National Culture and the Choice between Bank and Bond Financing

We examine how cultural preferences impact the financing decision of firms. In particular, we hypothesize that firms in countries with a higher degree of long-term orientation tend to prefer bank finance, whereas firms in countries with a higher degree of short-term orientation tend to prefer bond finance. Based on a thorough theoretical investigation and an extensive empirical analysis using a large, worldwide dataset, we find strong support for our hypothesis on the role of culture in financial intermediation. The results are robust to controlling for other determinants of the choice of debt financing as well as alternative measures of culture.

Keywords: Agency Theory, Debt Financing, Bank Loans, Bond Finance, Financial intermediation, National Culture

JEL classification: A13, G21, G32, Z1

1. Introduction

Why do some firms borrow from banks while others rely exclusively on direct borrowing through issuing bonds? Despite the topic's appeal and a large number of theoretical models that make predictions about firm's debt source preferences, the answer to this question is not well understood. Throughout the following analysis we present novel evidence that challenges the conventional view by proposing a cultural explanation for the corporate choice between the different forms of debt financing. We argue that a country's degree of long-term orientation affects the structure of corporate debt. Based on a review of the existing literature, we assert that bank financing is particularly related to a longer planning horizon, both from a borrower's and a lender's perspective. A borrowing firm which wants to pursue long-term projects chooses bank financing because of greater flexibility in the case of financial distress. Banks need to establish long-term relationships with borrowers in order to produce private information about the quality of projects as well as being able to engage in reputation-building. In a thorough theoretical and empirical investigation we show that firms in countries with a pronounced long-term orientation tend toward bank finance, whereas short-term orientation induces a preference for financing by issuing bonds. Our empirical results document that even in the presence of a series of financial control variables, national culture variables still exhibit statistically significant effects in explaining the financing choice of firms in a large and diversified group of countries.

According to Hofstede (1980), culture is defined as "the collective programming of the mind". Culture is composed of certain values which shape behavior as well as one's perception of the world. Following this reasoning, we can assume that corporate decisions may not only be determined by objective assessments but also by subjective perceptions with the latter

depending on national culture. This rationale is the main intuition behind the culturally driven analysis of corporate financial decision making.

A series of studies demonstrates the important influence of national culture on capital structures (Chui et al., 2002), dividend policy decisions (Shao et al., 2010, Fidrmuc and Jacob, 2010), cash holdings (Ramirez and Tadesse, 2009), and debt maturity choice (Zheng et al., 2010), amongst others. We contribute to this literature by analyzing a further important corporate financing decision, namely the choice between bank and bond financing. There is increasing evidence that national characteristics must be seen as determinants for issues in financial intermediation (Aggarwal and Goodell, 2009), indicating that a society's cultural characteristics can help to unveil the mechanisms through which firms choose their lenders.

There are large differences in the relative shares of bank loans and corporate bonds across countries. In the so-called bank based financial systems (such as Germany and Japan), firms rely more on bank debt than bonds, the reverse pattern is true for the market based financial systems (such as the UK and the US) (Modigliani and Perotti, 2000). Bank debt is usually assumed to be more expensive than bond debt (Johnson, 1997), so there must be something unique about bank loans that makes borrowers willing to pay a premium (Fama, 1985). Existing theories suggest that firms have to consider the tradeoff between the benefits and costs of bank financing relative to other financing choices (Hadlock and James, 2002). The potential benefits of bank financing include decreased adverse selection costs and low moral hazard (Leland and Pyle, 1977, Diamond, 1984) as well as efficiency of liquidation and ease of renegotiation in financial distress (Chemmanur and Fulghieri, 1994). The potential costs of bank debt include high monitoring costs (Bolton and Freixas, 2000) and distortions of management incentives induced by information monopolies (Rajan, 1992). Reviewing existing theoretical models we derive an explanation of the comparative advantages of banks as lend-

ers in the context of a firm's planning horizon. We contribute to the literature on debt financing by proposing a new determinant of the mix of firms' debt sources and by testing the hypothesis using a large, worldwide dataset. Prior empirical work on the cross-sectional determinants of the mix of debt sources has been largely focused on the US market (see, for example, Houston and James, 1996, Johnson, 1997, Krishnaswami et al., 1999, Cantillo and Wright, 2000, Hadlock and James, 2002, Denis and Mihov, 2003, Arena, 2010).

The remainder of this paper is structured as follows: Based on a literature review, Section 2 discusses the potential link between long-term orientation and bank finance. Section 3 describes a model context as the formal background of our hypothesis. Section 4 explains our dataset and in Section 5 our hypothesis is tested empirically. Section 6 reports several robustness checks and Section 7 concludes.

2.   Literature review and hypothesis development

An extant number of theoretical models examine the corporate debt choice in the context of either demand or supply preferences (see, for example, Johnson, 1997, Hadlock and James, 2002, or Denis and Mihov, 2003, for excellent reviews of the literature). The models are mainly centered on certain benefits and costs of bank financing relative to other sources of debt finance. Potential benefits of bank finance include decreased adverse selection costs and moral hazard as well as efficiency of liquidation and ease of renegotiation. Costs of bank debt include high monitoring costs and distortions of management incentives. Underlying most of the aforesaid benefits and costs are information asymmetries between borrowers and lenders.

Information asymmetry affects financial markets because borrowers possess private information about the projects for which they seek financing or may harm lenders after funding has been received. Financial intermediaries can provide contractual arrangements or efficiently

monitor firms to reduce the effects of information asymmetries between borrowers and lenders (Leland and Pyle, 1977, De Fiore and Uhlig, 2004). In this vein, literature on financial intermediation has focused on the role of banks as relationship lenders. Banks establish close relationships with borrowers over time, facilitating monitoring and screening and thereby mitigating problems of asymmetric information (Boot, 2000).

A financial intermediary can be described as a delegated monitor of entrepreneurial projects when the quality of such projects is not publicly observable (Diamond, 1984). Intermediaries like banks are good project screeners as they are assumed to have a comparative advantage in extracting information efficiently, compared to arm's length investors (Cantillo and Wright, 2000). Since banks need to spend resources to produce information, this implies that bank loans are more expensive than bonds. Hence, firms choose bank debt only if they require its benefits (Johnson, 1997), while other borrowers prefer cheaper sources of debt.

The implementation of profitable long-term projects is an area of entrepreneurial activity where agency problems are particularly severe, as long-term projects might bring about periods of financial distress due to reasons unrelated to project quality (Chemmanur and Fulghieri, 1994). If agency problems cannot be solved, asymmetric information results in a short-term bias of investment (von Thadden, 1995). Incentives to underinvest when market conditions are difficult might make it impossible to carry out profitable long-term projects (Berlin and Mester, 1992). This dilemma can be overcome by relationship banking, where firms turn to banks as preferential providers of debt because banks can help them through times of financial distress (Bolton and Freixas, 2000). If a firm is in financial distress due to the poor quality of its projects, it is optimal for the lender to liquidate the firm. However, if financial distress is caused by reasons not pertaining to project quality, it might be optimal for all parties to allow the firm to continue, as the continuation value might be greater than proceeds

from liquidation (Chemmanur and Fulghieri, 1994). Correspondingly, if firms want to execute long-term projects where renegotiability is valuable, they will rely on bank loans rather than bonds (Berlin and Mester, 1992).

Unlike bondholders, banks are long-term actors in the debt market, which implies that banks treat borrowers differently in situations of financial distress. Banks maintain long-term relationships with borrowers and assemble information about them (Diamond, 1991). The banks' longer time horizon requires them to build a reputation by minimizing the probability of inefficient borrower liquidations through spending resources to obtain information (Chemmanur and Fulghieri, 1994). The ongoing history of a relationship between a borrower and a lender provides inside information which is especially valuable for loan decisions (Black, 1975). Banks can quickly renegotiate loans and thereby have superior ability to contain financial losses in the case of a borrower's financial distress (Arena, 2010).

The above discussion illustrates the long-term aspect of bank financing, both from the borrower's and the lender's perspective. The borrowing firm wants to implement long-term projects and the lending bank needs to establish long-term relationships with the borrowing firms. This long-term emphasis of bank finance suggests that a country's degree of the cultural dimension of long-term orientation might be a potential explanation for the cross-country diversity in the firm's mix between bank debt and bond debt.

There has been an increasing awareness of the necessity to take cultural influences into account in order to better understand behavior. Recent empirical research examines the relationship between culture and finance and recognizes the importance of national culture for several topics in financial economics. The idea that the development of financial markets and institutions is related to the surrounding social environment goes back to Granovetter (1985) who presumed that all kinds of economic relations among individuals or firms do not exist in

an abstract idealized market but are embedded in the social context. Depending on the business, economic, legal, social, and cultural environment, financial institutions may be optimal in some conditions, while financial markets may be optimal in other circumstances (Aggarwal and Goodell, 2009). Hence, bank finance may be favored in some countries, while bond finance is favored in other countries.

One of the most influential approaches to characterize cultures has been developed by the Dutch sociologist Geert Hofstede during his cross-country research on organizational cultures. After analyzing questionnaire data, Hofstede (2001) introduces five cultural dimensions that address basic societal problems. *Individualism versus collectivism* describes the relationship between the individual and the collectivity that prevails in a given society. *Power distance* is the extent to which different societies handle human inequality differently. *Masculinity versus femininity* refers to the distribution of roles between genders. *Uncertainty avoidance* deals with a society's tolerance for uncertainty and ambiguity and refers to its search for truth. *Long-term orientation* captures the society's time horizon and reflects to what extent it has a dynamic and future oriented mentality.

In this paper, we examine the effect of national culture on the firm's choice between bank and bond finance. In particular, we investigate the extent to which the Hofstede dimension of long-term orientation contributes to systematic cross-country differences in the corporate choice of debt financing. We argue that firms in countries with a high degree of long-term orientation tend to borrow from intermediaries, while firms in countries with a low degree of long-term orientation tend to prefer arm's length investors.

Hofstede (2001) indicates that in countries with a higher degree of long-term orientation values like persistence, patience, thrift, and self-reliance are perceived as virtues by corporate managers. Therefore, investment opportunities are predominantly evaluated on their long-

term value-generating capacity, and accordingly, investors relinquish short-term rates of return in favor of long-term profitability. Managers are not continuously forced to yield short-term positive returns, which eases the pursuit of long-term projects (Chang and Noorbakhsh, 2009). To that effect, management practices consistent with long-term orientation are also known to provide long-term employment offering long-term job security to their employees (Newman and Nollen, 1996). This investment environment complies with bank finance, and encourages a focus on long-term strategic investment opportunity, which creates a stable value sustainable over an extended time horizon.

Hypothesis: In countries with a higher degree of long-term orientation, bank financing is the preferred source of finance. In countries with a lower degree of long-term orientation, bond financing is the preferred source of finance.

3. A simple model

So far, our line of reasoning has been solely based on our literature review. However, although intuitively plausible, the time horizon of firms has not been explicitly addressed in a formal model context on bank finance versus bond finance. In this section, we integrate this issue into a theoretical framework by building on the approach of Chemmanur and Fulghieri (1994) and modifying their paper accordingly.

Banks differ from other lenders of debt capital in that bank finance is usually designed for a longer time horizon (Petersen and Rajan, 1995). As a consequence, banks have an advantage in the production of information about the borrower, and bank finance establishes a closer relationship between lenders and borrowers (Boot, 2000). Chemmanur and Fulghieri (1994) – similarly to Rajan (1992) and Gorton and Kahn (2000) – take up these points and analyze their effects on the corporate choice between bank loans and direct debt financing in a game-

theoretical equilibrium model. They show that banks will make better renegotiation versus liquidation decisions in cases of financial distress, compared to other lenders such as bondholders for example.

In their two-period approach, a fundless entrepreneur (or firm) has a (risky) investment opportunity. To finance it, each entrepreneur can choose between borrowing from a bank and issuing bonds on capital markets to ordinary investors. The main difference between these two types of lenders results from their different time horizons: While banks can also act as investors on capital markets in the following period, ordinary bondholders cannot. Hence, banks have the possibility to develop a reputation, leading to higher expected yields in the following period.

Due to the riskiness of the investment, the entrepreneur will be in financial distress at the end of the first period with a certain probability, and will not be able to repay the debt. In this case, the lenders have to decide whether to liquidate the firm or to enable it to continue under a prolonged debt contract. Which decision is the efficient choice depends on the reasons for the financial distress: intrinsically bad projects versus temporary difficulties of intrinsically good projects. There is no specific information about a borrower's real quality in the market, but lenders can spend resources to produce some information about it in situations of financial distress. Depending on the resources spent, the probability of identifying intrinsically good projects correctly will increase. As all decisions and results become known, the liquidation decision affects the lenders' future reputation.

In contrast to Chemmanur and Fulghieri (1994), we assume that all entrepreneurs face the same investment opportunities with a success probability of p for the end of the first period. Nevertheless, projects that fail to generate positive cash flows at the end of the first period may still be successful at the end of the second period (or turn eventually out to be complete-

ly worthless). Instead of differences in investment opportunities, we assume that there are two types of entrepreneurs L and S with a different emphasis on long-term orientation versus short-term orientation. To this end, we extend the model of Chemmanur and Fulghieri (1994) by additionally implementing time preference rates β_L and β_S with $\beta_L > \beta_S$ which are subjective discount factors for future cash flows and thus describe the entrepreneurs' attitude toward time. Entrepreneur L is therefore more long-term oriented than investor S. The entrepreneurs' decision between taking out a bank loan and issuing bonds is based on their expected payoffs. Considering the entrepreneurs' objective functions, it can be seen that this utility is not only influenced by financing parameters, such as interest rates, but also by the parameter β.

To evaluate the influence of the parameter β on the entrepreneurs' behavior, we consider their equilibrium strategies. Following the realistic separating equilibrium in Chemmanur and Fulghieri (1994), banks will produce more information in the first financing period because the associated expected gain in reputation will lead to higher expected returns in the following period. Thus, banks can also require a higher interest rate as compensation for their higher evaluation costs. Because the same argument does not apply to bondholders, their interest rate is always lower than the banks' rate. In our context, only entrepreneur L will choose bank finance, since he is willing to pay a higher interest rate for the assumed prolongation decision following from banks' greater information production. Entrepreneur L prefers the resulting expected lower liquidation probability because of his more pronounced future-orientation. Thus, if entrepreneur L chooses bank finance, he can expect higher overall discounted profits than when choosing bond finance in spite of the higher interest rates which the entrepreneur will have to pay. In contrast, entrepreneur S does not need this characteristic of bank finance, due to his higher orientation at present payoffs. He will choose financing via issuing bonds on the capital market in order to benefit from the generally lower interest level

of this type of finance. In the Appendix at the end of this paper this result is shown more formally.

4.   Data description

We attempt to explain the cross-country variation in the sources of corporate debt finance based on variations in the degree of long-term orientation and a set of control variables. Our data consists of four different sets: a firm-specific measure of the ratio of bank debt to bond debt, measures of culture, and firm-specific as well as country-specific control variables. We have complete data on these sets of variables for up to 53 countries. Table 1 summarizes the definitions and data sources for all of the regression variables, including those used in the robustness section.

>>> Insert Table 1 about here. <<<

4.1.   *Dependent variable: the choice of debt finance*

Our dependent variable BANK/BOND is defined as the natural logarithm of the ratio of bank finance to bond finance, which varies significantly across countries. Bond debt may be either privately or publicly placed. In the case of zero bank finance, the variable is calculated as the logarithm of 0.00001. We obtain data on bank and bond finance and other firm-level financial information from CapitalIQ, which is one of the most comprehensive databases covering a large number of countries. Firm data is for the financial year ending 2009. We remove data for countries for which we have no scores on the cultural dimensions available. Consistent with previous studies, we exclude banks and financial firms (SIC codes between 6000 and 6999) because their capital structure is not generally comparable to those of industrial firms. Our final sample consists of 8,664 firms across 53 countries.

4.2. Key independent variables: national culture

Following an extensive literature in international business, we capture national culture using the Hofstede (2001) cultural dimensions. We use LONG-TERM ORIENTATION, one of the five cultural dimensions of Hofstede (2001), as our main explanatory variable. The cultural dimension of long-term orientation exhibits a wide variability across national cultures, ranging from a minimum of 19 in the Philippines to a maximum of 118 in China. The average long-term orientation is 43.34. The correlation coefficient between BANK/BOND and LONG-TERM ORIENTATION of 0.38 is statistically significant at the 1% level. These initial finding is consistent with our hypothesis. To capture cultural differences comprehensively, we further include the remaining four cultural dimensions. In order to examine whether our findings are sensitive to using alternative measures of national culture, we rely on the more recent and more comprehensive cultural model developed by Schwartz (1994) as a robustness check.

4.3. Country-specific control variables

In order to isolate the impact of culture on firms' choice between bank and bond finance we control for the institutional environment a firm operates in. First of all, we worry that the debt source preferences are primarily driven by the principal availability of certain types of debt or alternatively by the costs associated with raising certain types of debt. If investors are reluctant to purchase bonds from firms, the latter are likely to turn to banks to seek funding for their projects. If the costs for issuing bonds are considerably higher than those for receiving a bank loan, firms will again choose the latter. We therefore consider a number of controls for the economic and legal environment of the respective country.

To control for the costs associated with raising capital from public markets, we include the variable MARKET CAPITALIZATION which measures the stock market capitalization scaled by GDP for each country. Since the costs of issuing bonds are typically smaller than those of

issuing equity, countries with large equity capital markets should also enable companies to place bonds at relatively low expense. We intentionally do not include variables like the ratio of deposits to GDP to measure the amount of funds available to the banking sector or the ratio of claims on the private sector by commercial banks to GDP to measure the availability of bank funding to firms because of potential endogeneity. However, instead we control for a series of firm-specific variables to further isolate the impact of costs on financing choices (see Section 4.4). Thus, costs may not be the primary driver for a firm's remaining choice between bank and bond finance. We also note that previous research found that firms which do not access the public market mainly because of flotation costs and information asymmetry are more likely to use other private placements than bank loans (Arena, 2010). Therefore, we reduce our dataset and include merely the largest 20 firms by market capitalization in each country. This limits our analysis to large publicly traded firms, for which the fixed costs of issuing bonds should be relatively similar.

To check the general availability of loans in a country, we control for the LOAN AVAILABILITY index indicating how easy it is to access loans, which is provided in the Global Competitiveness Report. We are confident that these measures, together with the additional firm-specific controls discussed in the next section, help to isolate the cost and availability effects of different debt types.

We next turn to the legal environment. Academic research has demonstrated in-depth that capital structure decisions and, more generally, corporate governance are influenced by incentive problems. As Shleifer and Vishny (1997) point out, agency problems between stakeholders and managers as well as among different stakeholders can to certain extents be alleviated either by contracting or by the existence of major stakeholders like financial intermediaries. In the absence of power through concentrated ownership, small investors are highly de-

pendent on legal protection of their contractual rights. The effectiveness of contracts largely depends on the quality of the legal system (La Porta et al., 1998). In environments with weak legal protection of minority stakeholders, large stakeholders may use their power to compensate for low levels of protection (Shleifer and Vishny, 1997). We would therefore expect that weaker legal systems are associated with more concentrated creditors, i.e. banks. We use two variables to control for the protection of debt holders. First, we use INVESTOR PROTECTION, which indicates the strength of investor protection, and second we apply LEGAL RIGHTS, which reflects the degree of legal protection of borrowers' and lenders' rights. Both indices are taken from the Global Competitiveness Report.

La Porta et al. (1997) show that the extent of creditors' rights cannot explain all of the cross-country differences of the size and depth of credit markets. They show that the origin of law (common law or civil law) has a significant impact as well, i.e. the influence of the origin of law may not be totally captured by different specific legal control variables. This may be because in common law surroundings, courts judge on general principles even when no specific conduct has yet been described (La Porta et al., 2000). We therefore also control for the origin of law. LAW is a dummy variable that equals one if the origin of a country's law is common law and zero otherwise. Data is taken from La Porta et al. (1998).

Formal rights may be less important than the actual enforceability of contracts in the context of debt. Bae and Goyal (2009), for example, demonstrate in their cross-country analysis that the variation in enforceability of contracts has much more impact on the structure and price of loans than creditor rights. La Porta et al. (1998) argue that richer countries enforce laws better than poorer countries. We therefore control for GDP PER CAPITA as well as for INFLATION, with data from the Global Competitiveness Report.

We also use the variable TAX RATE as a control. While, at a firm-level, the tax rate should have no influence on the debt choice since in most (if not all) tax regimes, interest expenses are deductible from the tax base regardless of the source of debt, the effective tax burden for investors may depend on the channeling of funds through financial intermediaries.

Auditing and reporting standards are likely to impact the financing choice of firms because bondholders typically face a free rider problem: Diffuse ownership of public debt reduces the individual investors' incentives to produce information and to monitor the lender individually, because the expected increase in return is not large enough to compensate for the associated costs (Diamond, 1984). Dispersed investors have to rely on publicly available information such as the annual report instead. The quality of disclosed corporate information may differ considerably among countries. Alternatively, the free rider problem can be overcome by concentrated ownership of debt claims through a bank. De Fiore and Uhlig (2005), for example, find that the higher share of bank finance in the Euro zone relatively to the US market is partly due to lower availability of public information about firms' creditworthiness. We thus include the variable ACCOUNTING STANDARDS in our regressions, which represents an index on the strength of auditing and reporting standards. Data is again from the Global Competitiveness Report.

4.4. Firm-specific control variables

A growing number of studies analyzes the empirical relationships between firms' debt ownership structure and several firm characteristics (see, for example, Houston and James, 1996, Johnson, 1997, Krishnaswami et al., 1999, Cantillo and Wright, 2000, Hadlock and James, 2002, Denis and Mihov, 2003, Arena, 2010). We include a set of firm-level variables that capture factors that these previous studies have shown to affect the debt source of firms.

To begin, we again attempt to control for cost effects of the choice among different forms of debt financing. Firms that issue public debt face significant flotation costs which are largely fixed and result, amongst others, from registration fees, legal fees, banker fees and other kinds of fees. Large firms can exploit economies of scale in issuance costs of public debt by selling larger issues and thus should have proportionally lower costs (Blackwell and Kidwell, 1988, Krishnaswami et al., 1999). The same reasoning is likely to apply for private placements of bonds. Johnson (1997), Hadlock and James (2002) as well as Denis and Mihov (2003) confirm that borrowers issuing bonds are larger in size than those raising capital from banks. As a proxy for firm's size we include the variable SIZE, which is measured as the natural logarithm of total assets.

Several studies propose that a firm's life cycle and age influence the preferred source of debt. The intense monitoring by banks allows young firms to create credit reputation which at later stages can be capitalized on to access the public market (Diamond, 1991, Berger and Udell, 1998). We include AGE as a proxy for reputation in the regressions. AGE is calculated as the number of years between the year of the first incorporation and the date of obtaining the data. Johnson (1997), Krsihnaswami et al. (1999), Houston and James (1996) as well as Hadlock and James (2002) show that firm age is indeed associated with the probability of issuing bonds. AGE may also help to isolate unobserved credit risk as in Johnson (1997) and Arena (2010).

There is evidence that firms with high credit quality prefer bond finance while firms with average credit quality rather use bank debt. High quality firms may find bank monitoring unnecessary because these firms have more to lose from poor investment decisions and thus lower agency costs (Houston and James, 1996) or because they are unlikely to need the reorganization skills of banks in case of default (Cantillo and Wright, 2000). Accordingly, Arena

(2010) shows that firms with good credit quality issue bonds either publicly or privately. To proxy credit quality, and following previous studies, we consider variables that are known to be related to credit ratings.

First, we attempt to control for corporate risk (RISK). We use the standard deviation of the return on assets over the previous five years as a proxy. Firms that are riskier are likely to face higher information asymmetries as well as a higher probability of financial distress. Those firms should tend to raise capital from banks because of the banks' better information production and renegotiation skills. (Unobservable) Firm risk may also be captured by SIZE (Johnson, 1997). Larger firms are typically more diversified and exhibit lower default risk. They are also more mature and better known by market participants (Houston and James, 1996).

We also control for firm profits (PROFIT) as well as for cash holdings (CASH) as additional measures of risk. Profitable firms have lower default risk and less severe problems of moral hazard. The incentives to expropriate assets and to increase business risk at the expense of debt claimants are greater when firms are less profitable. Profit is measured as EBITDA divided by total assets. Cash holding is the amount of cash and cash equivalents divided by total assets.

Further proxies for corporate risk are the variables INDUSTRY and EQUITY-DEBT. Risk and growth opportunities are likely to be systematically different between industries. We therefore control for the industry of the firms (SIC code). Certain industries, for example utilities, are typically safer than others and should thus exhibit higher credit quality and higher probability of issuing bonds.

We measure the equity-to-debt ratio based on the book values for equity and debt, considering short- as well as long-term debt. Levered firms have greater agency costs of debt since

they are more likely to underinvest as described by Myers (1977). Highly leveraged firms are also more likely to engage in asset substitution to increase their business risk as pointed out by Jensen and Meckling (1976). Hadlock and James (2002), however, find that leverage is related to the ratio of public debt and assert that these firms may have lower agency costs of debt financing or less information asymmetry. Another possible measure of credit quality would be Altman's Z (Altman, 1977). However, this credit risk metric is based upon variables we largely already control for. Taking Altman's Z into account would therefore result in multicollinearity.

As a proxy for intangible assets and growth opportunities (GROWTH) we use Tobin's q (Smith and Watts, 1992, Barclay and Smith, 1995). We calculate Tobin's q as the sum of total assets plus the market value of equity less the book value of equity, over total assets. Intangible assets and growth options increase Tobin's q because these are not included in the book value of assets. Intangible assets cannot be easily collaterized and therefore should increase the cost of financial distress and bankruptcy. Intangible assets and growth opportunities also amplify information asymmetries and make monitoring more difficult (Diamond, 1991). At the same time, problems of underinvestments as well as of asset substitution to increase risk at the expenses of bondholders may become more pronounced (Barclay and Smith, 1995). On the other hand, profitable growth may make agency problems – because of the existence of good investment opportunities – less severe and future profits safer (Bao and Goyal, 2009).

5. Empirical analysis

Table 2 presents our main evidence for the impact of national culture on the choice of corporate debt finance. As it is common when using samples from different countries, sample sizes vary greatly across countries. This is dealt with by using a reduced dataset which only includes the largest 20 firms by market capitalization in each of the countries. As discussed

earlier, limiting our analysis to large publicly traded firms moreover helps to eliminate biases stemming from flotation costs, as those large firms are the ones which are most likely to have the opportunity to access the public market.

>>> Insert Table 2 about here. <<<

The basic regression reported in Model (1) focuses on whether national culture, in particular the cultural dimension of long-term orientation, affects the choice between bank and bond finance as predicted in our hypothesis. In Models (2) and (3) we include firm-level and country-level control variables separately. In all models, we find that the coefficient of long-term orientation is positive and statistically significant at the 1% level, lending strong support to our hypothesis that firms in countries with a high degree of long-term orientation prefer to seek funding from banks. This result supports our conjecture of the long-term aspect of bank finance. In Model (4) we run a horse-race regression in which we incorporate all five cultural dimensions in addition to the control variables of the previous regressions. We continue to estimate strong effects of the cultural dimension of long-term orientation on the choice of debt finance.

Our models which include cultural variables improve the adjusted R^2 significantly. Cultural variables alone (Model 1) can explain 18% of the variation in the choice of corporate debt finance, compared to 6% for the firm-level variables and 9% for the country-level variables. When including the cultural variables, the adjusted R^2 increase to 29% or 26% respectively, this is highly significant. Reflecting its material economic impact, the coefficient estimate of long-term orientation implies that a one-standard deviation increase in long-term orientation translates into an 11% increase in the fraction of bank to bond finance, with all other explanatory variables set at their mean values.

As expected, many of the control variables we include in the regressions explain some of the variation of the dependent variable. We note that the control variables have generally coefficients with expected signs. The signs and significance of the coefficients and control variables are also largely consistent with those in the simple Models (5) and (6), where we exclude the cultural variables.

At the country-level, our controls for the costs associated with raising capital from public markets as well as for the availability of loans in a country do capture some of the difference in debt financing. MARKET CAPITALIZATION is only significant in two regressions. Higher capitalization of the stock market leads to a higher portion of funding through banks. This indicates that the choice of issuing certain debt types is generally not driven by flotation costs of public bonds in our sample, probably because we only include the largest firms for each country. The general availability of loans in a country also captures some of the variation of BANK/BOND.

The results for the legal environment are largely consistent with the findings of the law and finance research as well as with corporate governance theories. Our controls for the protection of debt holders, INVESTOR PROTECTION and LEGAL RIGHTS, indicate that a higher protection of investors in a country leads to an increase of capital raising through issuing bonds. In environments with weak legal protection of investors, banks emerge to use their power to compensate for low levels of protection (Shleifer and Vishny, 1997). Our results also lend support to the findings of La Porta et al. (1997) that the origin of law (LAW) has some explanatory power for financing structures beyond those captured by specific legal rights.

The quality of auditing and reporting standards does not have any significant impact on the financing choice in our sample. We presume that this again is caused by the structure of our final dataset which only includes very large firms. Large firms are usually scrutinized by the

public so that there should not be much cross-country variance of generally available information investors can rely on among those firms.

While GDP PER CAPITA as well as INFLATION have only limited impact on our dependent variable, a higher value for TAX RATE seems to induce a preference for funding through banks.

We next turn to the results concerning the relationship between debt ownership and firm-specific characteristics. Consistent with the finding of previous studies (Johnson, 1997, Houston and James, 1996, Krsihnaswami et al., 1999, Hadlock and James, 2002, Arena. 2010), our data suggest that older firms prefer to issue bonds rather than raise capital from banks which might be driven by reputation building as hypothesized by Diamond (1991).

Our results for firm's credit quality are mixed. While AGE, which may also capture unobserved credit risk (Johnson, 1997, Arena, 2010), and the ratio of cash holdings to assets indicate that riskier firms favor bank finance, higher standard deviation of the return on assets is associated with a preference for bonds. PROFIT as well as INDUSTRY and EQUITY-DEBT have little or no significant impact on the preferred source of debt financing. These results are consistent with the findings of Denis and Mihov (2003) who show that firms with the highest credit quality borrow from public sources, firms with medium credit quality borrow from banks while firms with the lowest credit quality turn to non-bank private lenders. Because the first and third group of lenders are represented in our dataset by bonds, the same order might be underlying our results.

SIZE has no significant impact on the preferred source of debt financing. Thus, cost effects of the choice among different forms of debt financing do not seem to be relevant for our dataset which confirms our earlier reasoning that we eliminate this particular bias by reducing our sample to the largest firms only. We only have insignificant results for Tobin's Q (GROWTH), which is somewhat consistent with the mixed outcomes of earlier studies which found either

a positive (Houston and James, 1996, Arena, 2010), negative (Krishnaswami et al. 1999, Cantillo and Wright, 2000) or no significant impact (Johnson, 1997, Hadlock and James, 2002, Denis and Mihov, 2003) of this variable on the preference for bond finance.

6. Robustness checks

6.1. An alternative model of culture

Criticism may be raised regarding the use of the Hofstede cultural dimensions. The cultural scores for the Hofstede dimensions are partly based on his empirical work from 1967 to 1973, which may seem somewhat outdated by now. In addition, the scores for the Hofstede dimension of long-term orientation are only available for relatively few countries, so data availability is rather limited. Schwartz (1994) advanced another pioneering dimensional framework for characterizing culture, which overcomes the potential drawbacks of the Hofstede dimensions. Data for the Schwartz cultural model has been collected continuously up to now and is available for a set of 73 countries. Schwartz derived three bipolar dimensions representing basic problems confronting all societies. *Autonomy versus embeddedness* concerns the desirable relationship between the individual and the group. *Hierarchy versus egalitarianism* relates to guaranteeing responsible behavior that will preserve the social structure. *Mastery versus harmony* refers to the relation of humankind to the natural and social world. The cultural dimension of central interest here is autonomy versus embeddedness, which is also the most conclusive cultural dimension in general (Schwartz, 1999). Autonomy can again be subdivided into intellectual and affective autonomy. In the following, we will only focus on the former subdimension, which describes the desirability of individuals independently pursuing their own ideas, relying on the values creativity, broadmindedness, and curiosity. Embeddedness refers to the maintenance of the status quo and emphasizes values like national security, preserving public image, respect for tradition, and reciprocation of favors.

The cultural dimension of long-term orientation opposes a long-term to a short-term orientation to general aspects of life. A deeper understanding of the actual meaning of the cultural dimensions can be obtained by referring to the underlying basic values as specified in Hofstede (2001). Long-term orientation can be described by the relative importance of values like persistence or perseverance, ordering relationships by status and observing this order, thrift, and having a sense of shame. Short-term orientation on the other hand is associated with values like personal steadiness and stability, protecting your face, respect for tradition, and reciprocation of greetings, favors and gifts. A comparison of these values with the underlying values of the Schwartz cultural dimension of autonomy versus embeddedness as described above exhibits certain similarities of the two dimensions. The underlying cultural values show a considerable overlap between the Hofstede cultural dimension of long-term orientation and the Schwartz cultural dimension of autonomy versus embeddedness. The Schwartz dimension of autonomy is related to long-term orientation according to Hofstede, whereas the Schwartz dimension of embeddedness is related to short-term orientation according to Hofstede. Referring to the derivation above, we expect that countries with a high emphasis of autonomy tend to borrow from intermediaries, while countries with a high emphasis of embeddedness tend to prefer arm's length investors.

Following the empirical models above, we estimate linear regression models of the choice of debt finance on the Schwarz cultural dimensions (see Table 3). We find that the cultural dimension of autonomy versus embeddedness has a positive and significant impact on BANK/BOND. This result indicates that autonomy is positively related to the use of bank finance, which supports our hypothesis that a longer planning horizon is associated with bank finance. Embeddedness is positively related to bond finance, which implies that a shorter planning horizon is linked with this type of finance.

6.2. Alternative control variables

We check the robustness of our previous findings by including alternative country-level control variables. While the variables included before are widely used as controls, we examine whether our main results continue to hold when considering alternative measures. To reduce concerns about omitted variables we continue to include the firm-specific control variables.

Instead of GDP per capita we include GDP at current prices (GDP) in Model (1) and past real growth of GDP (GDP GROWTH) in Model (2). Data is from the Global Competitiveness Report and the CIA World Factbook, respectively. Higher levels of both variables are associated with a preference for bank funding. As an alternative measure for the legal environment we include MINORITY PROTECTION which measures the protection of minority shareholders' interest and is taken from the Global Competitiveness Report. Better protection of minority shareholders leads to a higher use of bank debt. This result may indicate that the power banks can exert through their concentrated ownership would lead to an expropriation of shareholders absent legal protection of the latter. To preserve equity value, firms will rely on bank debt only if shareholders are well protected. We further test for the institutional environment by including INSTITUTIONAL CONDITIONS as well as POLITICAL CONDITIONS. INSTITUTIONAL CONDITIONS is from Kaufmann et al. (2006) while POLITICAL CONDITIONS is from Demirgüç-Kunt and Levine (2001). Both variables are positively associated with a higher portion of bank funding. These results are not intuitive at first sight, but may be explained by high multicolinearity with the cultural variables, as Schwartz (2004) has shown that socioeconomic and cultural variables powerfully influence each other. Therefore, their relevance as control variables is rather limited.

Nevertheless, we find that in all regression models reported in Table 4, long-term orientation continues to load significantly positively at the dependent variable, reinforcing our previous evidence.

>>> Insert Table 4 about here. <<<

7. Conclusion

This paper contributes to the existing literature on financial intermediation by highlighting the importance of cultural preferences. Our results indicate that a society's cultural characteristics help us understand why, ceteris paribus, some countries borrow from intermediaries using bank finance, whereas others borrow from arm's length investors using bond finance. We document that the preference for bank finance increases with the degree of long-term orientation of a society.

This finding has important theoretical and practical implications. Our analysis underlines the need to include cultural aspects in financial economics which implies that recent literature on law and finance should be extended to allow for a more intricate view on culture and finance. The financing decision of firms cannot be effectively examined without regarding the cultural background of the society because managers' perception of the respective advantages of either bank or bond finance may be influenced by the culture to which they adhere. If cultural variables have true ability in partially explaining the bank versus bond finance choice of corporations and models fail to include them, then they may conceptually become misspecified. Given the current increased interest regarding the role of regulation in capital markets, our results should be of great political and economic relevance, regarding the impact of political and sociological developments on banks and other financial institutions.

Appendix:

The entrepreneurs' objective functions resulting from the original model context of Chemmanur and Fulghieri (1994) depend on the respective financing type and are extended in the present paper by the time preference rate β. Hence, in the case of bond financing, any entrepreneur's expected discounted payoff $\Pi_{M,t}$ of entering the market at the beginning of period t = 0, 1 is given by

$$\Pi_{M,t}\left(R_{M,t}, p, \beta\right) = p \cdot \left(X - R_{M,t}\right) + \beta \cdot (1 - p) \cdot \delta \cdot (1 - \kappa) \cdot X \cdot q_{M,t}(c_{M,t}). \tag{A1}$$

$$\Pi_{B,t}\left(R_{B,t}, p, \beta\right) = p \cdot \left(X - R_{B,t}\right) + \beta \cdot (1 - p) \cdot \delta \cdot (1 - \kappa) \cdot X \cdot \left[\alpha_t \cdot \bar{q} + (1 - \alpha_t) \cdot q_{B,t}(c_{B,t})\right] \tag{A2}$$

is valid in the case of bank financing. R_B denotes lenders' gross yields resulting from bank loans and R_M stands for those earnings resulting from publicly traded bonds. The payoff X is realized in either the short run (probability p) or – in the case of good projects – in the long run (probability 1−p; short-term "financial distress"). Bad projects earn long-run zero payoffs with certainty. 1−κ is the proportion of X that the entrepreneur receives in the case of successful renegotiation after short-term financial distress. He gets nothing in the case of liquidation (payoff of y > 0 to the lender). δ is a firm's prior probability of being good, while α denotes the probability whether a given bank is a low-cost instead of a high-cost bank (all private investors being high-cost lenders, too). q(c) ($0 \leq q \leq \bar{q} < 1$) is the probability for a high-cost lender of correctly identifying a good project to be good in situations of financial distress, depending on the amount of resources c spent. Low-cost banks will always choose $q = \bar{q}$, implying an incentive for high-cost banks to mimic their behavior in order to increase the probability of being falsely deemed to be also of the low-cost type – a feature which is typical for reputation models with finite time horizon. Nevertheless, high-cost firms will choose $q < \bar{q}$ in both periods t (with q for bondholders in the first period being even smaller).

It is now to be shown that there is a separating equilibrium in which entrepreneur L (weakly) prefers bank finance, whereas entrepreneur S (strictly) prefers bond finance. This is (* indicates equilibrium values):

a) $\Pi_{B,t}\left(R_{B,t}^*, p, \beta_L\right) \geq \Pi_{M,t}\left(R_{M,t}^*, p, \beta_L\right)$ (A3)

b) $\Pi_{M,t}\left(R_{M,t}^*, p, \beta_S\right) > \Pi_{B,t}\left(R_{B,t}^*, p, \beta_S\right)$ (A4)

In contrast to Chemmanur and Fulghieri (1994), we assume p to be identical for both entrepreneurs, while at the same time we introduce a time preference parameter β that is different for entrepreneur L and entrepreneur S with $\beta_L > \beta_S$.

Following Chemmanur and Fulghieri (1994), condition a) always holds, because the equilibrium interest rates are chosen by banks in such a way. To verify condition b) for period t = 1, we start with

$$\Pi_{M,1}\left(R_{M,1}^*, p, \beta_S\right) = p \cdot \left(X - R_{M,1}^*\right) + \beta_S \cdot (1-p) \cdot \delta \cdot (1-\kappa) \cdot X \cdot q_{M,1}^*\left(c_{M,1}^*\right),$$ (A5)

$$\Pi_{B,1}\left(R_{B,1}^*, p, \beta_S\right) = p \cdot \left(X - R_{B,1}^*\right) + \beta_S \cdot (1-p) \cdot \delta \cdot (1-\kappa) \cdot X \cdot \left[\alpha_1 \cdot \bar{q} + (1-\alpha_1) \cdot q_{B,1}^*\left(c_{B,1}^*\right)\right].$$

(A6)

The equilibrium interest rates for bank and bond finance can be taken from Chemmanur and Fulghieri (1994) because they remain valid without greater modification in our context. Only R_B is slightly changed in our context in comparison with the original through the adding of the time preference rate β:

$$R_{B,1}^* = R_{M,1}^* + \frac{1-p}{p} \cdot \left[\delta \cdot X \cdot (1-\kappa) \cdot \beta_L \cdot \alpha_1 \cdot \left(\bar{q} - q_{B,1}^*\right)\right].$$ (A7)

Inserting this in condition (A4) and considering that in equilibrium (according to Chemmanur and Fulghieri, 1994) we have $q_{B,1}^* = q_{M,1}^*$, the term can be reduced to

$$\beta_L > \beta_S,$$ (A8)

which is always true by assumption. The derivations for period t = 0 could be illustrated in a similar vein.

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Table 1: Data description

Variable	Definition and Source	Mean	Standard Deviation
BANK/BOND	Natural logarithm of the ratio of bank finance to bond finance. *CapitalIQ*	-1.98	5.11
POWER DISTANCE	Hofstede Power Distance Index. *Hofstede (2001)*	48.15	16.01
INDIVIDUALISM AND COLLECTIVISM	Hofstede Individualism Index. *Hofstede (2001)*	70.22	25.61
MASCULINITY AND FEMININITY	Hofstede Masculinity Index. *Hofstede (2001)*	61.56	16.00
UNCERTAINTY AVOIDANCE	Hofstede Uncertainty Avoidance Index. *Hofstede (2001)*	54.24	20.16
LONG-TERM ORIENTATION	Hofstede Long-term Orientation Index. *Hofstede (2001)*	43.34	27.03
HARMONY	Schwartz cultural index on harmony. *Israel Social Sciences Data Center*	3.63	0.58
AUTONOMY	Schwartz cultural index on intellectual autonomy. *Israel Social Sciences Data Center*	4.26	0.50
EGALITARIANISM	Schwartz cultural index on egalitarianism. *Israel Social Sciences Data Center*	4.54	0.31
HARMONY-MASTERY	Schwartz cultural index on harmony minus Schwartz cultural index on mastery. *Israel Social Sciences Data Center*	-0.33	0.48
AUTONOMY-EMBEDDEDNESS	Schwartz cultural index on autonomy minus Schwartz cultural index on embeddedness. *Israel Social Sciences Data Center*	0.53	0.43
EGALITARIANISM-HIERARCHY	Schwartz cultural index on egalitarianism minus Schwartz cultural index on hierarchy. *Israel Social Sciences Data Center*	2.18	0.55
INDUSTRY	Industry code, first digit SIC code. *CapitalIQ*	3.37	2.13
PROFIT	Return on assets, defined as earnings before interest, taxes, depreciation, and amortization (EBITDA) divided by total assets. *CapitalIQ*	-3.54	281.84
SIZE	Firm size, defined as the natural logarithm of total assets. *CapitalIQ*	5.22	3.29
RISK	Asset volatility, defined as the standard deviation of ROA over the previous five years. *CapitalIQ*	3.39	98.18
EQUITY-DEBT	Equity-to-debt ratio, defined as the book value of equity divided by the book value of debt. *CapitalIQ*	88.16	2404.30
GROWTH	Tobin's Q, defined as the ration of market value of equity and debt divided by the book value of equity and debt. *CapitalIQ*	6.75	169.95
CASH	Cash holdings divided by total assets. *CapitalIQ*	0.12	0.16
AGE	Firm age. *CapitalIQ*	42.38	40.19
GDP PER CAPITA	Gross domestic product (current prices) per capita in US dollars. *The Global Competitiveness Report 2008-2009*	38515.56	27012.38
INFLATION	Annual percent change in consumer price index (year average). *The Global Competitiveness Report 2009-2010.*	3.92	1.99
MARKET CAPITALIZATION	Stock market capitalization to GDP. *World Bank Financial Structure Dataset.*	0.93	0.46
LOAN AVAILABILITY	Ease of access to loans. Evaluation of answers to the question: How easy is it to obtain a bank loan in your country with only a good business plan and no collateral? (1 = very difficult; 7 = very easy). *The Global Competitiveness Report 2008-2009*	4.31	0.70
ACCOUNTING STANDARDS	Strength of auditing and reporting standards. Evaluation of answers to the question: Financial auditing and reporting standards regarding company financial performance in your country are (1 = extremely weak, 7 = extremely strong, the best in the world). *The Global Competitiveness Report 2008-2009*	5.69	0.51
LAW	Dummy variable equal to 1 if a country's legal origin is common law, and 0 if the legal origin is civil law. *La Porta et al. (1998)*	0.67	0.47
INVESTOR PROTECTION	Strength of Investor Protection Index on a 0–10 (best) scale. *The Global Competitiveness Report 2008-2009.*	7.37	1.42
LEGAL RIGHTS	Degree of legal protection of borrowers' and lenders' rights on a 0–10 (best) scale. *The Global Competitiveness Report 2009-2010.*	7.28	1.57
TAX RATE	Total tax rate. This variable is a combination of profit tax (% of profits), labor tax and contribution (% of profits), and other taxes (% of profits). *The Global Competitiveness Report 2008-2009*	48.11	11.05

GDP	Gross domestic product (current prices) in millions of US dollars. *The Global Competitiveness Report 2008-2009*	7174.71	6010.99
GDP GROWTH	Gross domestic product (real) growth rate. *CIA World Factbook 2010*	-2.07	3.14
MINORITY PROTECTION	Protection of minority shareholders interest. Evaluation of answers to: In your country, to what extent are the interests of minority shareholders protected by the legal system? (1 = not protected at all; 7 = fully protected). *The Global Competitiveness Report 2008-2009*	5.67	0.55
INSTITUTIONAL CONDITIONS	Principal component of six institutional measures: voice and accountability, political stability and absence of violence, government effectiveness, light regulatory burden, rule of law, freedom from graft. *Kaufmann et al. (2006)*	-1.73	1.42
POLITICAL CONDITIONS	Principal component of revolution, assassination and corruption. A revolution is defined as any illegal or forced change in the top of governmental elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from central government. Assassination is the number of assassinations per thousand .inhabitants. Corruption is a measure of corruption, with a scale from 0 (high level) to 10 (low level). *Demirgüç-Kunt and Levine (2001)*	0.67	0.82

This table lists the mean, standard deviation, definitions and sources of variables used in regressions. Sources are reported in *italics.*

Table 2: The impact of national culture on the choice of debt finance

Dependent variable: BANK/BOND	(1)		(2)		(3)		(4)		(5)		(6)	
Intercept	-2.96	(0.13)	12.04	(0.11)	2.12	(0.37)	21.46***	(0.01)	3.59	(0.12)	3.40***	(0.00)
POWER DISTANCE	0.02	(0.11)	0.03	(0.59)	0.01	(0.17)	0.00	(0.68)				
INDIVIDUALISM AND COLLECTIVISM	0.04**	(0.04)	-0.08**	(0.04)	0.05**	(0.03)	-0.12***	(0.01)				
MASCULINITY AND FEMININITY	-0.03	(0.11)	-0.08*	(0.05)	0.01	(0.67)	-0.10**	(0.03)				
UNCERTAINTY AVOIDANCE	-0.03***	(0.00)	-0.04	(0.21)	-0.02*	(0.06)	0.01	(0.77)				
LONG-TERM ORIENTATION	0.04***	(0.00)	0.06***	(0.00)	0.03***	(0.01)	0.04**	(0.03)				
INDUSTRY					0.04***	(0.00)	0.10	(0.10)			0.00	(0.37)
PROFIT					-0.01	(0.93)	-0.08	(0.47)			0.09	(0.27)
SIZE					-3.90	(0.23)	-4.94	(0.11)			-0.37	(0.85)
RISK					-0.65***	(0.00)	-0.57***	(0.00)			-0.34***	(0.00)
EQUITY-DEBT					1.48	(0.83)	1.05	(0.88)			-0.87	(0.86)
GROWTH					-0.01	(0.73)	0.04	(0.31)			0.00	(0.23)
CASH					-0.89***	(0.00)	-0.87***	(0.00)			-0.64***	(0.00)
AGE					-7.83***	(0.01)	-9.25***	(0.00)			-3.62*	(0.07)
GDP PER CAPITA			-0.02	(0.65)			-0.03	(0.44)	-0.02**	(0.04)		
INFLATION			0.00	(0.93)			0.00	(0.56)	0.00	(0.29)		
MARKET CAPITALIZATION			0.64*	(0.06)			0.62*	(0.08)	0.07	(0.16)		
LOAN AVAILABILITY			1.73*	(0.09)			3.05***	(0.01)	-0.69**	(0.03)		
ACCOUNTING STANDARDS			-0.49	(0.80)			1.71	(0.37)	0.46	(0.18)		
LAW			-1.62	(0.18)			-3.31***	(0.01)	-1.10**	(0.01)		
INVESTOR PROTECTION			-0.93	(0.33)			-1.04	(0.31)	-1.89***	(0.00)		
LEGAL RIGHTS			-0.68***	(0.00)			-0.87***	(0.00)	-0.02	(0.90)		
TAX RATE			0.91***	(0.00)			0.68***	(0.01)	0.23***	(0.01)		
R²	0.19		0.29		0.32		0.41		0.10		0.07	
Adjusted R²	0.18		0.26		0.29		0.36		0.09		0.06	
F-statistic	16.37		9.80		9.85		8.46		8.99		6.05	
p-value	0.00		0.00		0.00		0.00		0.00		0.00	
Standard error	3.48		3.31		3.21		3.03		3.54		3.56	
N	356		356		289		289		760		645	

This table presents the results of firm-level linear regressions of BANK/BOND on the Hofstede cultural dimensions and a set of firm-specific and country-specific control variables. The dependent variable is the natural logarithm of the ratio of bank finance to bond finance. Standard errors in parentheses. * indicate significance at the 10% level, ** indicate significance at the 5% level, *** indicate significance at the 1% level. Definitions for all variables are outlined in Table 1.

Table 3: Robustness check: alternative model of culture

Dependent variable: BANK/BOND	(1)		(2)		(3)		(4)	
Intercept	1.97***	(0.01)	5.85**	(0.01)	6.84***	(0.00)	8.88***	(0.00)
HARMONY-MASTERY	-1.15***	(0.00)	-0.01	(0.23)	0.00	(0.49)	0.00	(0.76)
AUTONOMY-EMBEDDEDNESS	2.49***	(0.00)	1.67***	(0.00)	2.31***	(0.00)	1.67***	(0.00)
EGALITARIANISM-HIERARCHY	-0.88***	(0.00)	-1.00***	(0.00)	-0.42	(0.18)	-0.91**	(0.02)
INDUSTRY					-1.59***	(0.00)	-0.01	(0.19)
PROFIT					0.11	(0.15)	0.11	(0.15)
SIZE					-1.09	(0.59)	-5.02**	(0.02)
RISK					-0.33***	(0.00)	-0.13	(0.19)
EQUITY-DEBT					3.14	(0.51)	3.26	(0.51)
GROWTH					-0.07***	(0.00)	-0.08***	(0.00)
CASH					-0.55***	(0.00)	-0.31	(0.10)
AGE					-4.49**	(0.02)	-4.50**	(0.02)
GDP PER CAPITA			-1.28***	(0.00)			-1.60***	(0.00)
INFLATION			0.00	(0.16)			0.00	(0.17)
MARKET CAPITALIZATION			-0.05	(0.32)			-0.05	(0.38)
LOAN AVAILABILITY			-0.81***	(0.01)			-0.94***	(0.01)
ACCOUNTING STANDARDS			1.05***	(0.00)			1.21***	(0.00)
LAW			-1.11**	(0.01)			-1.17**	(0.02)
INVESTOR PROTECTION			-1.40**	(0.01)			-1.04	(0.11)
LEGAL RIGHTS			-0.19	(0.17)			-0.20	(0.18)
TAX RATE			0.20**	(0.03)			0.18*	(0.08)
R²	0.09		0.15		0.18		0.24	
Adjusted R²	0.09		0.13		0.16		0.21	
F-statistic	26.11		10.81		11.56		8.77	
p-value	0.00		0.00		0.00		0.00	
Standard error	3.54		3.44		3.36		3.26	
N	767		760		595		591	

This table presents the results of firm-level linear regressions of BANK/BOND on the Schwartz cultural dimensions and a set of firm-specific and country-specific control variables. The dependent variable is the natural logarithm of the ratio of bank finance to bond finance. Standard errors in parentheses. * indicate significance at the 10% level, ** indicate significance at the 5% level, *** indicate significance at the 1% level. Definitions for all variables are outlined in Table 1.

Table 4: Robustness check: alternative control variables

Dependent variable: BANK/BOND	(1)		(2)		(3)		(4)		(5)	
Intercept	-3.44	(0.18)	3.78	(0.15)	-1.90	(0.73)	3.34	(0.26)	3.96	(0.11)
POWER DISTANCE	0.01	(0.13)	0.01	(0.13)	0.00	(0.19)	0.01	(0.16)	0.00	(0.22)
INDIVIDUALISM AND COLLECTIVISM	0.06***	(0.00)	0.02	(0.39)	0.06**	(0.03)	0.03	(0.27)	0.00	(0.86)
MASCULINITY AND FEMININITY	0.03*	(0.09)	-0.01	(0.65)	0.01	(0.54)	0.01	(0.78)	0.00	(0.84)
UNCERTAINTY AVOIDANCE	-0.01	(0.32)	-0.02*	(0.08)	-0.02**	(0.05)	-0.02*	(0.09)	-0.03**	(0.02)
LONG-TERM ORIENTATION	0.03***	(0.00)	0.03***	(0.00)	0.03***	(0.00)	0.03**	(0.01)	0.03***	(0.00)
INDUSTRY	0.00***	(0.00)	0.12	(0.13)	0.51	(0.42)	0.14	(0.50)	-0.46**	(0.02)
PROFIT	0.02	(0.85)	0.01	(0.92)	-0.02	(0.88)	0.00	(0.99)	0.00	(0.99)
SIZE	-4.29	(0.17)	-4.13	(0.20)	-3.88	(0.23)	-4.09	(0.21)	-4.22	(0.19)
RISK	-0.31*	(0.05)	-0.55***	(0.00)	-0.67***	(0.00)	-0.65***	(0.00)	-0.66***	(0.00)
EQUITY-DEBT	0.59	(0.93)	-0.53	(0.94)	1.48	(0.83)	1.01	(0.88)	1.42	(0.84)
GROWTH	-0.01	(0.76)	-0.01	(0.78)	-0.01	(0.78)	-0.01	(0.79)	0.00	(0.99)
CASH	-0.75***	(0.00)	-0.85***	(0.00)	-0.90***	(0.00)	-0.90***	(0.00)	-0.83***	(0.00)
AGE	-7.20***	(0.01)	-7.46***	(0.01)	-7.98***	(0.00)	-7.67***	(0.01)	-8.23***	(0.00)
GDP	0.04***	(0.00)								
GDP GROWTH			0.03**	(0.02)						
MINORITY PROTECTION					0.05***	(0.00)				
INSTITUTIONAL CONDITIONS							0.04***	(0.00)		
POLITICAL CONDITIONS									0.06***	(0.00)
R²	0.37		0.32		0.32		0.32		0.33	
Adjusted R²	0.34		0.29		0.28		0.28		0.30	
F-statistic	11.56		9.35		9.18		9.16		9.68	
p-value	0.00		0.00		0.00		0.00		0.00	
Standard error	3.09		3.21		3.22		3.22		3.19	
N	289		289		289		289		289	

This table presents the results of firm-level linear regressions of BANK/BOND on the Hofstede cultural dimensions, a set of firm-specific control variables and other control variables. The dependent variable is the natural logarithm of the ratio of bank finance to bond finance. Standard errors in parentheses. * indicate significance at the 10% level, ** indicate significance at the 5% level, *** indicate significance at the 1% level. Definitions for all variables are outlined in Table 1.