTUGAL	Farinha and Santos (2002)	1.577 SMEs	1996	Most companies initially request resources from only one bank. With time banking relationships begin to diversify.
SPAIN	Cardone, Longarela and Camino (1998)	189 SMEs	1996 Survey of Companies from the Reciprocal Guarantees System	The duration of banking relationships, as well as the mediation of financial intermediaries, only facilitate credit availability but do not reduce debt costs.
	Hernández, G. (2004)	184 SMEs	2000 SME Economic Observatory of Murcia and SABI	banking relationships increase credit availability and costs.
	Hernández, G. (2004)	705 SMEs	2000 SME Economic Observatory of Murcia and SABI	Analyses the determinants of the number of banks. The largest, oldest and most leveraged companies tend to work with more financial institutions.
EUROPE	Ongena AND Smith (2000)	1079 SMEs	1996 Survey of financial managers from 20 European countries	These authors analysed whether multiple banking relationships replaced relatively undeveloped securities markets. This hypothesis was not compared.
Source: Prepared by the authors				

#### 4.- Data and methodology

The empirical study of banking relationships in Spain was performed by constructing a database developed from a questionnaire on 13,200 Spanish companies. This questionnaire was sent by Internet to companies listed in the "Spanish Guide of Exporting Companies". The data requested from SMEs referred to 31/12/99 since the questionnaires were sent out during the first quarter of 2000.

The number of valid questionnaires received totalled 410, which represented 3.1% of the total number of companies surveyed. Of these 410 companies, 386 were eventually selected after applying filters to verify the quality of the variables, eliminating those that failed to offer correct measures or lost values in variables that were relevant for the purposes of the study.

The questionnaire consisted of 28 questions and was divided into three blocks:

- i) Block I contained information on the company (size, sector, age, legal form, ownership, address, data on composition of the balance sheets (assets and financial structure).
- ii) Block II included questions relating directly to the banking relationship of each SME: number of credit entities with which the SME worked, maximum percentage of debt requested from a credit entity, duration of the banking relationship with the two main institutions with which it works, interest rates on short and long-term operations, types of relationships that the SME maintained with credit entities and their importance, and loyalty in the relationship.
- iii) Block III contained questions relating to guarantees and compensation associated with loans: type of compensation, types of guarantees, reasons for requesting guarantees, requested guarantee-loan ratio, and reasons why the loan was refused, if this were the case.

The final sample of SMEs was divided into three groups according to company size: microcompanies (less than 10 employees), small companies (between 10 and 49 employees), and medium-sized companies (between 50 and 249 employees). The distribution of the sample according to company size was 37.31%, 46.63% and 16.06%, respectively. In the same way the sectorial representation of SMEs was widely distributed among the following sectors (without forgetting that all of them are exporters, given the basis taken as reference): Services (37,80%), Industry (27,82%), Wholesale (11,81%), Retail (10,76%), Construction (8,14%) and Primary and other (3,68%).

In terms of the legal form of the SMEs in the sample, these were mainly Limited Liability Companies (40%), Joint Stock Companies (39.74%) and Sole Proprietorships (12.37%). Other legal forms present in lower proportions included Workers' Cooperatives (2.37%) and Labour Cooperatives (1.87%).

The empirical study is divided into two parts. The first part consists of a descriptive analysis of the characteristics of banking relationships in Spain among SMEs. The second part describes an econometric study that enabled us to analyse the existence and determinants of credit rationing affecting mainly SMEs. The continental system is geared towards banking and is predominant in continental Europe and it served as a reference framework for this analysis; Spain is an example of such a system. Hence, given the reduced number of studies of this type that have focused specifically on the situation in Spain, the conclusions drawn from this research make important contributions to the reference literature.

#### **4.1. Description of banking relationships in the case of Spanish SMEs.**

Banking relationships are of special interest in the case of Spanish companies, given the importance of the credit market in the continental system. Furthermore, this is particularly relevant in the case of SMEs because these types of enterprises are burdened by strong limitations in terms of access to external financing, or the different types of credit rationing mentioned previously.

This section presents a descriptive study of the main characteristics of banking relationships and the different classes of conditions of credit contracts and guarantees requested by financial institutions.

##### *a. Characteristics of banking relationships*

Tables II and III present the statistics associated with banking relationship variables. In addition to the duration and length of the relationship, both widely considered in the literature, we have included another series of relevant characteristics associated with them. Thus, we analysed the maximum level of concentration of bank debt with a single financial entity, the importance of the relationships maintained by companies with the two main credit entities that they work with and the loyalty of companies towards credit institutions.

**Table II: Description of banking relationships by company size**

	<b>MICROCOMPANIES</b>	<b>SMALL COMPANIES</b>	<b>MEDIUM-SIZED COMPANIES</b>
No. of financial entities with which the company works	2.81 (2)	4.57 (4)	6.35 (5)
Maximum % requested from a single entity	57.58% (60%)	42.11% (40%)	44.84% (40%)
Duration of the relationship with the two main entities (a1 and a2)	3 to 5 years  3 to 5 years	6 to 10 years  3 to 5 years	6 to 10 years  6 to 10 years
Specialisation in operations with credit entities (Loyalty, %)			
Current account advances	21.74	14.93	-
Document discounts	43.5	32.8	18.2
Credit Line	59.42	53.7	27.3
Mortgage Operations	26.09	28.4	54.5
Other operations	7.25	16.42	18.2

<sup>1</sup> Mean values for each SME according to size. The average appears in brackets.

As regards the number of financial entities with which SMEs work, Table II shows that larger SMEs work with more financial institutions because they contract wider ranges of services and because of their stronger negotiating capacity. In line with these results, this table also shows that the maximum concentration of bank debt with a single entity was higher in the case of microcompanies, since these types of enterprises establish relationships with smaller numbers of financial entities. However, the duration of banking relationships between SMEs and banks are consolidated as company size increases; microcompanies maintain shorter relationships - on average between 3 and 5 years - and medium-sized companies the longest relationships - more than 10 years.

As regards the types of banking relationships that they maintain with banks, Table III shows the mean importance of these relationships with the two main institutions, measured on a scale of 1 to 5. From these results we may conclude that the main types of relationships that SMEs establish with the main financial institution are through current accounts, lines of credit and commercial discounts, whereas the most noteworthy relationships with second entities are developed in connection with current accounts. Also related to the foregoing is the loyalty of SMEs according to their size; interestingly Table II shows how microcompanies and small enterprises are mainly loyal in relation to document discounts and lines of credit, whereas medium-sized companies display loyalty to financial institutions through the execution of mortgage-type operations. These results also reveal the

types of financing of each type of company, which is more short-term for smaller companies. However, in the case of medium-sized companies we observed that the operations were broader in scope and longer term.

**Table III: Mean importance of banking relationships with the 2 main credit institutions with which the company operates (measured on a scale of 1 - least important - to 5 - most important)**

Order of importance	Current account	Commercial Discount	Savings account	Direct crediting/debiting of salaries	Line of credit	Participation of the entity in the SME's capital stock	Other: Specify
Entity 1	3.16	2.19	0.58	1.72	2.5	0.13	0.34
Entity 2	2.25	1.55	0.36	0.62	1.5	0.10	0.23

*b. Types of guarantees and compensation: Causes*

Table IV presents details of the different characteristics associated with guarantee requests, causes and types, as well as other types of additional conditions for contracts, all distributed according to company size.

Around 70% of all SMEs are asked to present guarantees. Of these companies, the enterprises that are most often asked to fulfil this requirement are microcompanies (of the total number of microcompanies in the sample, 85% were asked to present guarantees, compared with 51% of medium-sized companies). Microcompanies were mainly asked to present guarantees due to the volume of debt requested, the term or repayment period and the risk associated with the viability of the projects. In the case of small and medium-sized companies, guarantees were basically requested due to volume of debt requested and then the associated risk level.

In terms of the types of guarantees requested, it is worth noting that microcompanies are mainly required to present guarantees that are not related to the main line of activity, personal guarantees being the most important types of collateral, probably due to the lack of volume. Small companies mainly present personal guarantees. And, lastly, medium-sized companies are required to present real guarantees associated with their main line of business, followed by non-related personal guarantees. Therefore, these results confirmed the overall importance of personal guarantees in SMEs. It is more common for real guarantees to be requested from larger companies, given their higher level of complexity and the association of performance with their investment projects.

**Table IV: Guarantees**

	<b>MICROCOMPANIES</b>	<b>SMALL COMPANIES</b>	<b>MEDIUM-SIZED COMPANIES</b>
Request for Guarantees (69.4%)	85.16%	65.06%	50.85%
Factors determining the request for guarantees (Level of importance on a scale of 0 to 5, followed by the percentages in which the higher value appears)			
Amount of the loan	5/54.2	5/61.6	5/55.6
Duration of the relationship with the financial institution	4/19.6	1/13.3	2/13.8
Viability of the project for which financing has been requested	5/13.08	4/10.8	3-5/13.8
Operations of less than 12 months	2/10.3	1/10.83	1/19.4
Operations of between 1 and 3 years	5/12.15	1/10.8	2/13.8
Operations of more than 3 years	5/16.8	3/8.3	3/11.4
Other	5/4.67	5/9.3	5/8.3
TYPES OF GUARANTEES REQUESTED (%)			
Personal <b>NOT</b> related to the activity of the business (56.37%)	68.6	54.5	29.7
Personal, related to the activity of the business (20.36%)	17.9	25.41	13.5
Real, <b>NOT</b> related to the main line of business (17.95%)	20.54	15	16.2
Real, related to the main line of business (19.78%)	15.18	20.83	32.43

As shown in Table V, there do not seem to be any differences in the relationship between guarantees requested and loan volume according to the size of the company, the relationships of 100% and 101% to 200% being the most common. Additional compensation corresponded mainly to the opening of current accounts and other types of operations, in which we may include insurance and other financial products, for microcompanies and small companies. For medium-sized companies, the direct crediting/debiting of salary payments and current accounts were the most requested forms of compensation. Also noteworthy was the fact that the direct crediting/debiting of salary payments acquired greater relevance in larger

companies, given the larger number of employees and therefore the inferred business opportunities that this situation offers to financial institutions.

**Table V: Guarantee/loan ratio and compensation**

	<b>MICROCOMPANIES</b>	<b>SMALL COMPANIES</b>	<b>MEDIUM-SIZED COMPANIES</b>
Guarantee/loan ratio			
Less than 100% of the loan	10.48	11.71	14.71
100%	37.14	21.62	26.47
101/200%	23.8	25.23	20.59
201/300%	10.5	7.21	2.94
301/400%	4.76	11.71	8.82
401/600%	3.81	1.8	2.94
More than 600%	2.86	6.31	2.94
TYPES OF COMPENSATION (%)			
Opening of Current account (57.74%)	63.49	56.52	43.3
Opening of Savings account (19.76%)	16.13	26.09	16.67
Direct crediting/debiting of salary payments (32.14%)	28.57	31.8	43.3
Some type of compensation	55.75	53.03	61.22

*c. Problems of financing: causes of the rejection of loans*

As mentioned at the beginning of this study, SMEs, due to their opacity and high concentration of risks, are subjected to greater credit rationing. In this connection, Table VI presents the percentages of the different types of SMEs that are refused credit, as well as the main causes of credit denial. As can be seen, the failure to present guarantees accounts for the rejection of credit requests presented by 27.5% of microcompanies, 24% of small companies and 20% of medium-sized companies; at the same time, financing becomes more costly and is more pronounced in the case of microcompanies (9.81%). However, the presentation of collateral is no guarantee that a loan will be awarded or that a discount will be made on the cost of the credit. Thus, 37.27% of microcompanies that presented

guarantees were not awarded the credit (this percentage diminishes as company size increases).

As regards the causes of rejection of loan applications, even when guarantees are presented it was noted that loan applications were generally rejected because of the non-feasibility of the project, together with other causes (such as the risk of non-payment).

**Table VI: Negotiation of credit and causes**

	<b>MICROCOMPANIES</b>	<b>SMALL COMPANIES</b>	<b>MEDIUM-SIZED COMPANIES</b>
Credit is not awarded if no guarantees are presented	27.52	24.81	20
Loan costs increase if no guarantees are presented	9.81	3.67	7.21
Credit is refused even when guarantees are presented	37.27	27.14	22
Causes of rejection of credit requests even when guarantees are presented			
Non-viability of the project	33.3	30.3	27.3
Because the request has been rejected by another credit entity	18.2	6.2	9
Because the company does not have a relationship with the credit entity	27.3	15.6	18.8
Other causes	33.3	50	54.5

#### **4.2. Determinants of credit rationality: an econometric study.**

Literature on banking relationships describes credit rationing as one of the main problems faced by SMEs. As a result, they are unable to take on attractive projects and have to deal with problems that affect their growth and expansion, among other difficulties. Given this scenario, we decided to examine the causes of this situation and the possible strategies that companies could adopt to minimise it, through the banking relationships that they maintain with financial institutions.

Credit rationing may be perceived in different types of situations. Thus, this situation has traditionally been identified when companies cannot obtain credit. However, there are other circumstances in which companies have to deal with a problem of credit rationing even when they have been awarded credit. The most

important problems arise: when they obtain less financing than the amount initially requested (rationing of the amount of credit); when the cost of the credit they receive is higher than the market cost of credit (price rationing); when they achieve financing for a shorter term than expected (rationing of the term of credit); and when the amount of the collateral that they present is greater than the amount of the loan (rationing of credit conditions and guarantees). Previous studies in the literature have addressed these problems by focusing mainly on the two first forms of rationing described above, and at the same time they have considered the conditions of debt with respect to guarantee requests. In our research, we also studied the effects on compensation demanded in return for debt and the relationship with long-term credit rationing.

In this section we will focus on the effect that the characteristics associated with banking relationships may have on these types of rationing and the extent to which they may contribute to their minimisation. For this purpose we present the following general model:

$$RC_{in} = \alpha_0 + \sum_{j=1}^J \beta_j RB_{ij} + \sum_{m=1}^M \lambda_m VC_{im} + \sum_{K=1}^K \delta_k DSEC_{ik} + \varepsilon_i$$

where  $RC_{in}$  is the set of proxy variables used to determine the different types of credit rationing;  $RB_{ij}$  corresponds to the different factors that explain this rationing and which are associated with the banking relationship. We also included other control variables  $VC_m$  (size, age, financial structure, rotation of assets) and controlled the possible sectorial effects represented by sectorial dummies  $DSEC_j$ .

Tables VII and VIII present the definitions of the dependent proxy variables of credit rationing and the explanatory variables used in the estimations of the different models, respectively.

**Table VII: Dependent variables: types of credit rationing**

FEDC	Percentage of financing that the company maintains with credit institutions with respect to total liabilities.
COSTECP	Cost of short-term financing, measured at the nominal interest rate.
COSTELP	Cost of long-term financing, measured at the nominal interest rate.
PLAZO	Dichotomic variable equal to the value 1 if the percentage of long-term financing with respect to total resources is greater than, or equal to, the percentage of short-term financing; otherwise its value is 0.
SG	Dichotomic variable equal to the value 1 if the credit entity asks the company to present for guarantees for the loan; otherwise its value is 0.
COM	Dichotomic variable equal to the value 1 if the credit entity asks the company to present some form of additional compensation that is not a guarantee; otherwise its value is 0.
GP	Dichotomic variable equal to the value 1 if the guarantees requested are lower than, or equal to, 100% of the loan, and 0 if the level of guarantees requested exceeds 100% of the loan.

**Table VIII: Explanatory variables**

VARIABLES ASSOCIATED WITH THE BANKING RELATIONSHIP	
NRB	Number of banking relationships, measured as $\ln(1+\text{number of banking relationships})$ .
DUR_12	Dichotomic variable equal to the value 1 if the age of the relationship between the company and its main creditor with which it works is 1 to 2 years; otherwise its value is 0.
DUR_35	Dichotomic variable equal to the value 1 if the age of the relationship between the company and its main creditor with which it works is 3 to 5 years; otherwise its value is 0.
DUR_610	Dichotomic variable equal to the value 1 if the age of the relationship between the company and its main creditor with which it works is 6 to 10 years; otherwise its value is 0.
DUR_+10	Dichotomic variable equal to the value 1 if the age of the relationship between the company and its main creditor with which it works is more than 10 years; otherwise its value is 0.
PMD	Variable that reflects the maximum percentage of financing concentrated with a single credit entity.
RE_CC	Dichotomic variable equal to the value 1 when the company maintains a relationship with its main creditor through the maintenance of a current account; otherwise its value is 0.
RE_CA	Dichotomic variable equal to the value 1 when the company maintains a relationship with its main creditor through the maintenance of a savings account; otherwise its value is 0.
RE_DN	Dichotomic variable equal to the value 1 when the company maintains a relationship with its main creditor through direct debiting of its payroll; otherwise its value is 0.
RE_DC	Dichotomic variable equal to the value 1 when the company maintains a relationship with the main entity through documents discounts; otherwise its value is 0.
RE_CS	Dichotomic variable equal to the value 1 when the company maintains a relationship with the main financial entity because the credit entity has a share participation in the company; otherwise its value is 0.
RE_LC	Dichotomic variable equal to the value 1 when the company maintains a relationship with the main financial entity through the maintenance of a savings account; otherwise its value is 0.
AMPLITUD	This is the sum of the above mentioned dichotomic variables representing aspects of the type of relationship that the company maintains with its main creditor.
FID	Dichotomic variable equal to the value 1 if the company always operates with the same credit entity when performing banking operations; otherwise its value is 0.
CONTROL VARIABLES	
TAM	This measures the size of the company according to the number of employees.
AGE	Measured as $\ln(\text{age from which the company began to develop its main activity})$ .
EFIC	This measures the efficiency of asset usage and rotation as volume of sales with respect to total assets.
FINPROP	This reflects the financial structure of the company, measured as the percentage of own or internal financing with respect to total liabilities.
EMPFAMI	Dichotomic variable equal to the value 1 if the company is family owned; otherwise its value is 0.

Since the variables used to align credit rationing are both continual (cost and volume) and dichotomic (term and guarantees), the models proposed were the ordinary least squares regression models, but robust for the former and maximum likelihood estimations associated with the Probit Model for latter. Heteroscedasticity controls associated with the independent variables were also performed, but no problems of this type were detected<sup>12</sup>.

<sup>12</sup> The correlation matrix, which is not presented in the study, did not reflect any significant correlation above 0.5.

## 5. RESULTS

Tables IX and X present the results of the models estimated for the different forms of credit rationing described previously. Thus, Table IX presents the study of quantity rationing, cost or price rationing, and long-term credit rationing; and Table X presents the determinants of rationing associated with collateral requirements and other additional compensation.

### *A. Rationing of the amount of credit or credit availability*

We measured quantity rationing (rationing of the amount of credit) according to the amount of financing received by the company from all credit entities<sup>13</sup> (FEDC) as a percentage of total liabilities. Table IX presents the main results obtained from this estimation.

As regards the characteristics of the banking relationships, we discovered that enterprises working with larger numbers of financial entities (NRB) achieved better access to bank financing, since they obtained a larger proportion of funds from the same financial institution. However, the fact that debt was more concentrated (PMD) with a single creditor did not seem to be relevant in terms of improving access to bank financing. This coincides with the findings described previously. The duration of the banking relationship (DUR) also had a positive effect insofar as it fostered greater access to bank financing. We also observed a positive incremental effect in this regard as the duration of relationships increased (from DUR\_2 to DUR\_+10).

The presentation of guarantees (SG) enables companies to access larger amounts of bank financing; however, the scope of the banking relationship (measure of the number of services that the entity renders to the company) did not have a significant effect.

When analysing other variables outside the scope of the banking relationship, it seems that companies that display greatest efficiency in the use of assets (EFIC) and the most mature enterprises present lower percentages of financing from credit

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<sup>13</sup> This datum was constructed by adding the percentages of financing that companies maintained with banks (both national and foreign) and with savings banks, as available and broken down in the questionnaire.

entities, possibly because own or internal financing is a priority for these companies. It is also interesting to note that the duration of the banking relationship had a relevant impact on credit accessibility but this was not observed in the case of the age of the company.

### *B. Price rationing*

Price rationing refers to the fact that although SMEs may obtain access to bank debt, the conditions in terms of the costs of credit are unfavourable because the interest rates that they are forced to pay are higher than market rates. We used short and long-term cost measurements to measure price rationing.

In terms of both short and long-term financing costs, the variables relating to the number of entities with which enterprises worked and the duration of their relationships did not have any significant effects. Additionally, despite verifying beforehand that the scope of banking relationships was not significant for determining access to bank financing, the fact that companies maintained another kind of relationship with the financial institution did seem to be relevant, since this helped them to achieve reductions in costs. Companies managed to obtain reductions in short-term interest costs through direct crediting/debiting of salary payments. They also achieved reductions in long-term interest payable when lines of credit were established and when the bank in question had a shareholding in the company<sup>14</sup>.

In terms of requests for guarantees, it seems that whenever financial institutions request guarantees from companies this is accompanied by greater rationing, since they also require these enterprises to pay higher short and long-term interest. Therefore, these results suggest that even if companies manage to obtain financing from banks, they must bear higher costs and also present more collateral.

As regards the results associated with the control variables, we discovered that more mature companies managed to reduce not only the cost of short-term financing, but also its long-term costs. Furthermore, companies that used higher proportions of own or internal financing faced long-term price rationing, perhaps due to the more limited information available to the credit market on these companies. With regard to sectorial controls, the short-term financing costs borne

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<sup>14</sup> In the estimation of the model we included the other dichotomic variables that reflected the different types of relationships maintained by SMEs with financial entities, but those that were not significant have been excluded from Tables VI and VII.

by companies from the wholesale sector were lower than those of companies in industry, retail, construction and services, which enjoyed lower long-term costs with respect to the costs payable by companies in the primary sector<sup>15</sup>.

### *C. Long-term credit rationing*

Another type of rationing is long-term credit rationing; this is financing that is awarded but with a shorter repayment term than that requested. Column (4) in Table IX shows the determinants of banking relationships in long-term credit rationing. In order to study these determinants, we constructed dummy variable DFLP; this variable was equal to value 1 when long-term financing is greater than short-term financing; otherwise, its value was 0. We used the maximum likelihood method to estimate the Probit Model proposed on more probable conditioning factors of access to more long-term financing that would subsequently lead to a reduction of long-term credit rationing.

The results presented in column (4) reveal the significant influence of banking relationships on long-term credit rationing. Thus, we noted that companies that maintained longer relationships with credit entities had better access to long-term financing, and the incremental effect of this variable was positive and significant. When we compared these results with the coefficient used to measure the overall age of the SME, we discovered that it was not this variable but rather the duration of the banking relationship that increased the probability of access to long-term financing. The number of financial entities with which the company worked was not significant with regard to the credit term. As regards the types of relationships established with credit entities, we noted that companies establishing relationships through the maintenance of savings accounts and lines of credit were more likely to access shorter-term financing; this is not unusual because the types of financial instruments deriving from these relationships are short term. Another interesting finding was that SMEs in which credit entities had shareholdings were more likely to obtain long-term financing. Once again, the share participation of banks in SMEs seems to provide better conditions for access to financing. This may be due to the presence of venture capital companies that support SMEs and have stakes in the capital of these companies. Hence, the variable that reflects the relationship with the credit entity through its participation in the firm's capital may reflect this trend,

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<sup>15</sup> The sectorial dummies do not appear in the tables, although these were included in the model to make it easier to understand.

since it is to be expected that credit entities participate more in larger companies than in SMEs.

However, companies that concentrate a high percentage of their debt with a single entity (PMD) have fewer possibilities of obtaining long-term financing, since credit entities are more exposed to the higher level of risk of companies with these characteristics.

As regards the other control variables, the results show that larger companies are more likely to obtain more long-term financing because they present fewer asymmetries. In terms of the sectorial controls, companies operating in the wholesale sector are less likely to obtain long-term financing, which suggests that these companies may be affected by long-term credit rationing; however, as explained earlier, these companies are not subjected to price rationing, at least in the short term.

#### *D. Rationing in compensation and collateral requirements*

The existence of rationing in guarantees and compensation means that SMEs managing to access bank financing are required to present very stringent guarantees as compensation. We used various proxies to reflect this situation. In the literature, the most common proxy is the dummy variable, which reflects the request (or non-request) for guarantees that must be presented as collateral (SG). But in addition to this variable, we included another series of variables designed to complement the dummy variable. These variables were: the ratio between guarantees requested and the amount of credit awarded (RGP); and the inclusion in the contract of other types of additional compensation (COM) such as the direct crediting/debiting of salary payments, openings of current and savings accounts or other types of services rendered by the entity.

Since the explanatory variables were dichotomic in all three cases, we used the maximum likelihood method to estimate the Probit Models proposed for each variable; the results are shown in Table X.

The results presented in column (1) show that the request for guarantees was not significantly affected by the variables associated with the banking relationship, such as the number of entities with which the company works and the duration of the relationship. However, we observed that companies maintaining relationships with

entities by contracting certain services (direct crediting/debiting of salary payments or savings accounts) were less likely to be asked to present guarantees. However, if the financial entity owned a stake in the company, the likelihood of guarantees being requested increased. These situations may have arisen when venture capital companies were involved; despite offering more favourable credit access conditions, these types of companies try to cover the risks that they assume by guaranteeing awarded credits. We also noted that family-owned companies, which presented higher concentrations of risks, were more likely to be asked to present guarantees.

As regards the control variables, we discovered that SMEs with more solvent financial structures and higher levels of asset rotation emitted positive signals to the credit market, thus reducing the likelihood of being asked to present guarantees.

We used two further models - presented below - in order to complete our analysis of collateral requirements/guarantee requests. Column (2) identifies the determinants of the total amount of guarantees in relation to the loan (DRGP) and not simply the fact that these guarantees were requested. We also determined whether it was likely that the company also needed a different type of compensation to the guarantees (COM), i.e. by contracting a series of additional services that could also be treated as a form of rationing.

Companies that maintained longer relationships with credit entities were less likely to be asked for compensation, although it was also probable that they would be asked to present collateral superior to the value of the loan. In these cases the duration of the relationship, which was favourable in terms of other accessibility conditions and credit prices, was compensated by a reduction of risk through the requirement of a greater volume of guarantees. However, loyalty in the banking relationship was accompanied by a lower level of demand for guarantees; this can be explained by the fact that the entity receives that differential effect through other services.

The demand for guarantees above the value of the loan are associated with a greater probability of compensation, which indicates that these are complementary and not substitute mechanisms.

The rationing of the credit in the demand for guarantees to be presented by SMEs is reflected in the fact that for the global sample of SMEs we noted that guarantees requested (SG) were greater than 100% of the value of the loan.

As regards the other control variables, it seems that larger companies and less solvent enterprises are more likely to be asked for additional compensation. Moreover, the likelihood that they are asked for additional compensation and that the percentage of guarantees with respect to the total amount of credit is greater than 100% was greater for companies with higher levels of asset rotation. This shows that the credit market tries to cover itself against risks by rendering other services and imposing guarantee requirements, albeit not in terms of cost.

**Table IX: Determinants of quantity, price and long-term credit rationing**

	Quantity rationing (FEDC) OLS estimation (1)	COSTECP (2)	Price rationing COSTELP OLS estimation (3)	Long-term credit rationing (TERM) MLE estimation (4)
<b>TAM</b>	.006364 (0.13)	-.0055074 (-0.87)	-.0011485 (-0.16)	.0071456** (2.38)
<b>NRB</b>	952099** (2.29)	.5020608 (0.63)	.126213 (0.13)	.0142578 (0.04)
<b>DUR_12</b>	5.170062 (0.63)	-3.046645 (-1.17)	-2.034336 (-1.05)	2.116035*** (2.72)
<b>DUR_35</b>	1.285496* (1.70)	.8305425 (0.46)	.9839736 (0.62)	1.806008*** (2.91)
<b>DUR_610</b>	1.929181** (2.57)	2.108011 (1.11)	-.3407826 (-0.20)	1.391494** (2.41)
<b>DUR_+10</b>	2.144708*** (2.97)	3.158516 (1.62)	1.849328 (0.98)	2.045136*** (3.24)
<b>EFIC</b>	-.0042853*** (-6.12)	-.0001721 (-0.76)	.1079237 (1.64)	.0000251 (0.32)
<b>EDAD</b>	-4.962439** (-2.39)	-1.003923** (-2.30)	-.4967271 (-1.19)	-.5755908*** (-3.08)
<b>AMPLITUD</b>	-.2027631 (-0.18)			
<b>RE_CA</b>		1.110389 (1.32)	1.324792 (1.36)	-.7867924** (-2.19)
<b>RE_CS</b>		-2.177432 (-1.26)	-1.713193** (-2.05)	1.064334** (2.07)
<b>RE_DN</b>		-1.160694* (-1.73)	-.8810745 (-1.21)	.127286 (0.41)
<b>RE_LC</b>		-.2578537 (-0.26)	-1.529175* (-1.73)	-.9349545*** (-3.02)
<b>PMD</b>	.0396089 (0.61)	-.0029729 (-0.24)	.0028073 (0.18)	-.00938* (-1.83)
<b>SG</b>	1.156023*** (2.80)	2.169995*** (3.24)	3.239764*** (3.52)	.4830854 (1.53)
<b>FINPROP</b>		-.0170755 (-1.05)	.0294943* (1.79)	.0074185 (1.49)
<b>FID</b>		.1477965 (0.23)	-1.025388 (-1.00)	.0818391 (0.27)
<b>Constant</b>	1.462222 (0.93)	9.660876*** (2.96)	7.009987** (2.49)	.6257136 (0.58)
<b>No. Obs.</b>	197	81	81	128
<b>F (p-value)</b>	23.29 (0.00)	6.03 (0.00)	5.34 (0.00)	
<b>R<sup>2</sup></b>	0.14	0.496	0.47	
<b>Chi<sup>2</sup> (p-value)</b>				87.92 (0.00)
<b>Pseudo R<sup>2</sup></b>				0.3034

Level of significance: \*\*\* at 99%, \*\* at 95% and \* at 90%

**Table X: Determinants of guarantees and additional compensation**

	Guarantees requested (MLE estimation) (1)	Guarantees-loan ratio (MLE estimation) (2)	Compensation requested (MLE estimation) (3)
TAM	-.0066529 (-1.32)	-.0038587 (-1.09)	.0072044*** (2.60)
NRB	-.2264061 (-0.55)	.0591335 (0.15)	-.1359545 (-0.55)
DUR_12	.3659787 (0.41)	-.7859029 (-0.97)	.5322727 (0.79)
DUR_35	.849252 (1.10)	-1.112109 (-1.53)	-.6197413 (-1.19)
DUR_610	.55427 (0.71)	-1.488291** (-2.13)	-.4367202 (-0.85)
DUR_+10	.8067548 (1.04)	-.5582711 (-0.81)	-1.023286** (-1.98)
EFIC	-.055452* (-1.74)	-.0002263** (-2.57)	.0002994*** (3.34)
EDAD	-.21025 (-0.98)	.1042382 (0.51)	-.065055 (-0.46)
AMPLITUD		-.0664602 (-0.54)	
RE_CA	-1.216508** (-2.16)		
RE_CS	144423** (2.36)		
RE_DN	-.854122** (-1.98)		
RE_LC	.6754835 (1.37)		
OTHER	-.3136277 (-0.63)		
PMD	.0089837 (1.23)	.0062114 (0.99)	
FINPROP	-.0143956* (-1.87)	-.0018253 (-0.32)	-.0103957** (-2.44)
EMPFAMI	1.273668*** (3.42)		
RGP			-.5873368*** (-2.60)
SG		-2.684537*** (-4.84)	
FID		.8742071** (2.46)	
Constant	.2889378 (0.23)	3.618088*** (2.72)	1.833607** (2.07)
No. Observations	86	97	151
Chi <sup>2</sup> (p-value)	48.93 (0.00)	64.68 (0.00)	47.76 (0.00)
Pseudo R <sup>2</sup>	0.3726	0.23	0.1485

Level of significance: \*\*\* at 99%, \*\* at 95% and \* at 90%

## 6. CONCLUSIONS

Previous studies on credit rationing and the development of bank relationships to eliminate or reduce this type of rationing have basically focused on price and quantity rationing, and at the same time have considered debt terms and conditions with respect to guarantee requests. This paper also studies the effects on compensation demanded in return for debt and the effect of the development of banking relationships with long-term credit rationing.

In the case of the *quantity rationing* (rationing of the amount of credit) or credit availability, the main results confirmed that companies working with a larger number of financial entities and with longer banking relationships had more possibilities of accessing credit.

As regards the effect of banking relationships on *price rationing*, the variables relating to the number of financial entities with which companies work and the durations of these relationships did not have a significant impact on this effect. However, it is relevant that SMEs maintain other types of relationships with financial institutions since this helps them to achieve reductions in credit costs.

With respect to *long-term credit rationing*, we noted that SMEs that had established longer relationships with credit entities enjoyed better accessibility to long-term financing, and the incremental effect of this variable was positive and significant. When comparing these results with the coefficient measuring the overall age of the SME, we discovered that companies were not more likely to access long-term financing due to this variable but rather because of the duration of their banking relationship. The number of financial entities with which a company works did not have a significant impact on the term of credit. As far as the types of relations established with credit entities are concerned, it was noted that if the relationship was based on the maintenance of savings account and lines of credit, the company was more likely to have access to shorter-term financing.

In terms of rationing *in compensation and guarantees requested*, companies that establish relationships with credit entities based on the rendering of specific services (direct crediting/debiting of salary payments or savings accounts) are more likely to be asked to present fewer guarantees. However, the likelihood of guarantees being requested is higher if the credit entity has a shareholding in the company.

In order to complete the study of the credit market, we decided to study the credit market from the standpoint of suppliers or providers. It is to be expected that the perception that credit entities have of the importance of banking relationships and of the mediation of RGCs would be different, as factors for generating information and reducing risk, respectively. Since Savings Banks are the main providers of funds, it would be interesting to determine the destination of SME investments. There may be a certain degree of asymmetry in the relationships between these enterprises and financial institutions, depending on whether the operations are

asset or liability based. On this basis, it is to be expected that investments are performed with commercial banks (whose credit investment would go to large companies) and the credits would be received.

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