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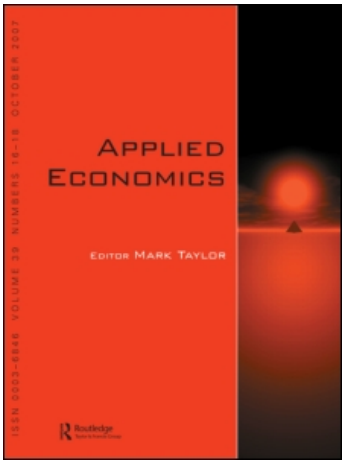

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Is the use of bank debt as a governance mechanism conditioned by the financial system? The cases of Chile and Spain

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Is the use of bank debt as a governance mechanism conditioned by the financial system? The cases of Chile and Spain

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We test whether the use of bank debt as a governance mechanism is conditioned by the financial system in which firms operate. Our results indicate 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.

I. Introduction

Imperfections in the capital markets mean that debt choices affect the value of firms (Modigliani and Miller, 1958). The existence of growth opportunities require that firms secure funds to finance new projects, and the choice of the ideal source of financing is conditioned by information asymmetry (Myers and Majluf, 1984), agency problems (Fama, 1980) and institutional environment. 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, 2000; Gallego and Loayza, 2000; Demirgüç-Kunt and Levine, 2001; Beck and Levine, 2002; Levine, 2002).

The objective of this study is to determine whether the use of bank debt as a governance mechanism in bank-based countries is conditioned by the existence of growth opportunities, the ownership structure of the firms or their institutional environment. With this objective in mind, we use a sample of firms from two countries that share a common legal tradition but whose financial systems have evolved in different ways. We test whether bank debt choices differ depending on the country in which the firm operates (Booth *et al*., 2001). These differences not only occur among countries with different legal traditions (Levine and Zevos, 1998; Levine, 2000; Tadesse, 2002; Bancel and Mittoo, 2004) but also among 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

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(i.e. civil law) and show a concentrated ownership and a highly concentrated banking system based on universal banks. Furthermore, both economies exhibit a similar economic stability in terms of gross domestic product (GDP) growth, inflation, interest and exchange rates. However, differences exist in the size and activity of their financial markets, the role played by banks as a control mechanism and banking regulations, which could condition a firm's choice of finance for its growth opportunities.

The sample includes 148 firms that are listed in Chile's stock market and 111 Spanish firms listed in the Spanish market, and the period of analysis is from 1991 to 1999. The results of this work support our hypotheses; namely, bank financing of growth opportunities depends not only on the country's legal tradition but also on the institutional environment in which the firms operate. Firms use bank debt to finance their growth opportunities when the banks work to solve agency and asymmetric problems and to avoid information monopoly costs. Countries with a bank-based financial system have an institutional environment that favours bank debt and ownership concentration complementarities to avoid the underinvestment problem. However, this complementarity has a limit. Bank debt loses its role as a governance mechanism to solve underinvestment and asset substitution problems if no alternative funding sources exist to finance a firm's growth opportunities.

The work is divided into five sections. Following the Introduction section, Section II offers a summary of the main theoretical contributions and our hypotheses. Section III describes the sample as well as the variables and methodology, and Section IV presents the main results and the robustness analysis. Finally, Section V summarizes and discusses the main conclusions.

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II. Theory and Empirical Hypotheses

Two main problems exist for financing investment projects with debt: underinvestment (Myers, 1977, 2001) and asset substitution (Galai and Masulis, 1976; Jensen and Mecking, 1976; Jensen, 1986). 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 for several reasons. First, 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). Second, 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; Hadlock and James, 2002; Denis and Mihov, 2003; Giannetti, 2003). Third, banks have expertise 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 provide information publicly regarding 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 arm's-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).

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 (Harris and Raviv, 1988, 1990; Shleifer and Vishny, 1992; Williamson, 1988). 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 could change depending on the function of the type of creditor and the institutional environment in which the firm operates (Andrés *et al*., 1997).

Thus, when operating in an environment of efficient capital markets, the firm will (a) prefer to finance its growth opportunities with equity rather than resort to debt and (b) opt for bank debt rather than market debt. The leverage ratio then decreases, and the mix of market debt and bank debt changes. Thus, 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 are conditioned both by the capacity of the financial markets 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 governance mechanism (Houston and James, 1996; Anderson and Makhija, 1999; Aivazian *et al*., 2005). Therefore, in a bank-based environment, no clear relation exists between

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bank debt and growth opportunities; rather, opportunities depend on the relevance of bank debt to act as a governance mechanism.

Thus, our first hypothesis is that financing firms' growth opportunities in bank-based countries *via* bank debt depend on the existence of an institutional environment that identifies bank debt as an efficient – and sometimes only – governance mechanism to control information asymmetry and agency problems: the more relevant the role of banks as a mechanism to control firm managers in the country, the higher the dependence on bank debt to finance growth opportunities. 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, who are the best-informed creditors. In these cases of insufficient internal funding, the firms' need for funds increases over time, and they thus have a greater probability of suffering bankruptcy or other severe underinvestment problems. Furthermore, in bank-based countries, lenders (mainly banks) could be aware of a firm's difficulties in generating internal funds. Banks then use their market power to reduce their credit risk in that firm and force an increase in equity (Bottazzi *et al*., 2005). Thus, our second hypothesis postulates that firms' borrowing capacity with bank intermediaries in bank-based countries decreases as their capacity to generate funds internally diminishes.

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 net positive value 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 to signal the quality of their growth opportunities. Bank debt becomes the least undervalued external fund. However, bank debt loses its role as a signal of growth opportunities quality in those countries in which banks are the main source of funds – either *via* equity or debt. Thus, resorting to bank financing is directly related to the level of development of the financial system (Demirgüç-Kunt and Maksimovic, 1999, 2002).In the absence of a legal system that protects the rights of external investors in firms, financial transactions are 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 is especially important in those countries in which the banks have a central role and are an efficient governance mechanism in the solution of the information asymmetry and agency problems. In this scenario, a firm's capacity to generate internal funds makes no difference to the financing of new projects. Therefore, our third hypothesis is that firms generating insufficient funds internally to finance their growth opportunities will use bank debt depending on whether the institutional environment identifies the use of bank debt as a signal of growth opportunities quality: If banks are the firms only source of funds, the bank debt loses its role as a signal.

A firm's agency problems vary depending on its ownership structure (Jensen and Mecking, 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 (i.e. bank debt; Bharadwaj and Shivdasani, 2003; Denis and Mihov, 2003) because 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 behaviour on the part of the firm's majority shareholders (Jensen, 1986). Then, in those countries in which firms' ownership is concentrated, bank debt becomes the main source of financing.

However, firms' ownership concentration differs among countries. The relation between the ownership structure and debt depends on the relative importance of each financing source in each country (La Porta *et al*., 1997, 1998, 1999, 2000; Johnson and Shleifer, 2000; Barth *et al*., 2000, 2001; Allen and Gale, 2001; Beck and Levine; 2002; Levine, 2002; Tadesse, 2002). 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 favoured (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 expect the relation between bank debt and ownership structure to be conditioned by the presence of growth opportunities and the financial development of the country in which the firm operates. Therefore, our fourth hypothesis postulates that the majority ownership structure of firms lacking growth opportunities in bank-based countries 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 depend on (a) the capacity of the financial markets of each country not to undervalue the new share issues, (b) the majority shareholders' strategies aimed at avoiding dilution of their shareholding and their subsequent loss of control and (c) the role that the banks play as a governance mechanism 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 (Giannetti, 2003). A firm will finance its growth opportunities with bank debt if doing so adds value in comparison to other sources of funds. However, when banks are the only governance mechanism, firm managers do not have any incentive to issue bank debt to finance the new projects. In the same vein, a firm will reject such financing if the institutional environment favours 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 nondiversifiable risk, a position that aligns with the managers' interests. The most appropriate financing source for this type of firm is bank debt, which 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, therefore, 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. Nevertheless, 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 determine the choice of lender when firms need external funds. Therefore, including institutional variables in the models significantly enhances our understanding about the capital structure choices of firms (Utrero, 2004).

III. Sample, Variables and Methodology

Sample

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. For our purposes, the firms of Chile and Spain are good samples because they operate in countries that share the same legal tradition, have economic stability, are dominated by bank intermediaries and exhibit a concentrated ownership among firms. In addition, a firm's financial decisions must account for the financial systems that show differences in terms of bank and financial regulation, bank concentration and the role of banks as a governance mechanism for companies. Thus, this sample selection allows us to determine whether debt decisions are conditioned by the institutional development of each country.

We obtain the information for the analysis of Chilean firms from the *Ficha Estadística Codificada Uniforme* (Uniform Codified Stadistic File) published by the Superintendencia de Valores and Seguro (Securities and Exchange Commission) in Chile. This data include 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 data from 148 nonfinancial firms 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 ($n = 26$); cement and building ($n = 10$); real estate properties ($n = 7$); transport and telecommunications ($n = 12$); textile, paper and cellulose ($n = 15$); utilities and energy ($n = 27$); services ($n = 36$); and mining ($n = 15$).

Nonfinancial Spanish firms total 111, with data collected from 1991 to 1999, for a total of 823

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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 ($n = 13$); cement and building ($n = 22$); real estate properties ($n = 10$); transport and telecommunications ($n = 8$); textile, paper and cellulose ($n = 11$); utilities and energy ($n = 19$); services ($n = 8$); and mining ($n = 20$). We consider both samples to be representative of Chilean and Spanish firms.

Variables

Certain indicators allow us to compare the financial systems of Chile and Spain. Following Wurgler (2000) and Andrés *et al*. (1997), we use the following ratios: size of bank sector (bank deposits/GDP), banks' credit activity (bank credits conceded to nonpublic firms/GDP), stock market activity (stock market capitalization/GDP), financial market liquidity (stock market assets traded/GDP), bank concentration, ownership structure, intangibles, volume of short-term and long-term debt and the relative importance of bank debt. These ratios are calculated at different periods to capture the different evolutionary processes of the two financial systems (see Table 1).

Spain and Chile exhibit similarities in the concentration of their firms' ownership structures (45% and 51%, respectively) and in the presence of a few banks that concentrate most of the banking assets in their financial systems (61% and 50%, respectively) as should be expected in countries that share the civil law legal tradition (see Table 1).

However, we observe that such similarities hide relevant differences between these two countries concerning the use of bank debt as a governance mechanism. Thus, Table 1 shows that in the past 15 years bank deposits have grown significantly in Spain, while Chile has seen a more modest growth in deposits (15%). Spain also stands out for its growth in bank credits to nonpublic firms. Thus, debt ownership is more concentrated in the hands of banks in Spain.

We also see a different evolution in the relative importance of the financial markets in Spain and Chile. Although Spain's market capitalization and volume of assets traded in its stock markets increased at a faster pace, Chile experienced an important growth in its stock market capitalization and a more moderate growth in its traded assets. However, the openness of the Chilean financial system during the 1990s drove their companies to finance themselves outside of Chile. The reform processes of these two countries' financial systems have been adapted to their geopolitical environments, resulting in diverging outcomes. Consequently, the role of bank intermediaries and financial markets as governance mechanisms have evolved differently: Whereas in Spain the higher relevance of financial markets has not reduced the pre-eminent role of bank debt as governance mechanism, in Chile financial reforms have increased the relevance of the equity and debt markets and reduced the role of bank debt as a governance mechanism (Lefort and Walker, 2000). Thus, Chile shows a more balanced situation among external governance mechanisms such as equity, market debt and bank debt.

We include all listed nonfinancial 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 because the nature of their business would distort the results. Firms included in the sample can issue bank debt, public debt or new shares in the markets in which they operate.

The debt agency problems (i.e. asset substitution and underinvestment) only occur in situations in which debt exists. Therefore, we ignore observations from firms financing themselves exclusively with equity because our objective is to study the potential problems of debt (5.9% and 8.1% for Chile and Spain, respectively); this exclusion has no significant effect on our results.

We calculate ratios from financial statements 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, and we use the percentage of shares in the hands of the major shareholder (OWN) to measure ownership concentration. Five dummy variables account for the nature of the main shareholder: family (FAMFM), institutional investor (i.e. banks in the Spanish sample and mutual funds in the Chilean sample; INSINV), domestic firm (DOMFM), multinational firm, (MULFM) and the administration (PUBFM). We measure firms' growth opportunities with the market-to-book ratio (Q) (e.g. Johnson, 1997a, b, 2003; Cuñat, 1999; Krishnaswami *et al*., 1999; Barclay *et al*., 2001; Barclay *et al*., 2003;). 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).

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

	Deposit Money Bank Assets to GDP	Private Credit by Deposit Money Banks to GDP	Stock Market Capitali-zation to GDP	Stock Market Value Traded to GDP	Equity Participation	Bank Concen-tration	Intangibles	Short-Term Debt	Short-term Debt Financial Institutions	Long-Term Debt	Long-term Debt Finance Institutions
Country	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Chile											
1985 to 1987	0.538	0.469	0.174	0.015	0.45	0.61	n/d	n/d	n/d	n/d	n/d
1990 to 1992	0.419	0.398	0.573	0.043			0.088	13.841	4.859	14.128	6.882
1995 to 1997	0.488	0.480	0.934	0.124			0.164	15.841	5.053	11.533	6.478
2000 to 2001	0.619	0.605	0.759	0.073			1.153	15.216	6.148	13.701	6.796
Variation (%)											
1985 to 2001	15.1	29.0	336.2	386.7			1210.2	9.9	26.5	−3.0	−1.2
Spain											
1985 to 1987	0.594	0.654	0.145	0.067	0.51	0.50	1.449	32.852	8.539	23.437	13.687
1990 to 1992	1.054	0.805	0.225	0.074			2.220	39.097	8.016	18.629	10.746
1995 to 1997	1.025	0.731	0.370	0.440			3.551	36.743	6.077	17.843	9.701
2000 to 2001	1.174	0.968	0.727	1.600			3.167	35.738	4.461	19.824	7.008
Variation (%)											
1985 to 2001	97.6	48.0	401.4	2288.1			118.6	8.8	−47.8	−15.4	−48.8
United States											
1985 to 1987	0.795	0.674	0.539	0.384	0.20	0.20	n/d	22.963	1.823	20.873	4.500
1990 to 1992	0.755	0.665	0.616	0.332			n/d	27.943	3.260	23.973	6.891
1995 to 1997	0.713	0.625	0.974	0.949			n/d	27.150	2.717	20.164	5.764
2000 to 2001	0.817	0.732	1.332	3.067			n/d	26.888	2.332	19.740	5.193
Variation (%)											
1985 to 2001	2.8	8.6	147.1	698.7			n/d	17.1	27.9	−5.4	15.4
United Kingdom											
1985 to 1987	0.662	0.637	0.710	0.319	0.19	0.65	n/d	n/d	n/d	n/d	n/d
1990 to 1992	1.123	1.117	0.879	0.315			n/d	n/d	n/d	n/d	n/d
1995 to 1997	1.143	1.136	1.267	0.670			n/d	n/d	n/d	n/d	n/d
2000 to 2001	1.284	1.281	1.575	1.299			n/d	n/d	n/d	n/d	n/d
Variation (%)											
1985 to 2001	94.0	101.1	121.8	307.2			n/d	n/d	n/d	n/d	n/d
Germany											
1985 to 1987	1.172	0.925	0.194	0.175	0.48	0.39	0.318	49.140	6.820	7.050	3.781
1990 to 1992	1.122	0.900	0.204	0.244			0.575	51.300	7.911	6.078	3.557
1995 to 1997	1.363	1.054	0.270	0.270			0.786	51.293	7.139	6.205	3.894
2000 to 2001	1.492	1.191	0.593	0.671			1.128	46.915	5.896	5.821	3.371
Variation (%)											

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1985 to 2001	27.3	28.8	205.7	283.4			254.7	−4.5	−13.5	−17.4	−10.8
Japan											
1985 to 1987	1.139	0.984	0.731	0.547	0.18	0.32	1.059	48.437	18.402	27.973	19.850
1990 to 1992	1.290	1.151	0.938	0.326			1.160	43.989	14.997	29.990	20.866
1995 to 1997	1.258	1.123	0.666	0.263			1.309	41.892	14.326	31.069	21.628
2000 to 2001	1.345	1.096	0.639	0.503			1.796	38.516	11.667	28.868	19.134
Variation (%)											
1985 to 2001	18.1	11.4	−12.6	−8.0			69.6	−20.5	−36.6	3.2	−3.6
France											
1985 to 1987	0.897	0.764	0.149	0.065	0.34	0.44	0.740	38.816	4.724	31.018	7.523
1990 to 1992	1.037	0.940	0.271	0.093			1.082	36.861	3.869	28.719	6.916
1995 to 1997	1.019	0.842	0.365	0.233			1.721	38.479	3.501	25.396	4.395
2000 to 2001	1.042	0.848	0.924	0.826			2.408	40.308	3.032	22.745	3.884
Variation (%)											
1985 to 2001	16.2	11.0	520.1	1170.8			225.4	3.8	−35.8	−26.7	−48.4
Italy											
1985 to 1987	0.666	0.485	0.145	0.050	0.58	0.38	2.311	45.740	11.894	19.714	9.549
1990 to 1992	0.744	0.559	0.132	0.028			3.353	49.052	13.377	18.856	9.626
1995 to 1997	0.783	0.556	0.204	0.111			3.151	48.724	10.969	15.606	7.753
2000 to 2001	0.928	0.746	0.564	0.616			4.997	48.437	10.273	13.138	6.313
Variation (%)											
1985 to 2001	39.3	53.8	289.0	1132.0			116.2	5.9	−13.6	−33.4	−33.9

Sources: Columns 1 through 4 are from the updated work of Beck *et al.* (1999) in 2001.
This table shows the size and activity indicators of the banking industry (see Columns 1 and 2) and those of the financial markets (see Columns 3 and 4). The relative size of the market is measured by the ratio stock market capitalization to 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 (Column 5) corresponds to the average ownership percentage of the three main shareholders from the 10 larger nonfinancial firms. Bank concentration (Column 6) corresponds to the average market share of the five larger banks from 1989 to 1996, and Columns 7 through 1) correspond, respectively, to the following ratios: intangible assets, short-term debt, short-term debt with financial institutions, long-term debt and long-term debt with financial institutions, respectively; all are given in respect to total assets.
Stock market participation, Column 5, is obtained from La Porta *et al.* (1998).
Bank concentration, Column 6, is obtained from Carlin and Mayer (2003).
Columns 7 through 1 are from the BACH database.
The sources for Chile data are the *Ficha Estadística Codificada Uniforme* database and the Instituto Libertad y Desarrollo (1999).

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 zero 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 in which the main shareholder owns at least a 50% stake, and zero 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 zero otherwise.We use size, return on assets (ROA), 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 nonnegative and high-variance values (LNTAB). We use ROA to measure the profitability of the firms' portfolios of projects. Altman's *Z*-score is our proxy for a firm's bankruptcy probability and is determined according to the following equation (Altman, 2002): $Z = 1.2$ (working capital/total assets) +1.4 (retained profits/total assets) +3.3 (profits before interests and taxes/total assets) +0.6 (equity capital at market value/total liabilities) +1.0 (sales/total assets). Finally, the debt-to-equity ratio (TDEB) is our proxy for a firm's insolvency risk. Table 2 provides descriptive statistical data.

Methodology

We analyse our data in two stages. 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. Second, we perform a regression analysis applying panel data econometrics as 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 (i.e. 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 is solved by transforming the variables into first differences (first-difference estimators). On the other hand, following Antoniou *et al*. (2002) who argue that the first difference specifications of the Generalized Method of Moments (GMM) are superior to alternative methodologies, we use GMM to solve the endogeneity problem of the independent variables related to the error term. Therefore, once

Table 2. Descriptive statistic of variables

	Average			Minimum			Maximum			Variance		
	Overall	Chile	Spain	Overall	Chile	Spain	Overall	Chile	Spain	Overall	Chile	Spain
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
Q	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.	1,977	1,154	823	1,977	1,154	823	1,977	1,154	823	1,977	1,154	823

In this table we include average, minimum and maximum values; 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 (Q), 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).

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the fixed effects are controlled and the endogeneity adequately considered, estimations become robust and consistent.

However, using the first-difference estimator is not without its problems. Alonso-Borrego and Arellano (1999) show statistically that the instruments in the panel difference estimator are often weak. This weakness would lead to biases in finite samples and to a poor asymptotic precision. 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, to reduce the potential biases and the errors of imprecision associated with the difference estimator, we use the estimators calculated with the system estimator (Arellano and Bond, 1998). Blundell and Bond (1998) show that the system estimator is much more efficient in cases in which the difference estimator performs poorly, especially for finite samples such as ours. This system consists of two equations, each one with its own instruments. The first type of equations is in levels and its instruments are the lagged differences in the dependent variable and the independent variables. The second type of equations is a set of equations in first differences with the levels of the dependent variable and the independent variables as instruments (Goergen and Renneboog, 2001; Gaud *et al*., 2005). Our regression model is

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

where i equals 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 BDAB. The explanatory or independent variables are ownership structure (OWN), growth opportunities (Q), external financing needs (DEF), ROA, firm size (LNTAB), TDEB and Altman's Z score. 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 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.

IV. 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

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

However, Spanish firms are more leveraged and use more bank debt than Chilean firms. Thus, the TDEB is 91% for Spanish firms, compared with 45% for Chilean firms. 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). This result is consistent with the higher relevance of banks as a source of funds and as a governance mechanism for firms in Spain than in Chile.

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 result means that growth opportunities are generally available both in Chilean and Spanish nonfinancial firms. However, we observe differences in terms of return and risk between Chilean and Spanish firms. Namely, Chilean firms have higher ROA 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. We consider that such differences are related to the different role bank debt plays in Spain and Chile as a governance mechanism. 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 vs. 8% of total assets for Chilean and Spanish firms, respectively).

Additionally, we classify 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 are evidence that legal changes introduced in the 1990s have reinforced the relevance of institutional investors (mutual and pension funds) as owners of Chilean firms (Majluf *et al*., 1998). In contrast, we find no clear pattern in the nature of the main shareholder within Spanish firms. In 26% of Spanish firms, the main owner is a domestic firm; in 26%, a family; in 19%, a multinational firm; in 18%, a bank; and in the remaining 12% the main shareholder is the administration. We emphasize the different role played by banks in Chile and Spain whereas Spanish banks are the main shareholder in one of every five firms and they can be minority owners in the rest of the companies, Chilean banks are forbidden to own shares of nonfinancial companies.

To expand the descriptive analysis, we build two country samples – Chilean firms and Spanish firms –to perform the mean difference analysis. Each country sample is divided into three subsamples by the ratio BDAB and bank debt to total debt (BDTD). They contain the firms with 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 mean values of the subsamples with low and high levels of bank debt for each country. The results of this analysis are shown in Table 3.

We observe statistically significant differences among the behaviors observed in Chilean and Spanish firms. Specifically, Chilean firms that use more bank debt present greater risk, greater external financing needs and lower ROA than Chilean firms less indebted with banks. For their part, the Spanish firms with more bank debt present lower ownership concentration, lower growth opportunities, lower ROA and greater risk than those with less bank debt. Moreover, the

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

	Combined sample *N*-tiles per Country				Chile *N*-tiles 1 y 3 DBAB				Spain *N*-tiles 1 y 3 DBAB			
Variable	Sig. (bilateral)	España	Chile	Mean diff.	Sig. (bilateral)	1	3	Mean diff.	Sig. (bilateral)	1	3	Mean diff.
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			

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 banki debt to total assets (BDAB), considering superior (*N*-tile 1) and inferior (*N*-tile 3) thirds and the mean differences for each sample. The variables included are: total debt to equity (TDEB), percentage of shares in the hands of the first shareholder (OWN), market value to book value (Q), 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 include 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). The null hypothesis is that equal means exist among the variables for each category. The statistical significance proves whether this hypothesis is accepted.

analysis of variance shows that Spanish firms whose main shareholder is a family present higher proportions of bank debt, whereas the opposite occurs whenever the main shareholder is a multinational firm. Therefore, both Chilean and Spanish firms with high bank debt volumes use more external funds, have higher risk and less ROA 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 (see Table 3). We argue that such differences are a consequence of the different role played by bank debt as a governance mechanism.

Results of the regression analysis

In this part of the analysis, 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

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

	Chile		Spain	
Dependent variable: DBAB	Coefficient	*p*-value	Coefficient	*p*-value
CONST	−0.1174***	0.0165	−0.1869**	0.0302
Q	−0.0001	0.6201	0.0387***	0.0000
Q*DEFI	0.0042**	0.0244	−0.0021	0.6452
Q + Q*DEFI	0.0042***	0.0000	0.0387***	0.0000
OWN	0.0044*	0.0893	0.0018***	0.0000
OWN*QI	0.0011***	0.0000	−0.0004***	0.0000
OWN + OWN*QI	0.0055***	0.0000	0.0014***	0.0000
DEF	−0.0424***	0.0007	−0.2350***	0.0000
DEF*OWNI	0.0558*	0.0231	0.3138***	0.0000
DEF + DEF*OWNI	0.0134***	0.0000	0.0788***	0.0000
TDEB	0.0698***	0.0000	0.0040**	0.0142
LNTAB	0.0241***	0.0000	0.0234***	0.0003
Z	−0.0019	0.0000	−0.0112***	0.0000
ROA	−0.3247***	0.0000	−0.3562***	0.0000
FAMFM	−0.0474*	0.0537	0.1422***	0.0000
INSINV	−0.0219	0.1078	0.1178***	0.0000
DOMFM	0.0156	0.2410	0.1307***	0.0000
MULFM	−0.0807***	0.0000	−0.0148	0.5919
Test for first-order serial correlation	−3.2170***	0.0010	−3.1500**	0.0200
Test for second-order serial correlation	−0.776	0.4380	−1.450	0.1470
Sargan test	126.4930	0.7290	70.4403	0.8880

Notes: Statistical significance are indicated as *** at 1% level, ** at 5% and * at 10%.
This Table contains the results obtained for companies of Chile and Spain. The Chilean sample consists of 148 nonfinancial firms with observations from 1991 to 1999 ($n = 1154$ observations), and the Spanish sample includes 111 nonfinancial firms with observations from 1991 to 1999 ($n = 823$ observations). The regression model estimated is

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

where the dependent variable is bank debt to total assets (BDAB). 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*DEF), 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 return on assets (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 test reveals that the models are statistically significant. The variables OWN, Q, OWN*QI, DEF*OWNI, Q*DEFI are considered endogenous and have been instrumented.

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of the different dummy variables used in each model. The different Wald tests are statistically significant. 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 (i.e. simultaneity bias).

Our first hypothesis, which relates to bank debt and growth opportunities, is supported by our results. Most studies of firms in the United States (a common law country) report a negative relation between growth opportunities and bank debt (Houston and James, 1996; Johnson, 1997a; Hadlock and James, 2002; 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 operate in an environment in which banks share with markets the role as a governance mechanisms. In addition, we observe less need for external funds to finance their growth opportunities. Our results do not show a significant relation between bank debt and growth opportunities. On the other hand, in Spain, where banks are the main supervisors and the main source of funds, firms show a positive relation between growth opportunities and bank debt. This positive relation agrees with Ojah and Manrique (2005) result but modifies the negative relation for Spanish companies found by Andrés *et al.* (2005) using first-differences estimator. Such negative relation is not robust to changes in the way of measuring bank debt whereas our positive relation is based in the system estimator, which is more suitable for finite samples, and it is robust to changes in the dependent variable. 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 encouraged the Chilean firms in our sample to imitate the behaviours of U.S. firms in terms of bank debt decisions. Another institutional difference is that whereas Spanish banks can be simultaneously creditors and shareholders in a firm, in Chile this dual role 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).

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 in both countries indicates that firms less able to generate funds internally have limited borrowing capacity because of their greater agency problems and credit risk. Banks will use their market power to reduce their exposure to firms with cash flow problems.

A firm's capacity to generate funds internally to finance growth opportunities could also condition its bank debt decisions as problems of asymmetric information are more important when the need for external financing grows. We observe a positive relation between growth opportunities and bank debt for Chilean firms with external financial needs. Chilean firms that have to finance their growth opportunities with external funds would likely prefer to rely on bank financing because of the greater flexibility in control, without assuming the risk of ownership dilution that stock issuance entails. Furthermore, Chilean firms with a financial deficit use more bank debt to signal the quality of their growth opportunities. 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 competitiveness. Yosha (1995) points out that a positive relation could exist between growth opportunities and bank debt levels for U.S. firms that are trying to avoid the diffusion of information considered strategic for the firm. Furthermore, the higher debt levels of Spanish firms foster bank debt to avoid an inefficient liquidation. Spanish firms do not need to use bank debt to signal the quality of their growth opportunities because banks are the main governance mechanism and the main source of funds.

The results also support our third hypothesis that firms generating insufficient funds internally to finance their growth opportunities will use bank debt depending on whether the institutional environment identifies the use of bank debt as a signal of growth opportunities quality. The banking environments in Spain and Chile and the high ownership concentration favour 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, whereas 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 because Chilean banks do not participate in the ownership of firms so that firms are reluctant to issue bank debt to finance their growth opportunities when internal funds are available because of underinvestment and asset substitution problems. Bank concentration and

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ownership concentration are alternative governance 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 governance mechanisms in Spain.

The results support our fourth hypothesis as we observe a positive and statistically significant relation between ownership concentration and bank debt in Spain and Chile. Ownership concentration and bank concentration are two of the characteristics shared by the financial systems of these two countries. Banks 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 (Jandik and Makhija, 2005). Consequently, 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 support the hypothesis that bank debt is more predominant in firms with less agency problems between shareholders and managers. This finding confirms the arguments of Dewatripont and Tirole (1994) and John and Kedia (2000), who find that concentrated ownership and bank debt are complementary elements in an optimal system of corporate governance.

However, in the Chilean case we observe that as ownership concentration increases in firms with growth opportunities, bank debt also increases. In Spanish firms, the opposite occurs. In Chile, managers use bank debt to signal the quality of their growth opportunities, and bank debt thereby allows firms to maintain control and avoid the undervaluation of their shares. Moreover, in Chile, issuing bank debt when growth opportunities exist 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 ownership.

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. Spanish banks prefer to finance the new growth opportunities through equity instead of bank debt. Banks are the main governance mechanism, and firms have no alternative source of funds. Therefore, if a nonfinancial firm has good growth opportunities, the bank will prefer to buy undervalued shares before lending them. On the other hand, if the firm's growth opportunities are not worthwhile, banks will refuse to finance the company.

We also observe differences among Spanish and Chilean firms regarding the use of bank debt for companies with majority ownership and external financing needs. Spanish firms with a major shareholder who owns at least 50% of shares and a deficit of funds to finance investment projects show a positive relation with bank debt (see Table 4). The results support our hypothesis that in this type of firms an alignment of interests among shareholders, managers and lenders results in the investment 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 results support our final hypothesis. Chilean firms with majority control are concerned about creditors holding excessive control over their decisions. The majority shareholders are more concerned with 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, and after the deregulation of capital movements, firms with good ratings are allowed to issue debt and shares in external markets (American Depository Receipts).

Finally, 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, ROA, industry and nature of main shareholder. The results are in agreement with previous empirical analysis. Thus, the TDEB presents a positive and statistically significant coefficient (Johnson, 1997b). The largest firms exhibit higher levels of bank debt (Andrés *et al*., 2005). This result, however, is contrary to that observed in samples of U.S. firms, for which a substitution effect of bank debt by public debt exists in the largest U.S. companies (Johnson, 1997a; Hadlock and James, 2002; Denis and

Mihov, 2003). The greater market power of the banking industry in bank-based countries makes bank financing in these economies the primary source of external funds. Besides, we observe a negative relation between ROA and bank debt (Denis and Mihov, 2003). Similarly, firms with a higher probability of bankruptcy are most interested in bank debt (James and Smith, 2000; Hege, 2003).

Alternative specifications

To corroborate the robustness of our results, we repeat the regression analyses for both Chilean and Spanish firms with BDTD as dependent variable. 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. However, 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 from 1991 to 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, which corresponds to stock market value traded to GDP, is also included to measure the activity of the stock market in each country and for each of the analysed years. The results of this analysis corroborate our hypothesis that differences exist 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.

V. 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, which can reduce asymmetric information problems and agency costs. Asymmetric information problems are especially significant in firms with growth opportunities and a need for external funds, whereas agency costs depends 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. 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. We test whether the use of bank debt as a governance mechanism in bank-based countries is 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. However, differences in their financial systems affect the role played by the bank debt as a governance mechanism: (a) debt ownership is more concentrated in Spain than in Chile; (b) unlike Chilean banks, Spanish banks are allowed to become shareholders of nonfinancial firms; and (c) banks in Spain are more relevant as a governance mechanism and a source of funds than in Chile. These differences are the result of the recent attempts to reform the financial markets of Chile and Spain, which are located in different geographical areas, with differing economic cycles and strategic priorities.

We consider the two samples to be appropriate to test our hypotheses about the effect of the bank-based

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institutional environment on firms' bank debt decisions as bank debt is predominant in both cases. Our sample firms resort to bank debt much more than U.S. 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 ROA. 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 nonfinancial firms from Spain and Chile have different explanatory factors, and the diverging evolutions of the two countries' financial systems are a possible explanation. These differences exist even though the corporate environments of the two countries share certain similarities, including high bank concentration, high ownership concentration and a 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, even if they share the same legal tradition. 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 favours the complementarity of bank debt and ownership concentration to avoid the underinvestment problem when growth opportunities exist. However, this complementarity has a limit, namely, 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 favours bank debt because these conditions align 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 in which 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 because bank debt 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, the institutional environment of each country appears to affect 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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