# **Accepted Manuscript**

Culture's Influences: An investigation of inter-country differences in capital structure

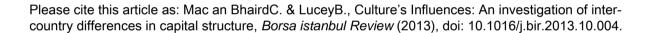
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PII: S2214-8450(13)00009-4

DOI: 10.1016/j.bir.2013.10.004

Reference: BIR 8

To appear in: Borsa istanbul Review



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Culture's Influences: An investigation of inter-country differences in capital structure.

Ciaran Mac an Bhaird, Brian Lucey

**Abstract** 

Employing firm-level observations from 13 countries over a seven year period, and controlling for an extensive set of firm-level characteristics, industry effects and country-level institutional variables, we provide a conceptual framework and empirical analysis of how culture influences capital structure in small and medium sized enterprises (SMEs). Uncertainty avoidance and individuality are negatively related with long-term debt, highlighting SME owners desire to avoid heightened business risk, reduce interference from debt providers, and maintain autonomy and independence. Negative relationships between power distance and debt suggest a more consultative role with financial institutions, facilitating greater access to debt. Policy makers should take account of the powerful consequences of cultural influences when designing and implementing financing initiatives.

Keywords

Capital structure, SME financing, Hofstede's cultural values, Europe.

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#### 1. Introduction

Over fifty years since the publication of the Modigliani and Miller (1958) irrelevance propositions, many studies have investigated the elusive 'optimal' capital structure. This voluminous literature has predominantly focused on public, nonfinancial corporations with access to United States or other international capital markets (Myers, 2001). Notwithstanding the importance of small and medium sized enterprises (SMEs) to national economies, the subject of SME financing has received relatively less attention. This deficit in the literature has been somewhat ameliorated in recent decades, with early studies emerging primarily from the UK (Chittenden et al., 1996) and the US (Balakrishnan and Fox, 1993). Subsequent studies have emerged from a growing number of countries, including Portugal (Esperanca et al., 2003), Belgium (Manigart and Struyf, 1997, Heyman et al., 2008), Spain (Sogorb Mira, 2005, Garcia-Teruel and Martinez-Solano, 2007), Italy (Giudici and Paleari, 2000), Sweden (Cressy and Olofsson, 1997, Berggren et al., 2000), Taiwan (Fu et al., 2002), India (Ghosh, 2007), Germany (Fritsch, 1993, Elsas and Krahnen, 1998, Audretsch and Elston, 1997), Australia (Fitzsimmons and Douglas, 2006, Cassar and Holmes, 2003), and Ireland (Mac an Bhaird and Lucey, 2010). Whilst this research has been extended to comparative international studies (Peterson and Schulman, 1987, Hall et al., 2004, Bancel and Mittoo, 2004, Daskalakis and Psillaki, 2008) , there is little or no research on the influence of national culture on capital structure. Investigation of the influence of culture in the SME literature has been confined to studies on enterprise (Gray, 1998) and as a 'spur' for innovation and growth (Bradley and Kennelly, 2008).

Empirical studies of SME financing typically test propositions of capital structure theories developed in the field of corporate finance by investigating firm characteristic determinants of short-term, long-term and total debt ratios. Cross-country comparative studies test similar firm characteristic determinants, although a number of studies examine other factors, such as the effect of creditor rights and legal origin (Hall and Jorgensen, 2005) and the effect of legal determinants on external finance (La Porta et al., 1998). Results from these studies suggest a number of similar inter-country factors in financing SMEs; for example, Daskalakis and Psillaki (2008) conclude that firm effects are more important than country effects, attributing similarities in determinants of capital structure to the commonality of institutional characteristics of the two countries studied. On the other hand, Hall et al. (2004: p.726) find "variations in both capital structure and the determinants of capital structure between the countries surveyed .... [which] could well be due to differences in attitudes to borrowing, disclosure requirements, relationships with banks, taxation and other national economic, social and cultural differences".

Whilst the suggestion of potential cultural influence on SME financing is unusual, culture is a key dimension in many fields of business and finance. In addition to its influence on whole financial systems (e.g. Islamic finance), culture has been shown to impact on commodity and services trade, corporate transparency, foreign direct investment, mergers and acquisitions, the modality of market entry, and managerial control (Kogut and Singh, 1988; Sekely and Collins, 1988; Grinblatt and Keloharju, 2001; Harzing and Joseph, 2003; Bushman, Piotroski and Smith, 2004; Tihanyi, Griffith and Russell, 2005; Kirkman, Lowe and Gibson, 2006; Hitt, Franklin and Zhu, 2006; Kwok and Tadese, 2006; Slangen, 2006; Demirbag, Glaister and Tatoglu, 2007; and Kaufmann and O'Neill, 2007). Research in the corporate finance capital structure literature also investigates the influence of cultural variables on international capital structure (Sekely and Collins, 1988; Gleason et al., 2000; Chui et al.,

2002; Kwok and Tadese, 2006). These studies suggest that national culture may be an important "missing piece" to the capital structure puzzle (Chui et al., 2002). In spite of this, however, research on the determinants of capital structure in the SME literature has largely ignored the cultural dimension, even though culture may be a more important element in the SME sector. This is because, whilst the influence of the cultural dimension in the corporate sector may be somewhat diluted because of international aspects of ownership and financial markets, the implications of culture are much more powerful in the SME sector. This is due to the closely held ownership structure of firms in the sector, and because SMEs generally access local sources of financing.

In this paper, we seek to add to the literature by investigating the role of culture in explaining the capital structure of SMEs. A number of specific research questions are posed:

- a. Do capital structures differ across countries?
- b. To what extent is capital structure determined by firm characteristics, and industry sector?
- c. What are the inter-country differences in firm characteristic, and sectoral effects?
- d. Controlling for firm and industry effects, to what extent is capital structure determined by (3) institutional factors, and (4) cultural factors.

The remainder of our paper is structured as follows. In section 2, we describe Hofstede's measures of cultural relativism and formulate hypotheses. In doing so, we focus particularly on the role of culture and other variables that are related to culture. In section 3, we present our data, describe our methodology and formalise our tests. Section 4 contains our findings and section 5 draws together our conclusions.

### 2. Culture and capital structure in related research

Hofstede and Hofstede (2005: p.4) state that "...Culture consists of the unwritten rules of the social game. It is the collective programming of the mind that distinguishes the members of one group or category of people from the others". By studying organisations in a wide number of countries, Hofstede (2001) developed a number of measures of culture, including power distance, individuality, masculinity, uncertainty avoidance, and short- and long-term orientation. He employed these measures in investigating cultural relativism, which explores "...cultural differences between societies, their roots, and their consequences" (Hofstede and Hofstede, 2005: p.6). Whilst these measures have been employed in a large number of studies across a wide range of disciplines, they have not been previously considered in empirical SME financing research. Each measure is now considered in turn:

Power Distance: Power distance scores inform us about dependence relationships in a country. It is defined as the extent to which the less powerful members of institutions and organisations within a country expect and accept that power is distributed unequally. (The way power is distributed is usually explained from the behaviour of the *more* powerful members – the leaders rather than those led). In those countries with a high power distance score, there is more deference to authority. Banks could be thought of as being the more powerful organisation, with SMEs being the weaker, subordinate organisation (After all, the SMEs go to the banks requesting funding – banks are in the position of authority). Chui et al (2002) find that higher degrees of

Schwartz and Sagiv's (1995) 'mastery' (which could approximate Hofstede's power distance) are associated with lower debt ratios. Additionally, in small power distance states "subordinates expect to be consulted". This suggests that SMEs in small power distance states may have a more consultative role with the banks – that they can at least bargain or negotiate their debt agreements with the banks. Therefore, one would arguably expect that this gives them access to higher levels of debt, or at least to negotiate for loans – much more than it does in higher power distance countries. It is hypothesised, therefore, that

There is an inverse relationship between power distance and debt.

*Individualism*: Individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after himself and his immediate family. Collectivism as its opposite pertains to societies in which people from birth onwards are integrated into strong, cohesive in-groups, which throughout people's lifetimes continue to protect them in exchange for unquestioning loyalty.

Gleason, Mathur and Mathur (2000) argue from Hirshleifer and Thakor (1992) that cultures with high individuality tend to be associated with managers looking after their own interests and enhancing their reputation. Therefore, they are likely to choose lower debt in order to maximise success. Personal freedom is an important component of the individualist pole, suggesting that SME owners do not wish to have high levels of debt. Additionally, as "autonomy is the ideal", this suggests that firm owners in highly individualistic societies will finance the firm with equity as much as possible. Thus, we hypothesise:

There is an inverse relationship between individualism and debt.

Masculinity: "A society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life" (Hofstede and Hofstede, 2005: p.120).

De Jong and Semenov (2002) argue that the degree of masculinity is synonymous with support for competitive processes and outcomes and associated with greater stock market depth. This suggests the possibility that Hofstede's (2001) measure of the degree of masculinity might well have implications for the capital structure of SMEs by influencing the appetite of owner-managers for debt and possibly for long-term rather than short-term debt. SME owners pursuing growth may have a greater appetite for debt, and greater disregard for agency considerations. Therefore, we hypothesise:

There is a positive relationship between masculinity and debt.

Uncertainty avoidance: Uncertainty avoidance is the extent to which the members of a culture feel threatened by ambiguous or unknown situations. It is well established in the literature that SME owners desire to avoid uncertainty, and have an overriding goal to retain control of the firm. Additionally, Chui et al (2002) find that higher degrees of 'conservatism' (which could approximate Hofstede's uncertainty avoidance) are associated with lower corporate debt ratios. In addition, Gleason et al (2000) argue that because higher debt leads to greater risks of corporate bankruptcy, higher uncertainty avoidance should lead to lower levels of debt in corporate capital structures. Therefore, we hypothesise that:

Uncertainty avoidance is negatively related with debt.

Overall, our review of prior research on the role of culture in capital structure points to the possibility that culture also has a role to play in explaining the capital structure of SMEs. Given that Hofstede's (2001) cultural characteristics have not yet been included in empirical work on SME capital structure, it is to this that we now turn. There are, of course, alternative frameworks of measuring national culture and psychic distance, such as the Schwartz measure and the Globe Project (Schwartz and Sagiv, 1995; House, Javidan, Hanges and Dorfman, 2002; Dow and Karunaratna, 2006), but most researchers who have examined national culture have used Hofstede's measures.

### 3. Data and Methodology

Data for our study was sourced in the Bureau Van Dijk *Amadeus* database. Our study concentrates on a number of countries that are grouped as follows: the Scandanavian countries including Finland, Norway and Sweden; Continental nations including France, Germany, Belgium and Switzerland; the Southern European nations including Spain, Portugal, and Greece; Ireland and the UK, and a sole Eastern European representative, Romania. Data with over 90,000 firm-level observations was extracted for the years 2002-2008 inclusive. Dependent and independent variables selected to test hypotheses developed in the previous section are described in table 1, and table 2 provides summary descriptive statistics for dependent variables. None of the cultural variables has, to our knowledge, been investigated in empirical SME capital structure studies heretofore.

Whilst the principal aim of this paper is to investigate potential cultural influences on SME capital structure, we also conduct an examination of firm, industry and institutional variables. Firm-characteristic variables are selected with reference to prior research, as Hall et al. (2000: p.300) note that: "From consideration of the previous studies of the determinants of the capital structure of small enterprises it becomes clear that profitability, growth, asset structure, size and age and possibly industry are, prima facie, likely to be related to capital structure." The objective of these tests is to expand the literature on cross-country studies, investigate the extent to which industry and country specific variables influence capital structure, and provide a more complete set of variables than employed in previous large scale empirical studies.

Our first set of 7 firm-level variables includes size as defined by total assets (*SIZE*), firm age (*AGE*), asset structure (*FIXASS*), the firm's growth opportunities (*GROWTH*), its profit margin (*PROF*), the collection period for its debts (*COLL*) and its credit period (*CRED*) (the latter two are included only in the analysis of short-term debt). These are presented in vector (1).

$$Firm = F(AGE, SIZE, FIXASS, GROWTH, PROF, COLL, CRED)$$
 (1)

Industrial classifications are grouped into six sectoral groupings, namely primary (*PRIMARY*), manufacturing (*MANU*), Retail and Wholesale (*RETWHOL*), Transportation and storage (LOGISTICS), Information, communication and professional services (*ICTSERV*), and Other services (*OTHSERV*). These are presented in vector (2).

Our institutional strength variables in vector (3) include the Fraser Institute measures of economic freedom (FREE) (Gwartney & Lawson, 2003), legal structure and security of property rights (LEGPROP), access to sound money (SM), and the World Bank measure of regulatory quality (REGQUAL) (Kaufmann et al 2009).

Instit = 
$$I$$
 (FREE, LEGPROP, SM, REGQUAL) (3)

Our cultural variables are from Hofstede's (2001) measures of the degree of masculinity (*MASC*), the degree of individuality (*INDV*), the degree of power distance (*POWD*) and the degree of uncertainty avoidance (*UNCA*).

$$Culture = C (UNCA, INDV, MASC, POWD)$$
 (4)

Following standard practice in the literature, we estimate our models using random-effects generalised linear regression (GLS) estimation with robust standard errors.

We first estimate our benchmark model employing only the firm-level variables in vector (1). The estimating equation for this model is as follows.

$$DTA_{t}^{i} = \alpha_{0}^{i} + \alpha_{1}^{i}AGE + \alpha_{2}^{i}SIZE + \alpha_{3}^{i}FIXASS + \alpha_{4}^{i}GROWTH + \alpha_{5}^{i}PROF$$

$$+ \alpha_{6}^{i}COLL + \alpha_{7}^{i}CRED + \varepsilon_{t}^{i}$$
(5)

Here, *DTA* denotes the debt-to-assets ratio, and the superscript *i* short-term and long-term debt-to-assets ratio. In essence, therefore, we estimate equation (5) twice – once for the short-term debt-to-assets ratio, and again for the long-term debt-to-assets ratio. The results are presented in model (1) of Table 3 for the short-term debt-to-assets ratio, and in model (5) in Table 4 for the long-term debt-to-assets ratio.

Industry sectoral dummies in vector (2). The primary sector (*PRIMARY*) is selected as the reference group because previous research suggests that the capital structure of these firms differs significantly from other sectors. The resulting equation to be estimated is as follows.

$$DTA_{t}^{i} = \beta_{0}^{i} + Firm + \beta_{1}^{i}MANU + \beta_{2}^{i}RETWHOL + \beta_{3}^{i}LOGISTICS + \beta_{4}^{i}ICTSERV + \beta_{5}^{i}OTHSERV + \zeta_{t}^{i}$$

$$(6)$$

Here, *Firm* represents the estimated coefficients from the vector of firm-level variables in equation (5). Results from estimating (6) are presented in model (2) of Table 3 for the short-term debt-to-assets ratio, and in model (6) in Table 4 for the long-term debt-to-assets ratio.

We next add the institutional strength variables from vector (3), giving the estimating equation (7) with *Ind* representing the estimated coefficients from the vector of industry sector dummies in equation (6).

$$DTA_{t}^{i} = \delta_{0}^{i} + Firm + Ind + \delta_{1}^{i}FREE + \delta_{2}^{i}LEGPROP + \delta_{3}^{i}SM$$
$$+ \delta_{4}^{i}REGQUAL + \xi_{t}^{i}$$
 (7)

The results are presented in model (3) of Table 3 for the short-term debt-to-assets ratio, and in model (7) in Table 4 for the long-term debt-to-assets ratio.

Finally, our specification in equation (8) adds the cultural variables to the firm, industry and institutional strength effects in models (3) and (7), with *Inst* representing the estimated coefficients from the vector of institutional strength variables in equation (7).

$$DTA_t^i = \delta_0^i + Firm + Ind + Inst + \delta_1^i UNCA + \delta_2^i INDV + \delta_3^i POWD + \delta_4^i MASC + \xi_t^i$$
 (8)

The results from estimating equation (8) are presented in model (4) of Table 3 for the short-term debt-to-assets ratio, and in model (8) in Table 4 for the long-term debt-to-assets ratio.

#### 3. Results

The results from our regression models employing short- and long-term debt as dependent variables are presented in Tables 3 and 4 respectively, and discussion of results is organised according to the categorisation of variables employed.

#### Firm characteristics

All four models employing short- and long-term debt as the dependent variable indicate a negative relationship between debt and age. This result is consistent with previous empirical studies, and provides further support for the stages model and the financial growth life cycle theory (Berger and Udell (1998), Mac An Bhaird and Lucey (2010)) . It indicates that firms become less reliant on sources of external funding over time as debt is retired and firms become increasingly dependent on retained profits (Myers and Majluf (1984)). Relationships between firm size and debt - negative for short-term and positive for long-term debt - are also consistent with previous studies. The negative relationship between short-term debt and firm size is consistent with the view that smaller firms are heavily reliant on short-term debt as per Garcia-Teruel and Martinez-Solano (2007), as firms may be unwilling or unable to employ long-term debt because of higher transaction costs. Cassar and Holmes (2003) suggest that larger firms, by contrast, may be offered, and employ, more long-term debt because of scale effects. A further reason for the observed positive relationship may be collateral effects, as the proxy employed for firm size is the natural logarithm of total assets. Firms with greater amounts of collateralisable assets have capacity for higher long-term debt ratios ceteris paribus, and tend to match the maturity of their debt with that of their assets (Bartholdy and Mateus (2008)). This explanation is confirmed by the significant positive relationship between asset structure (the ratio of fixed to total assets) and long-term debt. This finding supports the proposition of Bartholdy and Mateus (2008), that asset structure is the single most important determinant of SME capital structures. The negative relationship between short-term debt and asset structure suggests that firms' short-term debt is not secured on fixed assets, either because of

insufficient fixed assets, or because it is secured on other (short-term) collateral, or it remains unsecured. The implication in the former case is that firms employ inappropriate sources of finance (short-term rather than long-term debt) due to insufficient lien-free collateralisable fixed assets.

Relationships between growth opportunities (the ratio of intangible assets to total assets) are positive for long-term debt and negative for short-term debt, although a number of coefficients are not statistically significant. These results suggest that firms with sufficient lien-free collateralisable assets can access debt to finance their growth. The positive relationships observed in models (5) to (8) are consistent with Sogorb Mira (2005) who explain that the type of assets linked to growth opportunities may be long-term in nature, and thus the maturity of debt matches that of the assets. Negative relationships between short- and long-term debt and profitability are consistent with previous studies such as Daskalakis and Psillaki (2008), Lopez-Gracia and Sanchez-Andujar (2007), Sogorb Mira (2005) indicating that firms employ debt when retained profits are insufficient for investment projects. Results for all models are statistically insignificant, however. The relationships between short-term debt and collection and credit periods are positive and negative respectively. These results are intuitive, as firms' short-term debt increases with time to receive payments. Conversely, short-term debt requirements diminish with length of credit proffered by creditors.

#### **Industry sectors**

Consistent with Hall, Hutchinson et al. (2000), results suggest significant inter-industry differences in the levels of short-term and long-term debt employed. Statistically significant differences in coefficients for models (2) to (4) indicate that PRIMARY firms employ more short-term debt than those in the manufacturing and retail/wholesale sectors, and less than all other sectors. Coefficients in models (6) to (8) confirm inter-industry differences, as PRIMARY firms employ more long-term debt than all sectors except LOGISTICS. This result supports the proposition that there are persistent differences in industry debt ratios over time (Harris & Raviv (1990, 1991)), and that these differences are the result of inter-industry variations in asset structure (Bartholdy& Mateus (2008)). Whilst these results support the view that sources of financing employed vary significantly across sectors (Hall, Hutchinson et al. (2000)), we cannot dismiss the conclusion that firm specific characteristics are more important than structural characteristics of industry (Balakrishnan and Fox (1993)) , or that financial and strategy variables have greater explanatory power than industry specific effects (Jordan, Lowe, & Taylor (1998)).

#### Institutional characteristics

Our results suggest that some institutional strength variables are important for firms in accessing short-term, but particularly long-term debt. Relationships between debt and FREE in models (3) and (7) suggest that economic freedom is positively related to short-term and long-term debt respectively, although these results are not statistically significant and there is a considerable change in sign in models (4) and (8). Legal structure and security of property rights (LEGPROP) is positively and significantly related to both short-term and long-

term debt. This result is intuitive, and is consistent with previous literature Beck and Demirguc-Kunt (2006) The variable 'Access to sound money' is negatively related with short-term and long-term debt in models (3), (7) and (8), although this effect is reversed significantly in model (4), which has a positive coefficient. The latter result is not unexpected, although the inconsistent, statistically insignificant results preclude a definitive conclusion. Finally, regulatory quality is negatively related with short-term debt, but is positively related with long-term debt. The latter results are consistent with previous studies, although one of the coefficients is not statistically significant. Overall, it is difficult to make strong conclusions on the effects of institutional characteristics because of the lack of statistical significance in the short-term models, and the sign inconsistencies between models (3) and (4).

#### **Culture variables**

Our results for models employing cultural variables show that the cultural variables are statistically significant with two exceptions, and the effects for long-term debt are generally greater than for short-term debt. Uncertainty avoidance is negatively related to long-term debt as hypothesised, although the relationship with short-term debt is positive. This is unexpected. This could be explained by the conjecture that long-term debt is relatively riskier for the SME owner than short-term debt *ceteris paribus*, and the longer term commitment, including provision of personal assets as collateral to secure long-term debt. It also may be related to the Kwok and Tadesse (2006) finding of more bank reliance. Individualism is negatively related with long-term debt as hypothesised, and positively related with short-term debt, although the latter result is statistically insignificant. The relationship between power distance and debt is negative as hypothesised, although the coefficient for long-term debt is greater than that for short-term debt. This result is consistent with the individualistic view that "autonomy is the ideal", providing further support for the well documented desire for independence of SME owners. Masculinity is positively related with long-term debt as hypothesised, but negatively related with short-term debt. These results suggest that SME owners in societies with a high degree of masculinity have a greater appetite for debt to finance growth, with a preference for long-term rather than short-term debt.

#### 4. Summary and Conclusions

The aim of this paper is to expand and broaden the literature on SME financing by investigating the role of cultural variables in determining capital structures. Employing a database of over 90,000 observations across 13 countries, we find that significant cross-country differences in capital structure are partly explained by cultural variables. These effects are generally stronger than firm-characteristic, industry or institutional effects. Uncertainty avoidance is negatively related to long-term debt, confirming SME owners' desire to avoid heightened business risk, and interference from debt providers ((Esperanca, Gama, and Gulamhussen (2003), Cressy (1996)) This result highlights the intention to avoid adverse consequences of financial distress, including the considerable negative effects on the owner's reputation and self-esteem Such consequences may not be as severe in relation to short-term debt, for which the result is converse. The negative relationship between long-term debt and the degree of individuality suggests that issues of "...individual freedom and self-actualization..." (Hofstede and Hofstede (2005): p.109)) are important for SME owners in seeking to maintain autonomy and

retain control. Levels of short-term debt affect these considerations to a lesser degree, which may explain the contrary result in relation to this source. Indeed, employing short-term debt rather than long-term debt increases flexibility and reduces autonomy-restricting adherence to covenants, restrictions and increased monitoring. The negative relationships between power distance and debt suggest that SMEs in small power distance states have a more consultative role with financial institutions. We propose that the ability to engage in negotiations for debt financing facilitates greater access to debt, or at least the opportunity to negotiate debt facilities. The positive relationship between masculinity and long-term debt suggests that the values of "...challenge, earnings, recognition and advancement..." (Hofstede and Hofstede (2005): p.132))result in firm owners pursuing growth demonstrating a greater appetite for debt. We propose that this view is consistent with the contrary result observed for short-term debt. Indeed, similar to results observed for the Uncertainty avoidance and Individuality measures, these effects highlight the complex and varied issues in establishing the determinants of SME capital structures, particularly the decision to employ long-term versus short-term debt. The magnitude of coefficients for models employing cultural variables suggests that these measures are important in determining capital structure, and are significantly larger than those for models investigating firm, industry and institutional characteristics. Results for models employing firm-characteristic variables are broadly consistent with previous studies, highlighting the role of firm age, size, asset structure, growth opportunities and profitability in determining debt ratios. A novel result of our study is that the relationships between shortterm debt and collection and credit periods are positive and negative respectively. Results indicate that shortterm debt increase with debtors' time to payment, and diminishes with length of credit proffered by creditors. Whilst this result is not unexpected, it is heretofore unreported in large scale studies in the SME literature.

Whilst the inclusion of institutional variables captures a significant amount of cross-country differences in financial, legal and regulatory systems and structures, there may be notable variations in debt ratios depending on whether a financial system is bank-based (Germany, for example) or market-based (United Kingdom, for example Demirgücc-Kunt and Levine (1999). Additionally, differences in banking systems and institutions across countries can potentially account for variations in capital structures. Hofstede (2005: p.19) argues that institutions also follow "...mental programs in the way they adapt to local culture". Thus, institutions are also subject to the mores and conventions of national cultures. In order to fully comprehend the influence of legal and financial systems on capital structures, it is necessary to understand the societies in which they operate.

Consistent with previous studies there are significant sectoral differences in short- and long-term debt ratios. Firms in the primary sector employ higher levels of long-term debt than all sectors, and use less short-term debt than all sectors apart from the manufacturing and retail and wholesale sectors. This result is not unexpected, although it is not possible to discern the primacy of sectoral over firm-level variables. Institutional variables were included in the study to capture cross-country differences in access to money, regulatory quality, economic freedom and legal and property rights. These factors could possibly dominate and/or override cultural effects of financing. Consistent with previous research legal and property rights and regulatory quality are positively related with long-term debt. Other results are less conclusive, suggesting that these issues have less relevance in relation to levels of short-term debt.

The importance of cultural considerations in SME capital structure has implications for policy makers. For example, SMEs in high uncertainty avoidance countries preference short-term relative to long-term debt. These financing preferences may expose firms to excessive risk, and weaken the sustainability of the SME sector. Policies designed to improve access to finance or improve the capital mix may not succeed because of the deep and powerful consequences of cultural influences. Even if governments attempt to impose policies in relation to provision of SME finance, they may not succeed, as they will be thwarted by the over-arching effects of culture. Thus, policy makers must be aware of these potential pitfalls when designing initiatives. This does not mean such policy initiatives will fail – intelligent policy makers will be able to utilise cultural factors to design initiatives, which will succeed.

Our paper has implications for further research. Firstly, there remains the need for broad cross-country SME studies, notwithstanding the burgeoning of research in recent years. Secondly, researchers should examine the implications of these cultural factors in bank-based systems, such as Germany, in contrast with countries which have market-based systems, such as the UK. Thirdly, researchers might conduct a comparative study employing the Schwartz and GLOBE dimensions of national culture. Additionally, researchers could conduct more sophisticated statistical tests on this data which will result in improvements in efficiency. Finally, a research agenda of mixed methods, deploying qualitative as well as quantitative studies to deeply probe how cultural norms impact would be most useful.

Table 1

Description of variables employed in regression models

Variable	Description of Variable
STD	Short term debt to total assets. Short term debt is defined as the debt repayable within one year, including bank overdraft, loans, and other current liabilities.
LTD	Long term debt to total assets. Long term debt includes debt payable beyond one year.
AGE	Age of the firm in years from founding
SIZE	Natural log of total assets of the firm.
FIXASS	Ratio of fixed assets to total assets.
GROWTH	Ratio of intangible assets to total assets. Intangible assets include: research and development expenditure, trademarks, patents and copyrights.
PROF	Ratio of profit/loss before tax to operating revenue.
COLL	Collection period (days)
CRED	Credit period (days)
UNCA	Natural log of the Hofstede Uncertainty avoidance index.
INDV	Natural log of the Hofstede Individuality index.
POWD	Natural log of the Hofstede Power distance index.
MASC	Natural log of the Hofstede Masculinity index.
FREE	Natural Log of the Fraser Institute measure of Economic Freedom
LEGPROP	Natural Log of the Fraser Institute measure of legal structure and security of property rights
SM	Natural Log of the Fraser Institute measure access to sound money
REGQUAL	Natural Log of World Bank measure of regulatory quality (REGQUAL) (Kaufmann et al 2009).

Table 2
Summary statistics of culture and debt ratios

	No obs	Long- Term debt	Short- term debt	Masc	Powd	Unca	Indv
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Belgium	2,611	.135	.285	25	51	68	75
Finland	955	.149	.296	26	33	59	63
France	24,485	.043	.321	43	68	86	71
Germany	1,509	.284	.191	66	35	65	67
Greece	3,056	.063	.294	57	60	112	35
Ireland	377	.093	.272	68	28	35	70
Norway	5,029	.094	.324	8	31	50	69
Portugal	7,670	.132	.306	31	63	104	27
Romania	6,258	.008	.325	42	90	90	30
Spain	30,394	.122	.338	42	57	86	51
Sweden	513	.103	.405	5	31	29	71
Switzerland	285	.192	.300	70	34	58	68
United Kingdom	10,689	.137	.137	66	35	35	89

**Notes.** In column 2, 'No obs' denotes the number of firms per country. In columns (3) and (4), 'Long-term debt' and 'short-term debt' are country averages of the ratios of short and long-term debt to total assets. In columns (5) - (8), 'Masc',' Powd', 'Unca' and 'Indiv' denote respectively the country measures of Hofstede's masculinity, power distance, uncertainty avoidance and individualism.

Table 3

The determinants of SME capital structure: Short-term debt/assets ratio

		Model (1)		Model (2)		Model (3)		Model (4)	
Explanatory variable	Symbol	Coeff.	P	Coeff.	P	Coeff.	ρ	Coeff.	ρ
Firm								4	
characteristics									
Age	AGE	0005	.000	0003	.000	0003	.000	0004	.000
Total Assets	SIZE	0356	.000	0331	.000	0305	.000	0292	.000
Asset structure	FIXASS	0678	.000	0720	.000	0707	.000	0701	.000
Growth	GROWTH	0088	.500	0407	.002	0419	.002	0401	.002
opportunities									
Profitability	PROF	0001	.456	0001	.591	0001	.610	0001	.602
Collection period	COLL	.0004	.000	.0003	.000	.0003	.000	.0003	.000
Credit period	CRED	0006	.000	0006	.000	0006	.000	0006	.000
Industry sectors									
Manufacturing	MANU			0316	.000	0291	.000	0279	.000
Retail and	RETWHOL			0327	.000	0308	.000	0305	.000
Wholesale									
Transport &	LOGISTICS			.0253	.002	.0257	.002	.0262	.001
storage									
Professional	ICTSERV			.0741	.000	.0711	.002	.0688	.000
servs.				\ \					
Other Services	OTHSERV			.0658	.000	.0642	.000	.0651	.000
Institutional									
strength									
Economic	FREE			7		.0175	.322	0147	.627
freedom									
Legal & property	LEGPROP					.0127	.000	.0058	.262
rights			, , 7						
Access to sound	SM					0083	.217	.0343	.006
money			ľ						
Regulatory quality	REGQUAL					0591	.007	0985	.008
Culture		,							
Uncertainty	UNCA							.1565	.000
avoidance		7							
Individuality	INDV							.0197	.267
Power distance	POWD							1267	.000
Masculinity	MASC							0458	.000
Constant		.6256	.000	.6045	.000	.5165	.000	.3311	.122
R <sup>2</sup>		.0798		.1090		.1106		.1156	
Wald Chi <sup>2</sup>		2402.5	.000	2885.8	.000	2914.8	.000	3006.8	.000

*Notes*. This table reports the random effects panel estimates for the ratio of short-term debt to total assets using 51,131 observations over the 7-year period from 2002-2008. Model (1) includes only the firm characteristic variables, model (2) adds industry sector effects, model (3) includes institutional strength and model (4) cultural variables. All variables are defined in Table 1.

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Table 4

The determinants of SME capital structure: Long-term debt/assets ratio

		Model (5)		Model (6)		Model (7)		Model (8)	
Explanatory variable	Symbol	Coeff.	ρ	Coeff.	ρ	Coeff.	ρ	Coeff.	ρ
Firm									
characteristics									
Age	AGE	0010	.000	0010	.000	0004	.000	0008	.000
Log of Total Assets	SIZE	.0156	.000	.0157	.000	.0127	.000	.0130	.000
Asset structure	FIXASS	.2242	.000	.2211	.000	.2165	.000	.2156	.000
Growth opportunities	GROWTH	.0114	.249	.0153	.125	.0307	.002	.0331	.001
Profitability	PROF	0000	.505	0000	.490	0000	.425	0000	.425
Industry sectors									
Manufacturing	MANU			0105	.032	0143	.003	0140	.004
Retail and Wholesale	RETWHOL			0150	.002	0130	.008	0131	.007
Transport & storage	LOGISTICS			.0093	.150	.0104	.102	.0107	.090
Professional servs.	ICTSERV			0217	.000	0235	.000	0261	.000
Other Services	OTHSERV			0200	.005	0149	.033	0162	.019
Institutional									
strength									
Economic freedom	FREE			7		.0578	.000	0300	.291
Legal & property rights	LEGPROP					.0064	.009	.0173	.000
Access to sound money	SM		) 7			0514	.000	0033	.742
Regulatory quality	REGQUAL					.1138	.000	.2623	.440
Culture		/							
Uncertainty avoidance	UNCA							0244	.003
Individuality	INDV							0863	.000
Power distance	POWD							1915	.000
Masculinity	MASC							.0663	.000
Constant		0625	.000	0515	.000	1421	.070	1.041	.000
R <sup>2</sup>		.0927		.0941		.1154		.1211	
Wald Chi <sup>2</sup>		3496.25	.000	3531.8	.000	4075.3	.000	4288.4	.000

*Notes*. This table reports the random effects panel estimates for the ratio of long-term debt to total assets using 79,862 observations over the 7-year period from 2002-2008. Model (1) includes only the firm characteristic variables, model (2) adds industry sector effects, model (3) includes institutional strength and model (4) cultural variables. All variables are defined in Table 2.

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