

FINANCING GROWTH OPPORTUNITIES. THE USE OF BANK DEBT IN DIFFERENT ENVIRONMENTS.

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ABSTRACT

Our aim is to test if financing a firm's growth opportunities with bank debt is conditioned by the institutional and legal environment in which the firm operates. Our results seem to confirm that the legal and institutional environment determines the use of bank debt to finance growth opportunities. Firms use bank debt to finance their growth opportunities when the country's banking system contributes to solving agency and asymmetric information problems and avoiding information monopoly costs. The evolutionary process of the financial systems in each country means that market imperfections such as information asymmetry or agency costs can have a diverse influence on firms' bank debt decisions.

Key words: Bank debt, Growth opportunities, Ownership structure, Financial system, Panel data.

JEL classification: G32.

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1. INTRODUCTION

Imperfections in the capital markets mean that debt choices affect the value of firms (Modigliani and Miller, 1958). Thus, firms' values are altered as a consequence of asymmetric information and agency problems present in their financing decisions (Harris and Raviv, 1991; Azofra and Fernández, 1999).

The existence of growth opportunities in firms means that they require funds to finance them. The choice of the ideal source of financing new projects is conditioned by information asymmetry and agency problems (Fama, 1980). Thus, managers will choose the source of financing that allows them to resolve these problems. Choosing the appropriate creditor or ownership structure are key elements in resolving these problems. Moreover, solving these conflicts also depends on the characteristics of the financial system and the level of development of the economy in which the firms operate (La Porta *et al.*, 1998 and 2000; Gallego and Loayza, 2000; Demirgüç-Kunt and Levine, 2001; Beck and Levine, 2002; Levine, 2002).

The objective of the current research is to determine if the bank debt decision is conditioned by the existence of growth opportunities, the ownership structure of the firms or their institutional environment.

With this aim in mind we use a sample of firms from two countries sharing a common legal tradition but whose financial systems have evolved in different ways. We aim to find out if bank debt choices differ in function of the country in which the firm operates (Booth *et al.*, 2001). These differences not only occur between countries with different legal traditions (Levine and Zervos, 1998; Levine, 2000; Tadesse, 2002; Bancel and Mittoo, 2004), but also between countries with the same legal tradition. For this reason, we compare the bank debt decisions of Spanish and Chilean firms. The financial systems of these countries have the same legal tradition (civil law). Furthermore, both countries are undergoing a process of integration and opening up of their economies in their respective geographic environments: the European Union in the Spanish case and the Southern Cone for Chile. Also, both economies exhibit a similar economic stability in terms of GDP growth and inflation, interest and exchange rates. But there are differences in the size and activity of their financial markets that could condition firms' choice of finance for their growth opportunities.

The sample includes 148 firms that quote in Chile's stock market and 111 Spanish firms quoting in the Spanish market. The period of analysis ranges from 1991 to 1999. The results of this work seem to endorse our hypotheses. Bank financing of growth opportunities depends on the institutional environment in which the firms operate. Firms use bank debt to finance their growth opportunities when the banks contribute to solving agency and asymmetric problems and avoiding information monopoly costs. Countries whose financial system is bank based have an institutional environment that favors bank debt and ownership concentration complementarities in order to avoid the underinvestment problem. However, this complementarity has a limit. If control over the firm's ownership is threatened by the power of the creditor banks, it will prefer to seek alternative funding sources to finance its growth opportunities.

The work is divided into five sections. After the introduction of the topic, a second section offers a summary of the main theoretical contributions, together with the empirical hypotheses we wish to test. The third section describes the sample we use for the empirical analysis, as well as the variables and methodology. Section 4 presents the main results and

the robustness analysis. The final section of the work summarizes and stresses the main conclusions.

2. THEORY AND EMPIRICAL HYPOTHESES

There are two main problems of financing investment projects with debt: underinvestment (Myers, 1977 and 2001) and asset substitution (Jensen and Meckling, 1976; Galai and Masulis, 1976; Jensen, 1986). The existence of a contractual relationship between the firm and its creditors motivates the managers – who are working in line with the shareholders' interests – to invest at suboptimal levels, ignoring investment projects that are economically profitable. This behavior occurs because the managers perceive that when the firm is indebted any wealth generated by new projects can be transferred to the creditors. This transference occurs when the debt leads to a liquidation of the firm's assets.

In turn, the asset substitution problem means that the shareholders of indebted firms raise the risk of their portfolios of investment projects beyond the level expected by the creditors. In carrying out riskier investment projects, the excess returns will be entirely captured by the shareholders, who limit their losses to the capital invested. Thus, most of the risk of the investment transfers to the creditors, who have to bear the potential losses of the project without the reward of the excess return.

These problems can be resolved by the choice of the creditor. Bank creditors are better placed than arm's-length creditors to deal with managerial discretion. Bank intermediaries have greater control of a firm than arm's-length creditors because of the concentration of bank debt ownership (Fama, 1985; James, 1987; Blackwell and Kidwell, 1988). Banks have more capacity than individual investors to obtain information about the firm's future investment projects and to supervise the managers' decisions (James and Smith, 2000; Denis and Mihov, 2003; Hadlock and James, 2002; Giannetti, 2003). Banks have specialized in the supervision of managers. Finally, banks are more flexible in debt contract renegotiation.

Moreover, bank debt fosters a relationship of mutual confidence between the bank and the firm (James, 1987). This relationship makes it less necessary for the firm to inform publicly about its activities, thereby avoiding a loss of competitiveness (Berger and Udell, 1995; Anderson and Makhija, 1999; Krishnaswami *et al.*, 1999; Filatotchev and Mickiewicz, 2002; Hadlock and James, 2002). In the absence of sufficient arms-length information, creditors would be seriously affected by problems of adverse selection and moral hazard, as well as by agency costs. Therefore firms prefer bank debt when the activities of the firm are hidden to external investors, either for technological reasons or due to the existence of specific relationships with clients, suppliers or workers (Filatotchev and Mickiewicz, 2002).

All these reasons allow us to predict that bank debt solves the underinvestment and asset substitution problems better than public debt does (Fama, 1985; James, 1987; Blackwell and Kidwell, 1988; James and Smith, 2000; Denis and Mihov, 2003; Hadlock and James, 2002). Bank debt not only reduces the problems of adverse selection and moral hazard but also the probability of an inefficient liquidation of the firm. Nevertheless, one of the disadvantages of bank debt is that the lender could eventually hold excessive control over the firm's decisions. In this case, the firm has to resort to several financing sources to try to reduce that power as much as possible, especially when it is used to exploit the profits raised by the projects undertaken (Rajan, 1992).

Firms with growth opportunities potentially exhibit greater problems of asymmetric information (Myers and Majluf, 1984), greater agency problems between shareholders and lenders (Andrés *et al.*, 2000) and higher bankruptcy costs (Williamson, 1988; Harris and Raviv, 1988 and 1990; Shleifer and Vishny, 1992). As a result, firms with growth opportunities should use equity for their financing (Hovakimian *et al.*, 2001), given that the greater the problems of underinvestment and asset substitution, the lower the debt level. However, this relation should be qualified in function of the type of creditor and the institutional environment in which the firm operates (Andrés *et al.*, 1997).

Thus, when the firm operates in an environment of efficient capital markets it will prefer to finance its growth opportunities with equity rather than resort to debt and it will opt for bank debt before public debt. The leverage ratio will then decrease and there will be a change in the mix of public debt and bank debt. So even if debt volume declines, the proportion of bank debt could rise (Barclay *et al.*, 2003).

However, when the firm operates in an environment dominated by bank intermediaries, the financing of its growth opportunities will be conditioned both by the capacity of the financial markets correctly to evaluate the new financial assets that the firm needs to issue and the capacity of the bank intermediaries to substitute for the market as a mechanism of control¹.

Thus, our first hypothesis is that financing firms' growth opportunities via bank debt will depend on the existence of an institutional environment that permits the identification of bank debt as an efficient mechanism to control information asymmetry and agency problems. As Myers (2000) points out, the monitoring capacity of fund suppliers becomes the key element when the firm has growth opportunities.

Information asymmetry and agency problems are also important when the firm does not generate sufficient funds internally. These firms are then obliged to resort to external funds to complete their financing. Moreover, their incapacity to generate sufficient funds internally puts them in a weak negotiating position with their creditors, especially with the banks – the best informed creditors. In these firms the need for funds will increase over time. They will have a greater probability of bankruptcy and could suffer from severe underinvestment problems. In short, the agency problems of debt would outweigh the advantages of bank debt. Thus, our second hypothesis postulates that firms' borrowing capacity with bank intermediaries is inversely related to their capacity to generate funds internally. This negative relation between the need for external funds and bank debt could also have a tax component. The strong need for external funds can be rooted in two facts: the lack of profits or the high volume invested in depreciating assets; in both cases the tax advantages of debt disappear.

A special case concerns firms with a deficit in their generation of internal funds but which at the same time have profitable investment opportunities. The monitoring capacity of bank creditors could allow firms with positive NPV projects to obtain the funds they need under the best possible conditions (Stulz, 1990; Denis and Mihov, 2003). As a consequence, firms with external financing needs and growth opportunities should be financed with bank debt. However, resorting to bank financing is directly related to the level of development of the financial system (Demirgüç-Kunt and Maksimovic, 1999 and 2002a). Thus, in the absence of a legal system that protects the rights of external investors

¹ Financing growth opportunities with bank debt can lead to information monopoly problems (hold-up costs) (Houston and James, 1996; Anderson and Makhija, 1999).

in firms, financial transactions will be carried out via bank intermediaries with sufficient bargaining power to ensure compliance with the contractual clauses without having to resort to the courts (Modigliani and Perotti, 2000). Thus, using bank debt to finance growth opportunities with external funds will be especially important in those countries where the banks have a central role and are an efficient mechanism to control the information asymmetry and agency problems. Our third hypothesis is that firms not generating sufficient funds internally to finance their growth opportunities will use bank debt in function of whether the institutional environment favors the complementarity of bank debt and concentrated ownership as efficient mechanisms for controlling information asymmetry and agency problems.

A firm's agency problems vary depending on its ownership structure (Jensen and Meckling, 1976; Jensen, 1986; La Porta *et al.*, 1999; Brailsford *et al.*, 2002). When ownership is concentrated, managers have the incentive to choose the type of debt that maximizes firm value, namely bank debt (Denis and Mihov, 2003; Bharadwaj and Shivdasani, 2003), since it mitigates underinvestment and asset substitution problems. In this sense, Dewatripont and Tirole (1994), and John and Kedia (2000), among others, argue that firms with concentrated ownership should resort to bank creditors, given that bank debt and concentrated ownership are complementary elements in the design of an optimal system of corporate governance. Banks become the counterbalance that avoids an opportunistic behavior on the part of the firm's majority shareholders (Jensen, 1986).

However, firms' ownership concentration differs between countries. Burkart *et al.* (1997), Bontempi (2002) and Filatotchev and Mickiewicz (2002), among others, argue that the presence of highly concentrated ownership structures in firms is a substitute for the inadequate protection of minority shareholders. Carlin and Mayer (2000), on the other hand, show that at the beginning of the 20th century differences in ownership concentration between firms were not related to the degree of investor protection. Thus, differences in ownership concentration not only depend on differences in the protection of investor interests, but also on how each financial system has evolved. Moreover, the relation between the ownership structure and debt depends on the relative importance of each financing source in each country (La Porta *et al.*, 1998 and 2000; Barth *et al.*, 2000 and 2001)². In environments with legal gaps in investor protection and low levels of compliance with the law, the development of financial markets is hindered and financing via bank credit is favored (Thakor, 1996; La Porta *et al.*, 1997; Modigliani and Perotti, 1997; Shleifer and Vishny, 1997). Bank deposits are a form of secured investment for savers through the guarantee of deposit insurance (Modigliani and Perotti, 2000). Thus, we would expect the relation between bank debt and ownership structure to be conditioned by the financial development of the country in which the firm operates. Our fourth hypothesis postulates that the ownership structure of firms lacking growth opportunities facilitates bank debt by aligning the interests of managers, shareholders and creditors. However, when the firm has growth opportunities, the relation between ownership concentration and bank financing will depend on: the capacity of the financial markets of each country not to undervalue the new share issues; the majority shareholders' strategies aimed at avoiding dilution of their shareholding and their subsequent loss of control; and the role that the banks play as source of finance in the country in which the firm operates. Majority shareholders prefer bank debt to finance those growth opportunities they consider essential for the survival of the firm in which they have invested a substantial part of their wealth

² Other work in the same line includes La Porta *et al.* (1999), Johnson and Shleifer (2000), Allen and Gale (2001), Levine (2002), Beck and Levine (2002), Demirgüç-Kunt and Maksimovic (2002b) and Tadesse (2002), among others.

(Giannetti, 2003). However, they will reject such financing if the institutional environment favors creditors' excessive control over the firms' decisions.

Firms with a concentrated ownership structure and external financing needs emphasize the problems of asymmetric information and minimize the agency problems between shareholders and managers. The majority shareholders refuse to form a diversified portfolio and assume a greater non-diversifiable risk, a position that aligns with the managers' interests. The most appropriate financing source for this type of firm is bank debt. It allows firms to reduce the problems of adverse selection and moral hazard through effective monitoring by the banks. These financial intermediaries specialize in supervising firms because they concentrate the debt ownership of the firm. Our fifth hypothesis is that the relation between bank debt and ownership concentration in firms with a need for external funds will be positive as long as lenders, majority shareholders and managers are interested in investments that diversify the risk (Bharadwaj and Shivdasani, 2003). However, this relation will be negative if the major shareholder fears that the lender will eventually hold excessive control over the firm's decisions. The existence of a lender information monopoly could be used to exploit the profits raised by the projects undertaken (Rajan, 1992). The majority shareholder will prefer to reduce the bank's information monopoly as much as possible. But this preference is conditioned by the country's banking system and by the availability of other sources of funds.

These arguments support our hypothesis that the characteristics of the institutional environment could determine the choice of lender when firms need funds. Therefore, including institutional variables in the models significantly enhances our understanding about the capital structure choices of firms (Utrero, 2004).

3. SAMPLE, VARIABLES AND METHODOLOGY

We use a sample of firms listed on the financial markets of Chile and Spain to test our hypotheses about the relations among bank debt, growth opportunities, ownership structure and the institutional environment.

In contrast to previous studies, we use countries that share the same legal tradition and a strong economic stability. Both countries' financial systems are dominated by bank intermediaries and firms exhibit a concentrated ownership. However, the countries have different levels of development and are located in different economic areas. Thus, this choice allows us to determine if debt decisions are determined by the institutional development of each country.

Our choice of countries breaks with traditional analyses centering on representative economies of the civil law and common law legal systems and allows us to offer results from economies that are not usually analyzed.

Some indicators allow us to compare the financial systems of Chile and Spain, in which the firms that are our object of analysis operate. We use the following ratios: size of bank sector (bank deposits / GDP); banks' credit activity (bank credits conceded to non-public firms / GDP); stock market activity (stock market capitalization / GDP³); financial market liquidity (stock market assets traded / GDP⁴); bank concentration; ownership

³ Among various authors that have used this measure to compare the financial systems of different countries, we might mention Wurgler (2000).

⁴ Among various authors that have used this measure to compare the financial systems of different countries, we might mention Andrés *et al.* (1997).

structure; intangibles; volume of short-term and long-term debt; and the relative importance of bank debt. These ratios are calculated at different periods in order to capture the different evolutionary processes of the two financial systems (Table 1).

Thus, in Table 1 we can see that in the past 15 years bank deposits have grown most in Spain, while Chile has seen more modest growth in deposits (15%). Spain also stands out for its growth in bank credits to non-public firms. It is clear therefore that the bank intermediaries have evolved differently in the two countries.

In turn, we also see a different evolution in the relative importance of the financial markets in each of these countries. While Spain stands out as the country where the market capitalization and the volume of assets traded in its stock markets most grew, Chile experienced an important growth in its stock market capitalization, but a more moderate growth in its traded assets.

Spain and Chile exhibit similarities in the concentration of their firms' ownership structures (45% and 51%, respectively) and in the level of bank concentration of their financial systems (61% and 50%, respectively).

However, the reform processes of these two countries' financial systems have been adapted to their geopolitical environments and so have had diverging outcomes. It is for this reason that we consider it particularly important to study the bank debt decisions of Spanish and Chilean firms and compare them to those of other firms subject to different institutional, geopolitical and legal environments.

We include all listed non-financial firms for which we have data. Some of them disappear during the period of analysis, so our panel is unbalanced. The study of firms' ownership structures requires that the firms' financial assets trade in a regulated and transparent market. We discard those observations for which we have incomplete data. We likewise exclude financial firms, since the nature of their business would distort the results. The selected firms can issue bank debt, public debt, or new shares in the markets where they operate.

The debt agency problems – asset substitution and underinvestment – that we intend to study only occur in situations where debt exists. As a consequence, we have ignored observations from firms financing themselves exclusively from their equity, since our objective is to study the potential agency problems of debt.⁵

We obtain the information for the analysis of Chilean firms from the FECU⁶. It includes information from the balance sheet, the income statement, the firms' ownership structure and the market value of the shares traded on the Stock Exchange in Santiago. Our sample includes 148 non-financial firms ranging from 1991 to 1999, accounting for a total of 1154 year-observations. We classify the 148 firms into eight different industries: food, fisheries and agriculture (26); cement and building (10); real estate properties (7); transport and telecommunications (12); textile, paper and cellulose (15); utilities and energy (27); services (36) and mining (15)⁷.

⁵ The number of observations excluded from samples correspond to 5,9% and 8,1% for Chile and Spain, respectively, and their exclusion do not affect the results in a significative way.

⁶ The FECU is the "Ficha Estadística Codificada Uniforme" published by the "Superintendencia de Valores and Seguros" in Chile.

⁷ The number of observations for each sector is as follows: food, fisheries and agriculture (203); cement and building (82); real estate properties (51); transport and telecommunications (91); textile, paper and cellulose (119); utilities and energy (211); services (280) and mining (117).

There are 111 non-financial Spanish firms. The period goes from 1991 to 1999 for a total of 823 year observations. We obtain the information about the balance sheet, the income statement and ownership structure from the Comisión Nacional del Mercado de Valores (“Stock Market National Commission”). Similarly to the Chilean case, we classify the Spanish firms into eight industries: food, fisheries and agriculture (13); cement and building (22); real estate properties (10); transport and telecommunications (8); textile, paper and cellulose (11); utilities and energy (19); services (8) and mining (20)⁸. We consider that both samples are representative of Chilean and Spanish firms.

We calculate ratios from financial statements⁹ to approximate each one of the variables that we consider relevant for this work. We use the ratio of bank debt to total assets (BDAB) as our dependent variable. We use the percentage of shares in the hands of the major shareholder (OWN)¹⁰ to measure ownership concentration. Five dummy variables account for the nature of the main shareholder: family (FAMFM); institutional investor, namely banks in the Spanish case and mutual funds in the Chilean case (INSINV); domestic firm (DOMFM); multinational firm (MULFM); and the Administration (PUBFM). We measure firms’ growth opportunities through the market-to-book ratio (Q)¹¹. We calculate a company’s need for external funds (DEF) through the variation of fixed assets plus the variation of working capital minus cash flow scaled by total assets (Shyam-Sunder and Myers, 1999; Sogorb and López, 2003). We use three interaction variables. The first relates the firm’s ownership structure to the existence of growth opportunities (OWN*QI). It takes the value of OWN for firms with growth opportunities (Q>1) and 0 otherwise. The second relates the firm’s finance deficit or surplus with the existence of majority control (DEF*OWNI). It takes the value of DEF for firms where the main shareholder owns at least a 50% stake and 0 otherwise. The third interaction variable relates firms’ growth opportunities with the need for external funds (Q*DEFI). It takes the value of Q for firms with external fund needs (DEF>0) and 0 otherwise.

We use size, return on assets, leverage and Altman’s Z score as control variables. We calculate firms’ size from the book value of their assets. The logarithmic transformation of this variable is the accepted solution to work with variables that have non-negative and high-variance values (LNTAB). Return on assets is our measure of the profitability of the firms’ portfolios of projects. Altman’s Z-Score (Z)¹² is our proxy for a firm’s bankruptcy probability. Finally, the debt-to-equity ratio (TDEB) is our proxy for a firm’s insolvency risk. Table 2 provides descriptive statistical data.

INSERT TABLE 2

We analyze our data in two stages. In the first, we perform a descriptive analysis to identify the characteristics of Chilean and Spanish firms. We apply the analysis of variance to find statistically significant differences. In the second stage, we perform a regression

⁸ The number of observations for each economic sector is as follows: food, fisheries and agriculture (99); cement and building (162); real estate properties (75); transport and telecommunications (63); textile, paper and cellulose (80); utilities and energy (139); services (59) and mining (146).

⁹ When the data has permitted, we have used the measure most commonly indicated in the literature.

¹⁰ Other measures of ownership concentration calculated were the percentage of stocks in the hands of the two main shareholders and the percentage of ownership stocks of the five main shareholders.

¹¹ Growth opportunities have been usually measured through the market-to-book ratio (Johnson, 1997a and b, 2003; Cuñat, 1999; Krishnaswami *et al.*, 1999; Barclay *et al.*, 2001 and 2003, among others). However, Sogorb (2001) and Sogorb and López (2003) measure this as the proportion represented by intangible assets.

¹² Altman’s Z Score is determined according to the following equation (Altman, 2002): $Z = 1.2 (\text{working capital}/\text{total assets}) + 1.4 (\text{retained profits}/\text{total assets}) + 3.3 (\text{profits before interests and taxes}/\text{total assets}) + 0.6 (\text{equity capital at market value} / \text{total liabilities}) + 1.0 (\text{sales}/\text{total assets})$.

analysis applying panel data econometrics. The characteristics of our sample permit the use of this methodology. Panel data methodology allows us to control for the unobservable heterogeneity of the data and to consider the endogeneity problems (simultaneity bias) that are so common in studies on managerial decisions (Arellano and Bover, 1990). The presence of unobservable fixed effects associated to each firm and correlated with the rest of the independent variables can produce bias and inconsistent estimations. This problem can be solved by transforming the variables into first differences (first difference estimators). On the other hand, we apply the Generalized Method of Moments (GMM) to solve the endogeneity problem of the independent variables related to the error term. Therefore, once the fixed effects have been controlled and the endogeneity adequately considered, estimations become robust and consistent. Antoniou *et al.* (2002) agree that the first difference specifications of GMM are superior to alternative methodologies.

In spite of the previous arguments, using the first difference estimator is not without its problems. Statistically, Alonso-Borrego and Arellano (1999) show that the instruments in the panel difference estimator are often weak. This would lead to biases in finite samples and to a poor asymptotic precision¹³. On the other hand, the differentiation can worsen the bias caused by the measurement errors in the variables via the reduction in the signal-to-noise ratio (Beck and Levine, 2004). At the same time, the first differences cause loss of information among the cross-sectional units – in our case the sample firms. Thus, in order to reduce the potential biases and the errors of imprecision associated with the difference estimator we also introduce the estimators calculated with the systems estimator (Arellano and Bond, 1998). Blundell and Bond (1998) show that the systems estimator is much more efficient in cases where the difference estimator performs poorly, especially for short sample periods.

Along with this, we also present the results of a fixed effects model that implies strict exogeneity in the variables (within estimators). Although we consider that the estimators of the within model are inconsistent and biased (they do not tackle the endogeneity problem), we include them to facilitate comparison of our results with those of previous studies.

Our regression model is the following:

$$Y_{i,t} = \beta_0 + \sum_{j=1}^n \beta_j X_{i,j,t} + \varepsilon_{i,t}.$$

Where i stands for 1 to 148 for the sample of Chilean firms and 1 to 111 for the Spanish firms, t ranges from 1991 to 1999, and $\varepsilon_{i,t}$ corresponds to the error term, which includes the individual effect, the time effect and the stochastic error. The dependent variable is the bank debt to total assets ratio (BDAB). The explanatory or independent variables are: ownership structure (OWN), growth opportunities (Q), external financing needs (DEF), return on assets (ROA), firm size (LNTAB), debt-to-equity ratio (TDEB), and Altman's Z score (Z). The interaction variables are: ownership structure and growth opportunities (OWN*QI), the financing deficit or surplus and majority control (DEF*OWNI) and growth opportunities and external financing needs (Q*DEFI). We include time dummy variables (DUMMTEMP) for each of the years ranging from 1991 to 1999, dummy variables for each of the eight industries to which the sample firms belong (DUMMSEC) and dummy variables for the nature of the main shareholder.

¹³ According to Beck and Levine (2004), in the first difference methodology the variance of the coefficients increases asymptotically and, moreover, Monte Carlo experiments show that the weakness of the instruments can produce biased coefficients in small samples.

4. RESULTS

In this section we describe the main characteristics of Chilean and Spanish firms, specifically dealing with the institutional framework in which they operate. We then present the results of our regression analysis.

Descriptive analysis

Spanish firms are more leveraged and use more bank debt than those of Chile. Thus, the debt-to-equity ratio (TDEB) is 91% for Spanish firms and 45% for Chilean ones. Bank debt in Spanish firms is about 17% of the assets and 54% of the total debt whereas Chilean firms show values of 12% and 41%, respectively (see Table 2).

Bank debt is the predominant source of external funds, both in Chilean and Spanish firms, which confirms one of the main characteristics of financial systems dominated by banks (Thakor, 1996; Demirgüç-Kunt and Levine, 1999 and 2001). Another element that remains in both the Chilean and Spanish financial systems and which is characteristic of civil-law countries is the ownership concentration of non-financial firms. Both in the Chilean and the Spanish case, on average, the first shareholder of the firm owns more than 40% of the shares: 44.19% in Chilean firms and 40.93% in Spanish ones. This supports the argument that firms' ownership structures could be the result of investors' reaction to a weak protection of their rights.

We observe that on average the proxy for the Tobin's Q ratio is higher than 1 in both countries, although it is slightly higher in Chile than in Spain (1.34 and 1.23, respectively). This means that there are generally growth opportunities in Chilean and Spanish non-financial firms. However, we observe differences in terms of return and risk between Chilean and Spanish firms. Chilean firms have higher return on assets and higher Altman Z-Scores than Spanish firms. Thus, Chilean firms are on average simultaneously more profitable, more solvent and less leveraged than Spanish firms. These figures are also supported by the variable financing deficit (DEF). We observe that Chilean and Spanish firms generate, on average, internal cash flows in excess of the funds they need to finance their investments. However, the surplus is higher for Chilean firms: 11% of total assets versus 8% for Spanish companies.

Additionally, we have classified our sample firms according to the nature of the main investor. The figures reveal that in most Chilean firms the main shareholder is either a domestic firm (46%) or a mutual fund (40%). These data evidence the pyramidal structure of ownership in Chile¹⁴. We observe a different picture in the Spanish case. Here there is no clear pattern in the nature of the main shareholder. In 26% of the firms, the main owner is a Spanish firm, in 26% a family, in 19% a multinational firm, in 18% an institutional investor (mainly banks) and in the remaining 12% the main shareholder is the Administration.

To deepen in the descriptive analysis, we build two country samples: the sample of Chilean firms and the sample of Spanish firms to perform the mean difference analysis. Each country sample is divided into three subsamples by the ratio bank debt to total assets (BDAB) and bank debt to total debt (BDTD). They contain the firms with, respectively, low levels of bank debt, average levels of bank debt and high levels of bank debt. To reinforce the results of our analyses we compare the average values of the subsamples with

¹⁴ Among works dealing with the ownership structure in Chile, we might mention Majluf *et al.* (1998), Lefort and Walker (1999) and Gallego and Loayza (2000).

low and high levels of bank debt for each country¹⁵. The results of this analysis are shown in Table 3.

INSERT TABLE 3

We observe statistically significant differences among the behaviors observed in Chilean and Spanish firms. Thus, Chilean firms that use more bank debt present greater risk, greater external financing needs and lower return on assets than Chilean firms less indebted with banks. For their part, the Spanish firms more indebted with banks present lower ownership concentration, lower growth opportunities, lower return on assets and greater risk than those with less bank debt. Moreover, the analysis of variance shows that Spanish firms whose main shareholder is a family present higher proportions of bank debt, while the opposite occurs whenever the main shareholder is a multinational firm. As a consequence, both Chilean and Spanish firms with high bank debt volumes use more external funds and have higher risk and less return on assets than firms that use less bank financing. However, we observe differences in ownership structure and growth opportunities among the Spanish firms in function of their use of bank debt that are not observed in Chilean firms (Table 3).

Results of the regression analysis

In this part of the work we interpret our panel data regression results. We distinguish between Chilean and Spanish firms to observe differences in their bank debt decisions depending on the institutional and geopolitical environment in which the firms operate. The results are summarized in Table 4. In all cases we use Wald tests to determine the significance both of the model and of the different dummy variables used in each model. The different Wald tests are statistically significant¹⁶. The Sargan test allows us to accept the null hypothesis that the model is correctly identified, including the instruments used to solve the endogeneity problems of the variables (simultaneity bias).

INSERT TABLE 4

Our first hypothesis relates bank debt and growth opportunities. Most of the studies consulted for the case of US firms report a negative relation between growth opportunities and bank debt (Huston and James, 1996; Johnson, 1997a; Hadlock and James, 2002; and Denis and Mihov, 2003). As predicted by our hypothesis, we observe that the relation between growth opportunities and bank financing depends on the institutional environment in which the firm operates. Thus, Chilean firms with less need for external funds to finance their growth opportunities reduce their bank debt, while Spanish firms do the opposite. According to Gallego and Loayza (2000), between 1990 and 1999, the Chilean financial system was subject to several structural modifications, among which they mention that firms with good ratings were allowed to issue debt and shares in external markets (ADRs) at the beginning of the decade, and Chilean corporate investors, in particular banks, pension funds and insurance companies, were allowed to keep external financial assets in their portfolios. As a consequence, the deregulation of capital movements in Chile in the 1990s (which coincides with our period of analysis) could be at the origin of the results obtained, given that the institutional changes have encouraged the Chilean firms in our sample to imitate the behaviors of US firms in terms of bank debt decisions. Another institutional

¹⁵ Our goal is to identify the variables that help to explain differences in the choice of bank debt

¹⁶ In order to simplify, we omit the values of these tests in the corresponding tables. We have only included those models that are statistically significant. The tests performed and the values obtained are available from the authors on request.

difference is that while Spanish banks can be simultaneously creditors and shareholders in a firm, in Chile this possibility is prohibited by law. Thus, banks can control asymmetric information and agency problems more efficiently in Spain than in Chile, which encourages firms to resort to bank debt when they have growth opportunities (Bartholdy *et al.*, 1997).

We observe a positive relation between growth opportunities and bank debt for Spanish and Chilean firms with external financial needs. It seems that Chilean firms that have to finance their growth opportunities with external funds would prefer to rely on bank financing, because there is a greater flexibility in terms of control without assuming the risk of ownership dilution that stock issuance would imply. Spanish firms, on the other hand, prefer bank debt to finance their growth opportunities even if they generate enough internal funds, because it is an efficient way of avoiding the dissemination of firm information that could jeopardize their competitiveness¹⁷. At the same time it does not increase agency problems. Furthermore, the higher debt levels of Spanish firms foster bank debt in order to avoid an inefficient liquidation.

Our second hypothesis is also verified. We observe a negative relation between the need for external financing and bank debt in the absence of majority ownership. In this case, the high bank concentration and the signaling capacity of bank debt in both countries indicates that firms less able to generate funds internally have limited borrowing capacity because of their greater agency problems.

Firms' capacity to generate funds internally to finance growth opportunities could also condition their bank debt decisions. Problems of asymmetric information are more important when the need for external financing grows. Our findings indicate that in both countries the institutional environment favors the complementarity of bank debt and ownership concentration to avoid the underinvestment problem. Although in some cases the results are not statistically significant, our third hypothesis is confirmed. The banking environments in Spain and Chile and the high ownership concentration favor the use of bank debt to finance firms with needs for external funds and growth opportunities. In Chilean firms the use of bank debt is particularly important when the firm has growth opportunities but cannot generate sufficient funds internally, while in Spain the extent to which the firm can generate funds internally does not affect its decision to finance its growth opportunities with bank debt.

This difference could be due to the fact that Chilean banks do not participate in the ownership of firms, so that firms there are reluctant to take on bank debt to finance their growth opportunities when internal funds are available because of the underinvestment and asset substitution problems. Bank concentration and ownership concentration are alternative control mechanisms in Chile.

In the Spanish case, banks' ability to participate in firm ownership means that when firms have new growth opportunities they opt for bank debt without hesitation as the best source to finance their projects. Bank concentration and ownership concentration are complementary control mechanisms in Spain.

¹⁷ Yosha (1995) points out that a positive relation could exist between growth opportunities and bank debt levels for US firms when trying to avoid the diffusion of information considered strategic for the firm. Yosha analyses firms' choice of bilateral (bank) or multilateral (negotiable) financing after the firm has obtained certain private information. When the firm chooses multilateral financing it faces the risk that its private information could "drop" to its competitors. But if the firm chooses bilateral financing, its competitors could infer that the firm has something to hide and could react in such a way that the firms' profits are affected. Yosha shows that on balance, high quality firms, exposed to big losses if private information is revealed, choose bilateral financing, and that the difference in cost between the two financing sources keeps competitors in a state of ambiguity about whether the firm is hiding information or not.

We observe a positive and statistically significant relation between ownership concentration and bank debt¹⁸ in Spain and Chile. Ownership concentration and bank concentration are two of the characteristics shared by the financial systems of these two countries. The results seem to support our fourth hypothesis. Banks will prefer to lend funds to firms with a low level of agency conflicts among shareholders and managers. In this case, the monitoring costs required to guarantee the optimal allocation of the funds are reduced (James and Smith, 2000). The high ownership concentration of firms acts as a substitution mechanism for the market for corporate control (takeovers) present in those financial systems whose architecture is based on financial markets. In consequence, shareholding concentration and bank concentration help to align the interests of shareholders, managers and creditors, thereby providing these firms with access to bank debt. These results allow us to accept the hypothesis of a preference for bank debt in firms with less agency problems between shareholders and managers. This confirms the arguments of Dewatripont and Tirole (1994) and John and Kedia (2000) that concentrated ownership and bank debt are complementary elements in an optimal system of corporate governance.

However, we observe in the Chilean case that as ownership concentration increases in firms with growth opportunities, bank debt also increases. In Spanish firms the opposite occurs. Ownership concentration in Chile is pyramidal, so that the financing of new growth opportunities must respect the ownership structure. Bank debt allows firms to maintain control and avoid the undervaluation of their shares. Moreover, in Chile, issuing bank debt when there are growth opportunities and in the presence of concentrated ownership is a signal to the market that a firm offers good investment opportunities. This signal becomes more necessary given that the banks do not participate in firm ownership¹⁹.

On the other hand, underinvestment problems are more severe in Spanish firms, which are more leveraged. Ownership concentration reduces the agency problems between shareholders and managers, but it increases the agency problems between lenders and shareholders (underinvestment) when growth opportunities exist and the firm is highly leveraged.

Finally, we observe differences among Spanish and Chilean firms regarding the use of bank debt for companies with majority ownership and external financing needs. Spanish firms where the first shareholder owns at least 50% of shares and with a deficit of funds to finance investment projects show a positive relation with bank debt (Table 4). The results support our hypothesis that in this type of firms an alignment of interests among shareholders, managers and lenders takes place to invest in risk diversifying projects. The use of bank debt avoids the problems of ownership dilution and reduces the agency problems between shareholders and managers. Furthermore, banks' market power in Spain reduces the possibility that borrowers will behave opportunistically, expropriating banks (Faccio *et al.*, 2001).

Chilean firms with majority control and external financing needs show a negative relation with bank financing. The result is in agreement with our last hypothesis. Chilean firms with majority control are concerned about creditors holding excessive control over

¹⁸ In the case of Chile the relation becomes negative when the dependent variable is bank debt to total debt. In the Spanish case, the relation fails to be statistically significant for the same dependent variable. We do not discuss the results of the within model, since we consider that their estimators are inconsistent and biased.

¹⁹ Johnson (1997b) indicates that bank debt mitigates the asset substitution problem of firms with growth opportunities. In this sense, ownership concentration favors the appearance of the asset substitution problem when the interests of managers and shareholders align. The use of bank debt when there is concentrated ownership could mitigate the potential problems of asset substitution.

their decisions. The majority shareholders there are more concerned about avoiding the control of the banks than about a possible inefficient liquidation of the firm. Structural changes in the Chilean financial system have reduced the relative importance of bank debt in firm financing. After the deregulation of capital movements firms with good ratings are allowed to issue debt and shares in external markets (ADRs).

We control for those variables that appear in most empirical work on bank debt to avoid specification problems in our regression model. These control variables are: leverage, size, probability of bankruptcy, return on assets, industry and nature of main shareholder.

The debt-to-equity ratio (TDEB) presents a positive and statistically significant coefficient in Chile and Spain (Table 4) that is in agreement with previous empirical analysis. The preference for this financing source is coherent with the characteristics of the institutional civil-law environment to which these countries belong.

Our results reveal that the largest Chilean and Spanish firms exhibit higher levels of bank debt. This result, however, is contrary to that observed in samples of US firms, for which there exists a substitution effect of bank debt by public debt in the largest US companies²⁰. Thus, it is pointed out that large firms operating in a common-law country will have easier access to public debt, because they have less asymmetric information problems and are able to issue a sufficient volume of debt that, once transaction costs are discounted, allows them to obtain a lower cost of capital than bank debt (Diamond, 1991). In this sense, the greater market power of the banking industry in Europe and Japan makes bank financing in these economies the primary source of external funds.

We observe a negative relation between ROA and bank debt. Our results for Chilean and Spanish firms coincide with those of Denis and Mihov (2003) for a sample of US firms. Therefore, independently of the institutional environment, there seems to be a trend for firms to resort less frequently to bank debt whenever their portfolio of projects is more profitable.

In a similar way, we can describe the results obtained with the variable measuring the firm's probability of bankruptcy²¹. Firms with a higher probability of bankruptcy are most interested in bank debt. These results are in agreement with previous work, where firms that are closer to bankruptcy and with growth opportunities will prefer to be financed with bank debt to avoid the possibility of inefficient liquidation. In situations of near insolvency, banks play a crucial role in avoiding the liquidation of firms that have profitable projects and yet are suffering a temporary situation of financial distress²².

Finally, we consider some dummy variables that allow us to observe the relation between the nature of the main investor and bank debt and between the industry and bank debt. In both countries we observe a positive relation between bank debt and firms whose main owner is either an institutional investor or a national company. In Spain there is a positive relation between family control and bank debt. In Chile there is a negative relation between bank debt and those companies whose main shareholder is a multinational firm.

²⁰ Among the works that use a sample of US firms and obtain a negative relation between firm size and bank debt, we might mention those of Johnson (1997a), Hadlock and James (2002) and Denis and Mihov (2003).

²¹ Altman's Z-Score coefficient, used to measure the financial risk of the sample firms for Chile and Spain, should be interpreted in the following way: the higher the Z-Score, the lower the probability of bankruptcy.

²² James and Smith (2000) recognize that firms will choose bank debt when it is possible, given that it offers greater flexibility during the renegotiation of their conditions. In a similar way, Hege (2003) points out that banks provide advantages when it is necessary to solve the liquidation problems of the firms "out-of-court", that is, without having to resort to the corresponding legal authorities.

Alternative specifications

To corroborate the robustness of our results, we repeat the regression analyses both for Chilean and Spanish firms with bank debt over total debt as dependent variable. The results are presented in Table 5. The regressions for Spanish firms show a second-order correlation in the models using GMM. This result indicates the lack of consistency of the estimators. The absence of serial correlation is essential for the consistency of the estimators in these models, in particular, second-order correlation.

INSERT TABLE 5

Even though the new estimations of the coefficients for Spanish firms are inconsistent, the results obtained with bank debt over total debt are rather similar to those obtained when the dependent variable is bank debt to total assets.

In the case of Chilean firms, when we modify the dependent variable we obtain consistent estimators. Thus, we can appreciate the robustness of our results against changes in the dependent variable.

We run a regression analysis for an incomplete panel comprising 111 Spanish firms and 148 Chilean firms for the period 1991-1999 to corroborate the differences among the bank debt decisions of Chilean and Spanish firms. In this regression of the full sample we include a dummy variable to differentiate the firms in each country. The TRADMK variable is also included in order to measure the activity of the stock market in each country and for each of the analyzed years. TRADMK corresponds to stock market value traded to GDP. The results of this analysis corroborate our hypothesis that there are differences in bank debt decisions between Chilean and Spanish firms, although both countries have a legal system based on civil law, a bank-based financial system and a strongly concentrated ownership structure. In spite of these coincidences, the evolution processes of the respective institutional environments have followed diverging patterns that have conditioned firms' bank debt decisions in a different way, particularly in the presence of growth opportunities.

Finally, we repeat the analysis with alternative measures of ownership concentration, financial deficit, leverage and size. In all cases the results remain qualitatively unchanged.

5. CONCLUSIONS

The underinvestment and asset substitution problems posed by the use of debt can be reduced by means of the appropriate choice of type of lender. Such a choice could reduce asymmetric information problems and agency costs. Asymmetric information problems are especially significant in firms with growth opportunities and a need for external funds, while agency costs will depend on the firm's ownership structure. Furthermore, the ownership structure and the choice of creditor are complementary elements in the design of an optimal system of corporate governance (Dewatripont and Tirole, 1994; John and Kedia, 2000). Finally, analysis of bank debt decisions is incomplete if we ignore the financial system in which companies operate.

We argue that bank debt decisions taken by firms with growth opportunities are not only conditioned by the asymmetric information and agency problems associated with the debt relation in imperfect markets, but also by the peculiarities of the legal and institutional environment in which these firms operate. These characteristics depend on the country and cannot be formulated within a standardized pattern. Reforms carried out in each country determine the evolution and outcomes of the legal and institutional framework in which

firms operate. The objective of this work has been to test if firms' bank debt decisions are conditioned by the existence of growth opportunities, firms' ownership structure, their need for external funds or by the institutional environment in which they operate.

For the empirical analysis we use samples of firms from Chile and Spain. These two countries share a common legal tradition based on civil law and a concentrated bank system as the key element of their financial systems. We observe that two elements are common to both Chile and Spain, namely: recent attempts to reform their financial markets in what has been defined as a process of convergence towards the Anglo-Saxon financial model, and the survival of a particularly concentrated ownership structure among the firms. However, their financial systems have evolved differently in recent decades. The two countries are located in different geographical areas, with differing economic cycles and strategic priorities.

An additional advantage of using these samples is that they belong to countries that are less commonly studied than the US, UK, Germany or Japan (Hoshi *et al.*, 1990; Bevan and Danbolt, 2000; Goyal *et al.*, 2002). Thus, this study contributes to the empirical literature by widening the range of countries from which the firms under analysis are taken.

We consider that the two samples are appropriate to test our hypotheses about the effect of the institutional environment on firms' bank debt decisions. Bank debt is predominant in both cases. Moreover, these firms resort to bank debt much more than US firms do. However, Spanish firms are not only more leveraged than Chilean ones but they also resort more frequently to bank debt in relative terms. Spanish firms have greater need for external funds, and a large proportion of these firms have as their main shareholder a family, multinational firm or the Public Administration. On the other hand, Chilean firms stand out for their greater ownership concentration, growth opportunities, solvency and return on assets. In terms of ownership structure, we observe an important proportion of firms whose main shareholder is a domestic firm or institutional investor.

The bank debt decisions of non-financial firms from Spain and Chile have different explanatory factors and the diverging evolutions of the two countries' financial systems are a possible explanation. This is true in spite of the fact that the corporate environments of these countries share certain similarities: high bank concentration, high ownership concentration, legal system based on civil law, among others.

Our findings confirm that bank financing of growth opportunities depends on the institutional environment in which firms operate. Firms use bank debt to finance their growth opportunities when the banks of that country contribute to solving information asymmetry and agency problems and avoid information monopoly costs. Countries with financial systems dominated by the banks have an institutional environment that favors the complementarity of bank debt and ownership concentration to avoid the underinvestment problem when there are growth opportunities. However, this complementarity has a limit – when the control over the ownership of the firm is threatened by the power of the creditor banks. In this case, bank debt is still used to finance growth opportunities, but to a lesser extent than it would be in the absence of hold-up costs.

Ownership concentration in firms together with bank concentration favors bank debt since this aligns the interests of shareholders, managers and creditors. This alignment can help firms to invest in projects that allow them to diversify their risk. However, firms with majority ownership and less capacity to generate funds internally and that operate in an environment where the banks have excessive power over firm decisions will maintain a negative relation with bank debt to avoid hold-up costs.

In countries with a high bank concentration, bank debt represents a signal of the quality of the growth opportunities available. These opportunities are financed with bank debt, since this is the most abundant resource and at the same time the market is indirectly informed about the firm's growth opportunities.

Chilean and Spanish firms with external financing needs and poor growth opportunities will refuse to be financed with bank debt. Their concentrated ownership will act as a substitute for the role played by debt in dispersed ownership firms.

Thus, it seems that the institutional environment of each country affects the willingness of firms to finance their growth opportunities with bank debt. Bank debt decisions are dependent on the characteristics of the institutional environment in which firms operate; and these environments evolve in different ways in each country depending on the decisions adopted by the authorities. The evolutionary process affecting the financial systems in each country means that market imperfections, such as information asymmetry and agency costs, can have varying effects on bank debt.

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Table 1. Index of size and activity of financial markets and financial intermediaries among countries.

This table shows the size and activity indicators of the banking industry -columns (1) and (2)- as well as those of the financial markets -columns (3) and (4)-, respectively. The relative size of the market is measured by the ratio stock market capitalization to Gross Domestic Product (GDP); the activity of financial markets is measured by the ratio stock market value traded to GDP; the size of banking industry is measured by the ratio deposit money bank assets to GDP and the loan activity of banking industry is measured by the percentage of private credit by deposit money banks to GDP. The participation in a firm's equity is also included -column (5)- corresponding to the average ownership percentage of the three main shareholders from the 10 larger non-financial firms. Bank concentration -column (6)- corresponds to the average market share of the five larger banks over the period 1989-96; while columns (7) to (11) correspond to the ratios: intangible assets, short-term debt, short-term debt with financial institutions, long-term debt and long-term debt with financial institutions, respectively, all of them with respect to total assets.

Country	Period	Deposit Money Bank Assets to GDP	Private Credit by Deposit Money Banks to GDP	Stock Market Capitaliz. to GDP	Stock Market Value Traded to GDP	Equity. Particip.	Bank Concent.	Intang.	Short-term Debt	Short-term Debt Financ. Instit.	Long-term Debt	Long-term Debt Financ. Instit.
		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Chile	1985-7	0.538	0.469	0.174	0.015	0.45	0.61	n/d	n/d	n/d	n/d	n/d
	1990-2	0.419	0.398	0.573	0.043			0.088	13.841	4.859	14.128	6.882
	1995-7	0.488	0.480	0.934	0.124			0.164	15.841	5.053	11.533	6.478
	2000-1	0.619	0.605	0.759	0.073			1.153	15.216	6.148	13.701	6.796
	Variation % 1985-2001	15.1%	29.0%	336.2%	386.7%				1210.2%	9.9%	26.5%	-3.0%
Spain	1985-7	0.594	0.654	0.145	0.067	0.51	0.50	1.449	32.852	8.539	23.437	13.687
	1990-2	1.054	0.805	0.225	0.074			2.220	39.097	8.016	18.629	10.746
	1995-7	1.025	0.731	0.370	0.440			3.551	36.743	6.077	17.843	9.701
	2000-1	1.174	0.968	0.727	1.600			3.167	35.738	4.461	19.824	7.008
	Variation % 1985-2001	97.6%	48.0%	401.4%	2288.1%				118.6%	8.8%	-47.8%	-15.4%
United States	1985-7	0.795	0.674	0.539	0.384	0.20	0.20	n/d	22.963	1.823	20.873	4.500
	1990-2	0.755	0.665	0.616	0.332			n/d	27.943	3.260	23.973	6.891
	1995-7	0.713	0.625	0.974	0.949			n/d	27.150	2.717	20.164	5.764
	2000-1	0.817	0.732	1.332	3.067			n/d	26.888	2.332	19.740	5.193
	Variation % 1985-2001	2.8%	8.6%	147.1%	698.7%				n/d	17.1%	27.9%	-5.4%
United Kingdom	1985-7	0.662	0.637	0.710	0.319	0.19	0.65	n/d	n/d	n/d	n/d	n/d
	1990-2	1.123	1.117	0.879	0.315			n/d	n/d	n/d	n/d	n/d
	1995-7	1.143	1.136	1.267	0.670			n/d	n/d	n/d	n/d	n/d
	2000-1	1.284	1.281	1.575	1.299			n/d	n/d	n/d	n/d	n/d
	Variation % 1985-2001	94.0%	101.1%	121.8%	307.2%				n/d	n/d	n/d	n/d
Germany	1985-7	1.172	0.925	0.194	0.175	0.48	0.39	0.318	49.140	6.820	7.050	3.781
	1990-2	1.122	0.900	0.204	0.244			0.575	51.300	7.911	6.078	3.557
	1995-7	1.363	1.054	0.270	0.270			0.786	51.293	7.139	6.205	3.894
	2000-1	1.492	1.191	0.593	0.671			1.128	46.915	5.896	5.821	3.371
	Variation % 1985-2001	27.3%	28.8%	205.7%	283.4%				254.7%	-4.5%	-13.5%	-17.4%
Japan	1985-7	1.139	0.984	0.731	0.547	0.18	0.32	1.059	48.437	18.402	27.973	19.850
	1990-2	1.290	1.151	0.938	0.326			1.160	43.989	14.997	29.990	20.866
	1995-7	1.258	1.123	0.666	0.263			1.309	41.892	14.326	31.069	21.628
	2000-1	1.345	1.096	0.639	0.503			1.796	38.516	11.667	28.868	19.134
	Variation % 1985-2001	18.1%	11.4%	-12.6%	-8.0%				69.6%	-20.5%	-36.6%	3.2%
France	1985-7	0.897	0.764	0.149	0.065	0.34	0.44	0.740	38.816	4.724	31.018	7.523
	1990-2	1.037	0.940	0.271	0.093			1.082	36.861	3.869	28.719	6.916
	1995-7	1.019	0.842	0.365	0.233			1.721	38.479	3.501	25.396	4.395
	2000-1	1.042	0.848	0.924	0.826			2.408	40.308	3.032	22.745	3.884
	Variation % 1985-2001	16.2%	11.0%	520.1%	1170.8%				225.4%	3.8%	-35.8%	-26.7%
Italy	1985-7	0.666	0.485	0.145	0.050	0.58	0.38	2.311	45.740	11.894	19.714	9.549
	1990-2	0.744	0.559	0.132	0.028			3.353	49.052	13.377	18.856	9.626
	1995-7	0.783	0.556	0.204	0.111			3.151	48.724	10.969	15.606	7.753
	2000-1	0.928	0.746	0.564	0.616			4.997	48.437	10.273	13.138	6.313
	Variation % 1985-2001	39.3%	53.8%	289.0%	1132.0%				116.2%	5.9%	-13.6%	-33.4%

Source: Columns (1) to (4), from the updated work of Beck *et al.* (1999) in 2001. Stock market participation, in column (5), was obtained from La Porta *et al.* (1998). Bank concentration, in column (6), was obtained from Carlin and Mayer (2003). Columns (7) to (11), from the BACH database. The sources for Chile data are the *FECU* database and the Instituto Libertad y Desarrollo (1999).

Table 2. Descriptive statistic of variables.

In this table, we include average, minimum and maximum values, standard deviation and variance of the following variables: bank debt to total assets (BDAB), bank debt to total debt (BDTD), total debt to equity (TDEB), percentage of shares in the hands of the first shareholder (OWN), market value to book value (QA), financing deficit for the variation of fixed assets and working capital (DEF), natural logarithm of total asset values in thousands of euros (LNTAB), Altman's Z-Score coefficient (Z) and return on assets (ROA). We also use the descriptive statistic of the nature of the firm's first shareholder: a family (FAMFM), an institutional investor (INSINV), a domestic firm (DOMFM), a multinational firm (MULFM) and a public firm (PUBFM).

	<i>Average</i>			<i>Minimum</i>			<i>Maximum</i>			<i>Variance</i>		
	<i>Overall</i>	<i>Chile</i>	<i>Spain</i>	<i>Overall</i>	<i>Chile</i>	<i>Spain</i>	<i>Overall</i>	<i>Chile</i>	<i>Spain</i>	<i>Overall</i>	<i>Chile</i>	<i>Spain</i>
BDAB	0.14	0.12	0.17	0.00	0.00	0.00	0.75	0.75	0.70	0.02	0.02	0.02
BDTD	0.46	0.41	0.54	0.00	0.00	0.00	1.00	1.00	1.00	0.12	0.12	0.12
TDEB	0.64	0.45	0.91	0.00	0.00	0.00	62.24	7.12	62.24	2.98	0.29	6.62
OWN	42.83	44.19	40.93	0.01	2.08	0.01	99.39	99.39	99.20	653.82	620.99	694.44
QA	1.29	1.34	1.23	0.09	0.09	0.23	30.52	15.10	30.52	1.18	0.93	1.53
DEF	-0.10	-0.11	-0.08	-1.63	-0.98	-1.63	0.83	0.83	0.76	0.04	0.04	0.03
LNTAB	11.00	11.24	10.66	7.07	7.07	7.28	17.18	15.74	17.18	2.61	2.40	2.71
Z	5.59	7.53	2.87	-3.64	-1.30	-3.64	135.60	91.42	135.60	110.67	142.18	53.88
ROA	0.06	0.09	0.02	-0.82	-0.61	-0.82	0.45	0.45	0.22	0.01	0.01	0.01
FAMFM	0.14	0.06	0.26	0.00	0.00	0.00	1.00	1.00	1.00	0.12	0.05	0.19
INSINV	0.31	0.40	0.18	0.00	0.00	0.00	1.00	1.00	1.00	0.21	0.24	0.15
DOMFM	0.37	0.46	0.26	0.00	0.00	0.00	1.00	1.00	1.00	0.23	0.25	0.19
MULFM	0.11	0.06	0.19	0.00	0.00	0.00	1.00	1.00	1.00	0.10	0.06	0.15
PUBFM	0.06	0.02	0.11	0.00	0.00	0.00	1.00	1.00	1.00	0.06	0.02	0.10
N Obs.	1977	1154	823	1977	1154	823	1977	1154	823	1977	1154	823

Table 3. Test of mean differences among the variables for Chilean and Spanish samples.

This Table shows the test of mean differences for the combined samples of Chile and Spain. The test is performed first by comparing the mean differences for the combined sample categorized by country. Then, a similar analysis is performed with the samples of Chile and Spain categorized by banking debt to total assets (BDAB) considering superior and inferior thirds, and the mean differences for each sample categorized by bank debt to total debt (BDTD) considering superior and inferior thirds. The null hypothesis is that there exist equal means among the variables for each category. The statistical significance proves if this hypothesis is accepted.

<i>Variables</i>	<i>Combined Sample</i>				<i>Chile</i>				<i>Spain</i>			
	<i>N-tiles por País</i>				<i>N-tiles 1 y 3 DBAB</i>				<i>N-tiles 1 y 3 DBAB</i>			
	<i>Sig. (bilateral)</i>	<i>España</i>	<i>Chile</i>	<i>Mean Diff.</i>	<i>Sig. (bilateral)</i>	<i>1</i>	<i>3</i>	<i>Mean Diff.</i>	<i>Sig. (bilateral)</i>	<i>1</i>	<i>3</i>	<i>Mean Diff.</i>
BDAB	0.000	0.168	0.116	0.052	0.000	0.004	0.268	-0.265	0.000	0.021	0.342	-0.321
BDTD	0.000	0.544	0.406	0.138	0.000	0.053	0.716	-0.663	0.000	0.214	0.803	-0.589
TDEB	0.000	0.913	0.450	0.463	0.000	0.195	0.788	-0.594	0.000	0.403	1.701	-1.298
OWN	0.005	0.409	0.442	-0.033	0.114	0.423	0.451	-0.028	0.000	47.349	38.404	8.945
Q	0.027	1.229	1.338	-0.110	0.103	1.406	1.289	0.117	0.002	1.458	1.071	0.387
DEF	0.000	-0.080	-0.113	0.032	0.029	-0.132	-0.101	-0.031	0.091	-0.068	-0.091	0.024
LNTAB	0.000	10.664	11.238	-0.573	0.978	11.133	11.137	-0.003	0.460	10.665	10.566	0.099
Z	0.000	2.866	7.532	-4.665	0.000	15.356	2.578	12.778	0.000	5.206	1.290	3.916
ROA	0.000	0.024	0.087	-0.062	0.000	0.120	0.052	0.068	0.000	0.052	-0.008	0.060
FAMFM	0.000	0.260	0.058	0.202	0.298	0.073	0.055	0.018	0.000	0.186	0.332	-0.146
INSINV	0.000	0.179	0.399	-0.220	0.527	0.388	0.410	-0.022	0.319	0.197	0.164	0.033
DOMFM	0.000	0.255	0.458	-0.203	0.536	0.440	0.462	-0.022	0.684	0.234	0.219	0.015
MULFM	0.000	0.188	0.062	0.127	0.134	0.076	0.049	0.026	0.002	0.281	0.172	0.109
PUBFM	0.000	0.118	0.023	0.094	0.996	0.023	0.023	0.000	0.680	0.102	0.113	-0.011
N Obs.	1997				769				548			

Table 4. Determinants of bank debt for samples of Chilean and Spanish firms.

This table contains the results obtained for a combined sample of Chile and Spain.. For Chile, we have a sample of 148 nonfinancial firms from 1991 to 1999 (1154 observations), while for Spain we have a sample of 111 nonfinancial firms over the years 1991 to 1999 (823 observations). The regression model estimated is:

$$DBAB_{it} = \beta_0 + \beta_1 OWN_{it} + \beta_2 Q_{it} + \beta_3 OWN \cdot QI_{it} + \beta_4 DEF \cdot OWN_{it} + \beta_5 Q \cdot DEFI_{it} + \beta_6 TDEB_{it} + \beta_7 DEF_{it} + \beta_8 LNTAB_{it} + \beta_9 Z_{it} + \beta_{10} ROA_{it} + \beta_{11} FAMFM_{it} + \beta_{12} INSINV_{it} + \beta_{13} DOMFM_{it} + \beta_{14} MULFM_{it} + \beta_{15} DUMMTEMP_{it} + \beta_{16} DUMMSEC_{it} + \varepsilon_{it}$$

Where the dependent variable is bank debt to total assets (DBAB). The independent variables are: shares in the hands of the first shareholder (OWN), growth opportunities (Q), the relation between ownership concentration and growth opportunities (OWN*QI), the relation between fund deficit and ownership concentration (DEF*OWNI), the relation among fund deficit for the financing of the firm's portfolio of projects and growth opportunities (Q*DEFI), a firm's leverage (TDEB), the fund deficit for the financing of the variations of fixed assets and working capital (DEF), the size (LNTAB), the default risk (Z) and ROA. We also introduce the dummy variables corresponding to the nature of the main owner: FAMFM for a family, INSINV for mutual funds, DOMFM for domestic firms and MULFM for multinational firms, as well as the dummy variables corresponding to industry, and the temporary ones. In all cases, Wald test²³ reveals that the models are statistically significant. The variables OWN, Q, OWN*QI, DEF*OWNI, Q*DEFI have been considered endogenous and have been instrumented with system estimator and GMM. We have also included the results when considering all the variables as exogenous, within estimators. Statistical significance: * * * at 1% level, * * at 5% and * at 10%.

Dep. Var.: DBAB	Chile			España			
	Modelo	SE	DIF	Within	SE	DIF	Within
		Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)
CONST		-0.1174 *** (0.0165)	0.0392 *** (0.0000)	-0.5031 *** (0.0000)	-0.1869 ** (0.0302)	-0.0142 *** (0.0067)	-0.5560 *** (0.0000)
Q		-0.0001 (0.6201)	-0.0011 ** (0.0488)	0.0000 (0.9990)	0.0387 *** (0.0000)	0.0192 *** (0.0001)	0.0073 (0.1110)
Q*DEFI		0.0042 ** (0.0244)	0.0033 * (0.0838)	0.0074 (0.1150)	-0.0021 (0.6452)	-0.0009 (0.7051)	0.0002 (0.9790)
	<i>Q+Q*DEFI</i>	<i>0.0042 *** (0.0000)</i>	<i>0.0022 *** (0.0000)</i>		<i>0.0387 *** (0.0000)</i>	<i>0.0192 *** (0.0000)</i>	
OWN		0.0044 * (0.0893)	0.0002 ** (0.0308)	-0.0005 * (0.0780)	0.0018 *** (0.0000)	0.0011 *** (0.0000)	0.0016 * (0.0690)
OWN*QI		0.0011 *** (0.0000)	0.0001 * (0.0786)	0.0002 (0.1120)	-0.0004 *** (0.0000)	-0.0008 *** (0.0000)	-0.0006 *** (0.0050)
	<i>OWN+OWN*QI</i>	<i>0.0055 *** (0.0000)</i>	<i>0.0003 *** (0.0000)</i>	<i>-0.0005</i>	<i>0.0014 *** (0.0000)</i>	<i>0.0003 (0.0000)</i>	<i>0.001</i>
DEF		-0.0424 *** (0.0007)	-0.0814 *** (0.0000)	-0.0338 * (0.0630)	-0.2350 *** (0.0000)	-0.042 *** (0.0003)	-0.0608 ** (0.0390)
DEF*OWNI		0.0558 * (0.0231)	0.0052 * (0.0509)	-0.0233 (0.3060)	0.3138 *** (0.0000)	0.0823 *** (0.0000)	0.1574 *** (0.0020)
	<i>DEF+DEF*OWNI</i>	<i>0.0134 *** (0.0000)</i>	<i>-0.0762 *** (0.0000)</i>	<i>-0.0338</i>	<i>0.0788 *** (0.0000)</i>	<i>0.0403 *** (0.0000)</i>	<i>0.0966</i>
TDEB		0.0698 *** (0.0000)	0.0640 *** (0.0000)	0.0648 *** (0.0000)	0.0040 ** (0.0142)	0.0053 *** (0.0000)	0.0063 *** (0.0000)

²³ A Wald test has been performed to check: i) the combined significance of parameters, ii) the significance of temporary dummy variables, iii) the significance of industry variables, and iv) the significance both of temporary dummy variables and of industry, or of the combined temporary dummy variables and temporary dummy variables relative to the nature of the main owner.

LNTAB	0.0241 *** (0.0000)	0.0903 *** (0.0000)	0.0387 *** (0.0000)	0.0234 *** (0.0003)	0.0723 *** (0.0000)	0.0648 *** (0.0000)
Z	-0.0019 *** (0.0000)	-0.0004 *** (0.0000)	-0.0008 *** (0.0070)	-0.0112 *** (0.0000)	-0.0028 ** (0.0183)	-0.0012 (0.1270)
ROA	-0.3247 *** (0.0000)	-0.2429 *** (0.0000)	-0.1863 *** (0.0000)	-0.3562 *** (0.0000)	-0.1502 *** (0.0000)	-0.2841 *** (0.0000)
FAMFM	-0.0474 * (0.0537)	-0.0262 *** (0.0000)	0.2000 *** (0.0000)	0.1422 *** (0.0000)	0.0072 (0.1119)	0.0284 (0.4670)
INSINV	-0.0219 (0.1078)	-0.0272 *** (0.0000)	0.1965 *** (0.0000)	0.1178 *** (0.0000)	0.0091 ** (0.0252)	0.0143 (0.7000)
DOMFM	0.0156 (0.2410)	-0.0207 *** (0.0000)	0.1896 *** (0.0000)	0.130703 *** (0.0000)	0.0113 *** (0.0037)	-0.0015 (0.9640)
MULFM	-0.0807 *** (0.0000)	-0.0245 *** (0.0000)	0.1177 ** (0.0240)	-0.0148 (0.5919)	0.0075 * (0.0648)	0.0091 (0.8190)
Test for first-order serial correlation:	-3.217 *** (0.0010)	-3.036 *** (0.0020)		-3.150 ** (0.0200)	-2.842 *** (0.0040)	
Test for second-order serial correlation:	-0.776 (0.4380)	0.508 (0.6120)		-1.450 (0.1470)	-1.553 (0.1200)	
Sargan test:	126.4930 (0.7290)	117.2023 (0.9840)		70.4403 (0.8880)	86.1285 (0.4450)	
R-sq (within)			0.2488			0.172

Table 5. Determinants of bank debt for the samples of Chile and Spain: An analysis of robustness.

This table contains the results for a combined sample of Chile and Spain.. For Chile, we have considered a sample of 148 nonfinancial firms from 1991 to year 1999 (1154 observations), while for Spain we have considered a sample of 111 non-financial firms over the years 1991 to 1999 (823 observations). The regression model is:

$$BDTD_{it} = \beta_0 + \beta_1 OWN_{it} + \beta_2 Q_{it} + \beta_3 OWN \cdot QI_{it} + \beta_4 DEF \cdot OWNI_{it} + \beta_5 Q \cdot DEFI_{it} + \beta_6 TDEB_{it} + \beta_7 DEF_{it} + \beta_8 LNTAB_{it} + \beta_9 Z_{it} + \beta_{10} ROA_{it} + \beta_{11} FAMFM_{it} + \beta_{12} INSINV_{it} + \beta_{13} DOMFM_{it} + \beta_{14} MULFM_{it} + \beta_{15} DUMMTEMP_{it} + \beta_{16} DUMMSEC_{it} + \varepsilon_{it}.$$

Where the dependent variable is BDTD which corresponds to bank debt to total debt. The independent variables are: shares in the hands of the first shareholder (OWN), growth opportunities (Q), the relation between ownership concentration and growth opportunities (OWN*QI), the relation between fund deficit and ownership concentration (DEF*OWNI), the relation among fund deficit for the financing of the firm's portfolio of projects and growth opportunities (Q*DEFI), a firm's leverage (TDEB), the fund deficit for the financing of the variations of fixed assets and working capital (DEF), the size (LNTAB), the default risk (Z) and ROA. We also introduce the dummy variables corresponding to the nature of the main owner: FAMFM for a family, INSINV for mutual funds, DOMFM for domestic firms and MULFM for multinational firms, as well as the dummy variables corresponding to industry, and the temporary ones. In all cases, Wald test²⁴ reveals that the models are statistically significant. The variables OWN, Q, OWN*QI, DEF*OWNI, Q*DEFI have been considered endogenous and have been instrumented with system estimator and GMM. We have also included the results obtained from considering all the variables as exogenous, within estimators. Statistical significance: *** at 1% level, ** at 5% and * at 10%.

Dep. Var.: DBDT Modelo	Chile			España		
	SE	DIF	Within	SE	DIF	Within
	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)	Coefficiente (P-Value)
CONST	0.1138 (0.3645)	0.1538 *** (0.0000)	-0.8735 *** (0.0010)	-0.6962 *** (0.0016)	-0.0163 (0.1736)	0.1646 (0.6540)
Q	-0.0052 (0.4594)	-0.0263 *** (0.0036)	0.0022 (0.8480)	0.0660 *** (0.0005)	0.0439 *** (0.0000)	0.0275 ** (0.0460)
Q*DEFI	0.0296 *** (0.0000)	0.0087 (0.1849)	0.0138 (0.3500)	-0.0416 ** (0.0246)	-0.0298 *** (0.0000)	0.002 (0.9230)
<i>Q+Q*DEFI</i>	<i>0.0296 *** (0.0000)</i>	<i>-0.0263 *** (0.0000)</i>		<i>0.0244 *** (0.0000)</i>	<i>0.0141 (0.0000)</i>	<i>0.0275</i>
OWN	0.0008 ** (0.0466)	-0.0018 ** (0.0138)	-0.0006 (0.4650)	0.0029 *** (0.0000)	-0.0001 (0.8074)	0.0012 (0.6440)
OWN*QI	0.0007 *** (0.0003)	-0.0001 (0.8724)	0.0006 (0.2040)	-0.0014 *** (0.0000)	-0.0025 *** (0.0000)	-0.002 *** (0.0010)
<i>OWN+OWN*QI</i>	<i>0.0008 *** (0.0000)</i>	<i>-0.0018 *** (0.0000)</i>		<i>0.0016 *** (0.0000)</i>	<i>-0.0025 *** (0.0000)</i>	<i>-0.002</i>
DEF	-0.1482 *** (0.0000)	-0.0646 ** (0.0403)	-0.0664 (0.2450)	-0.6852 *** (0.0000)	0.0409 (-0.1667)	-0.1862 ** (0.0350)
DEF*OWNI	0.0890 *** (0.0014)	-0.0022 (0.9610)	-0.083 (0.2460)	0.7026 *** (0.0000)	0.1464 *** (0.0003)	0.3629 ** (0.0170)
<i>DEF+DEF*OWNI</i>	<i>-0.0592 ***</i>	<i>-0.0646 ***</i>		<i>0.0173 ***</i>	<i>0.1464 ***</i>	<i>0.1767</i>

²⁴ A Wald test has been performed to check: i) the combined significance of parameters, ii) the significance of temporary dummy variables, iii) the significance of industry variables, and iv) the significance both of temporary dummy variables and of industry, or of the combined temporary dummy variables and temporary dummy variables relative to the nature of the main owner.

	(0.0000)	(0.0000)		(0.0000)	(0.0000)		(0.0000)	(0.0000)	
TDEB	0.0589 *** (0.0000)	0.0505 *** (0.0000)	-0.0035 (0.8570)	-0.0089 * (0.0501)	0.0015 (0.4528)	-0.0061 (0.1650)			
LNTAB	0.0756 *** (0.0000)	0.1316 *** (0.0000)	0.0967 *** (0.0000)	0.1011 *** (0.0000)	0.0648 *** (0.0000)	0.0481 (0.1420)			
Z	-0.0066 *** (0.0000)	-0.0026 *** (0.0000)	-0.0051 *** (0.0000)	-0.0096 *** (0.0013)	-0.0044 ** (0.0176)	-0.0073 *** (0.0020)			
ROA	-0.5567 *** (0.0000)	-0.4264 *** (0.0000)	-0.5147 *** (0.0000)	-0.6682 *** (0.0002)	0.1063 *** (0.0002)	-0.2921 * (0.0770)			
FAMFM	-0.4562 *** (0.0000)	-0.0061 (0.7703)	0.3033 ** (0.0360)	0.5580 *** (0.0000)	0.0045 (0.6618)	-0.0204 (0.8620)			
INSINV	-0.4721 *** (0.0000)	-0.0483 ** (0.0136)	0.2862 ** (0.0360)	0.3098 *** (0.0000)	-0.0026 (0.7277)	-0.2029 * (0.0690)			
DOMFM	-0.3571 *** (0.0000)	-0.0355 * (0.0870)	0.2825 ** (0.0310)	0.3336 *** (0.0000)	-0.0085 (0.1670)	-0.0561 (0.5730)			
MULFM	-0.7224 *** (0.0000)	-0.0409 * (0.0524)	0.1706 (0.2960)	0.0606 (0.4674)	0.0278 *** (0.0000)	-0.2001 * (0.0940)			
Test for first-order serial correlation:	-3.867 *** (0.0000)	-3.676 *** (0.0000)		-3.499 (0.0000)	-3.543 *** (0.0000)				
Test for second-order serial correlation:	-1.638 (0.101)	-1.278 (0.201)		-2.971 (0.003)	-2.545 ** (0.011)				
Sargan test:	128.5913 (0.972)	77.0024 (0.720)		84.6670 (0.879)	88.4783 (0.377)				
R-sq (within)			0.1061			0.088			