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National Culture's Influence on the Capital Structure of SMEs

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Abstract

Many studies examine the determinants of SME capital structure. The effects of both firm and institution level factors are well documented but there is still unknown influence behind SME capital structure: national culture. Reflecting on the sparse evidence on listed firms, this study explores the question whether national culture influences decision making which determines the capital structure of unlisted SMEs. This is examined both for SMEs as a whole and for three subsamples of micro, small and medium firms.

Of Schwartz's latest (2008) cultural dimensions Embeddedness, Hierarchy and Mastery are used in conjunction with a panel data sample (2006-2010) of almost 900,000 observations from nine countries spread across three continents. The empirical analysis is based on a stratified re-sampling approach. The results show that Hierarchy and Embeddedness are negatively related to debt levels. However, very limited evidence is found that Mastery is positively related to debt. The effect of culture is consistent in the full sample and throughout the subsamples. These results are robust when tested using an alternative model, lagged asset values and Hofstede's cultural values.

These findings provide strong evidence that national culture affects SME capital structure. A significant relationship between debt and Embeddedness suggests cultures which value security and public appearance usually have lower debt levels. A negative relationship between Hierarchy and debt suggests that managers who operate in cultures where power, authority and wealth are important cultural values prefer to use less debt because taking on debt results in the manager losing some control to debt providers. Countries with these cultural values prefer to retain maximum control.

These findings confirm that cross-cultural variation in risk perceptions and control issues can cause differences in SME capital structure. The effect of national culture is consistent throughout all SMEs in the same country indicating that firms will behave collectively with regard to leverage. Because SMEs play such a large role in any economy, this could have wider implications for any individual economy.

Acknowledgements

The title of this page may be “Acknowledgements” but, in this case, I think it should be called “Apologies”.

I would like to apologise to almost everyone that I have had in my life throughout the duration of my MPhil. Firstly, my friends from home who saw me off last October and have not heard very much from me since – I promise I will see you all down the barrels for a few drinks soon!

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Chapter 1 Introduction

1.1 Capital Structure

Capital structure literature looks at debt to assets ratios within firms and why firms have the debt levels that they do. Borrowing enables investment which allows firms to grow by facilitating the purchase of assets. This area of finance literature has spiralled outwards since the seminal paper by Modigliani and Miller (1958) which prompted a wide range of research into capital structure. This resulted in the development and testing of capital structure theories (Donaldson, 1961; Kraus and Litzenberger, 1973; Jensen and Meckling, 1976; Myers, 1984), capital structure determinants (Rajan and Zingales, 1995; Deesomsak et al., 2004; De Jong et al., 2008; Kayo and Kimura, 2011), debt maturity (Flannery, 1986; Diamond, 1991; Barclay and Smith, 1995), and speed of adjustment of debt proportions (Ozkan, 2001; Huang and Ritter, 2009). The volume of literature demonstrates this area is of great interest to both the academic community and corporate finance professionals alike.

This study expands on prior literature by investigating the effect of national culture as an SME capital structure determinant. The rationale behind national culture is that people in different countries hold certain values with greater or lesser importance than those in other cultures and may make different decisions based on these values. People manage firms and intuition suggests that national culture will influence their decision making. Prior literature finds this holds for several managerial decisions including financial reporting (Ding et al., 2005), auditor choice (Hope et al., 2008), dividend policy (Shao et al., 2010), foreign market entry (Kogut and Singh, 1988), tax compliance (Tsakumis et al., 2007) and compensation practices (Schuler and Rogovsky, 1998).

1.2 Small and Medium Enterprises

This study investigates the effect of national culture on the capital structure of unlisted SMEs. SMEs play an important role in any economy and form approximately 99% of firms. Their size enables them to tailor their services to specific client which results in them exhibiting great heterogeneity both within countries and between countries, in terms of not only their capital structure but their operational structure. As SMEs play

such a vital role in any economy, it is important we develop our understanding of their operations and their structure, particularly with regard to how they finance themselves.

Prior literature indicates that SMEs generally apply the pecking order theory and are more likely to raise finance for a particular objective rather than specifically to alter their capital structure (Lopez-Gracia and Sogorb-Mira, 2008). There are several studies which focus specifically on SME capital structure determinants (e.g., Van Caneghem and Van Campenhout, 2012, Degryse et al., 2012) but there are a limited number of cross-country studies in this area (e.g., Hall et al., 2004; Daskalakis and Psillaki, 2008; Joeveer, 2012) and these examples focus only on European SMEs leaving a large number of SMEs unexplored.

1.3 National Culture

National culture can be measured in several ways but the majority of prior literature uses either Hofstede's cultural values (Hofstede, 1980) or Schwartz's cultural dimensions (Schwartz, 1994). This study uses Schwartz's latest cultural dimensions (Schwartz, 2008) to enable empirical examination. These cultural dimensions are beginning to appear in finance literature (e.g., Siegel et al., 2011) and provide a more recent method of quantifying national culture.

Prior literature which investigates the relationship between culture and capital structure is limited to three papers: Sekely and Collins (1988), Gleason et al. (2000) and Chui et al. (2002). However, these papers only examine listed firms. Gleason et al. (2000) and Sekely and Collins (1988) both cluster countries together based on cultural similarities and differences. They report a connection between capital structure and culture but this method prevents the detection of specific cultural values which may affect capital structure. Chui et al. (2002) apply Schwartz's 1994 dimensions but the way they develop their hypotheses is different. Although they test individual dimensions, the hypothesis developed based on the Mastery dimensions also draws on characteristics from the Hierarchy dimension. Schwartz groups his seven dimensions into two opposite pairs of wider dimensions: Self-enhancement (Mastery and Hierarchy) vs. Self-transcendence (Egalitarian Commitment and Harmony) and Openness to Change (Conservatism vs. Intellectual and Affective Autonomy) and although Chui et al. (2002) tests Mastery and Conservatism individually, the characteristics represented are more

reflective of these wider cultural dimensions.

1.4 Contribution

The primary contribution of this study is the investigation of the relationship between SME capital structure and national culture which until now is unexplored. Although the relationship between culture and the capital structure of listed firms is investigated by prior literature (Sekely and Collins, 1988; Gleason et al., 2000; Chui et al., 2002), as unlisted SMEs are significantly differences to their listed counterparts, it cannot be taken for granted that the relationship between culture and capital structure is the same across all types of firms.

Schwartz's 2008 cultural dimensions are used to quantify culture in this study. These dimensions are the most recently developed method of quantifying culture and although they are used by Siegel et al. (2011) in a different context, their use in prior literature is minimal. This study develops three hypotheses which link risk and control in the context of SMEs to both capital structure and cultural dimensions and, uses individual cultural dimensions to test each hypothesis.

Even after conducting sensitivity tests which reflect methods most commonly used in the relevant literature, the findings are robust and contribute to prior knowledge by confirming that national culture impacts the capital structure through the manager's approach to risk and control issues within SMEs.

1.5 Data and Methods

An unbalanced panel data sample of almost 900,000 observations of unlisted SMEs from nine countries (China, Korea, Japan, Malaysia, New Zealand, the Philippines, Taiwan, Thailand and the UK) covering the period 2006 to 2010 is used in conjunction with hypotheses generated using the Mastery, Hierarchy and Embeddedness dimensions. The unusual data structure requires an atypical method of analysis. The data has large numbers of observations from some countries and few from others, creating false multicollinearity issues, particularly with the cultural dimensions. To solve this, a stratified re-sampling method is employed in conjunction with an OLS regression model, allowing the combined testing of all the three dimensions. The method of analysis contributes to the development of robust methods for analysing

capital structure with unusual panel data structures providing a method of empirical analysis where more traditional methods have failed.

1.6 Structure of the Thesis

The structure of the thesis is as follows: Chapter two provides the literature review. Chapter three discusses culture as a capital structure determinant and develops the hypotheses. Chapter 4 presents the methodology and describes the data. Chapter 5 discusses the empirical results and the thesis finishes with Chapter 6 which discusses conclusions drawn from the study.

Chapter 2 Literature Review

Capital structure decision making has been examined extensively in academic literature since the seminal paper of Modigliani and Miller (1958). This paper theorizes that under certain conditions, firm value is not affected by its leverage ratio. This indicates that higher leverage levels should not lead to reductions in firm value. What followed Modigliani and Miller (1958) was a vast quantity of literature trying to determine what does affect capital structure, including the development of capital structure theories and empirical studies investigating several aspects of capital structure. This chapter begins by discussing the capital structure theories (Section 2.1) and then continues by discussing the capital structure determinants which have been examined in prior literature (Section 2.2). Then, Section 2.3 discusses the specific characteristics of SMEs and how these relate to the capital structure determinants. Section 2.4 concludes the chapter.

2.1 Theories on Capital Structure

2.1.1 Agency Cost Theory

Agency costs arise when the owners or a firm are separated from managers. This separation means that there is asymmetric information[1] between owners and managers, which the manager can use to their own advantage. A manager's personal objectives can be different to shareholder objectives and managers may seek to satisfy their own personal objectives before considering shareholder wealth. It is the cost to the shareholder of these actions that is the agency cost. Theoretically, leverage can be used to reduce agency costs by placing a certain amount of pressure on managers to perform because they are required to meet interest payments. Grossman and Hart (1982) suggest this is particularly applicable if the costs of bankruptcy are high for the manager personally.

There are more ways that agency costs can be reduced. If the manager is given a number of shares in the firm as part of his remuneration, he becomes a shareholder and therefore is more likely to act in the best interests of the shareholders. Moh'd et al.

[1] Information related to a transaction which is not held by all the relevant parties (Sharp, 1990).

(1998) find evidence suggesting that managers reduce debt levels and the firm's default risk when their own wealth is tied to the firm. This supports Grossman and Hart (1982) and suggests managers will act in the best interests of the firm, when the firm's bankruptcy has a greater impact on their own personal finances.

In contrast, Jensen and Meckling (1976) predict that managers will increase the level of firm risk when the firm has debt. If successful, shareholders will receive greater dividends but if the project fails, the losses are partially absorbed by the debt provider.[2] Managing the firm in this way increases the probability of default and could have serious implications for the longevity of the firm.

Leyland (1998) develops a theoretical model based on several aspects of the firm to measure agency costs and concludes that agency costs may not be positively related to the optimal level of debt as would be expected based on Jensen and Meckling (1976) but there are several limitations to this model. One of the most significant being that the effects of asymmetric information are ignored which is a vital part of both the agency cost and the pecking order theory[3] so this model has limited applicability.

The interests of managers and shareholders can also differ over dividend payments when the firm has large cash reserves. A firm is committed to making interest payments on debt, whereas, the manager can choose to reduce future dividends and maintain cash within the firm (Jensen, 1986). If managers issue low dividends, the share price will often drop as a result, reducing the wealth of the shareholders (Jensen, 1986). The remaining internal cash is also at the disposal of the manager who may not use this cash in the most beneficial way to the shareholders.

Jensen (1986) suggests that, if the free cash within a firm is reduced, managers often reduce their personal benefits. Opler et al. (1999)[4] find support for this. They find that firms tend to accumulate more internal cash when managers are maximizing shareholder wealth, i.e. not using it for personal benefits. An increase in the manager's personal benefits could be seen as an agency cost so if these are reduced by leverage,

[2] This is particularly true in countries with weak creditor protection. Debt providers may not be able to take legal action to enforce their debt agreements or obtain funds (either the original capital or the interest payments) from the borrower.
[3] This is discussed in more detail in Section 2.1.3.
[4] Opler et al. (1999) investigated the determinants and implications of cash holding within U.S. listed firms using 85,000 observations from 1952-1994.

then this is a benefit of debt.

In countries with emerging capital markets, there is often wider separation between owners and managers of firms than in developed countries, which can result in particularly high agency costs. Harvey et al. (2004) find that in such circumstances, using leverage to reduce agency costs is important because it "mitigates the loss in firm value attributable to the separation of management control and ownership" (Harvey et al., 2004:5). Additionally, the authors find that the reduction in agency costs achieved by using leverage is more pronounced in firms with limited future growth opportunities or large amounts of fixed assets. This study concludes that if agency costs are extremely high, the use of leverage to reduce them is particularly important.

Alves and Ferreira (2011) consider the relationship between capital structure and the various types of legal systems. They find shareholder rights are negatively related to leverage[5] suggesting that if shareholders have the power to influence the board of directors by, for example, voting rights, the manager may be more inclined to act in the best interests of the shareholders although there does not appear to be any empirical evidence to support this theory.

2.1.2 The Trade-off Theory

Kraus and Litzenberger (1973) predict that every firm has an optimal level of debt. This optimal level of debt is determined by a "trade-off" between the costs and benefits of debt, assuming that a firm's assets and investment opportunities remain constant. Once the firm calculates its optimal level debt it aims to maintain this whilst in operation. This theory may not be as straightforward as this suggests. In practice, a firm's assets and investment opportunities may constantly be changing and, as a result, one would expect the optimal level of debt will fluctuate continuously. Maintaining an optimal level of debt, where the optimal level of debt is continually changing could be problematic, particularly as transaction costs incurred when altering a firm's debt levels could be high and may outweigh the benefits.

2.1.3 The Pecking Order Theory

Donaldson (1961) was the first to suggest the order in which firms prefer to finance

[5] The relationship between shareholder rights and leverage is discussed further in Section 2.2.2.1.

themselves. According to use internal finance first, and then debt and finally equity because, using finance in that order means that any investment is less costly to the existing shareholders. Myers (1984) refers to this as the pecking order theory and suggests that the firm's cost of capital increases with asymmetric information. Firms that finance themselves with internal finance find this is a more economical way of financing themselves compared to obtaining funds from external sources. Once this is exhausted, the pecking order theory suggests issuing debt, which is more expensive but, as Modigliani and Miller (1958) conclude, has a lesser impact on the existing shareholders. Issuing equity is the most expensive option to existing shareholders. When equity is issued, often the firm's share price decreases, reducing the value of existing shareholders equity.

Managers also have to consider that asymmetric information may lead to the newly issued shares being undervalued by financial markets and sold at a discount (Myers and Majluf, 1984). This means the majority of the benefits reaped by the firm would be bestowed on the newest shareholders. This further increases the cost of issuing equity to existing shareholders.

There have been several adaptations and expansions made on the pecking-order theory. The 'managerial over-optimism model' (Heaton, 2002) suggests that managers are over confident regarding their own firm and consider their stock constantly undervalued. This means they are particularly hesitant to issue equity and more likely to issue higher levels of debt to limit the impact on existing shareholders. The 'windows of opportunity' theory (Baker and Wurgler, 2002), also referred to as the market timing hypothesis, is a conditional expansion of the pecking order theory based on circumstances where either debt or equity is less costly and suggests the pecking-order should be altered accordingly. This theory suggests firms do not prefer debt or equity but simply opt for what is the most economical.

The trade-off theory and the pecking order theory are often considered as competing theories (Shyam-Sunder and Myers, 1999; Tong and Green, 2007) but there is increasing evidence they are applied simultaneously (Fama and French, 2002; Beattie et al., 2006; Lemmon and Zender, 2010). The pecking order theory itself, suggests there is a level of debt where the benefit of taking debt is outweighed by the risks and the firm

should issue equity instead. This point could relate to the optimal level of debt as it describes a scenario where the benefits of debt are met by the risks of bankruptcy. Combining the two theories, it would seem reasonable to suggest that a firm's optimal debt level is the highest level where the firm's future operations are not in jeopardy.

If these two theories are applied simultaneously, what affects the firm's optimal debt level? What factors affect the application of the pecking order theory? Several papers have tried to answer these questions by examining capital structure determinants (e.g., Rajan and Zingales, 1995; Booth et al., 2001; Deesomsak et al., 2004; De Jong et al., 2008). These papers, among others, consider several factors found to affect capital structure. The following discussion provides more detail regarding the capital structure determinants previous studies have considered and their results.[6]

2.2 Capital Structure Determinants

Prior literature divides capital structure determinants into two categories: firm level and institution level determinants. Firm level determinants (e.g., firm size, tangibility of assets) vary between each individual firm. Previous research examining these determinants is conducted on both individual countries and international samples, on both listed and private firms.

Institution level determinants (e.g., legal systems, development of financial markets) can also affect capital structure and are tested in numerous prior studies. The existing literature considers these variables but there are other potential capital structure determinants which have only been considered minimally. The investigation of national culture as a capital structure determinant, which is the focus of this study, is one of these minimally considered capital structure determinants.

The two subsections that follow (Sections 2.2.1 and 2.2.2) discuss the firm and institutional capital structure determinants focusing on empirical evidence from studies on listed and private firms separately. The effect of the same capital structure determinants on SMEs is discussed later in Section 2.3.

[6] These capital structure theories are generic in their nature and do not specifically refer to any particular type of firm. Section 2.3.2 discusses each of these theories in the context of SMEs.

Table 2.1 Prior Literature's Empirical findings regarding the capital structure determinants of listed firms

Capital Structure Determinant	Related Theories	+	-	Insignificant Findings
Size	Trade-off (+)	Rajan & Zingales (1995), Booth et al. (2001), Deesomsak et al. (2004), Bevan & Danbolt (2004), De Jong et al. (2008), Antoniou et al. (2008), Frank & Goyal (2009), Kayo & Kimura (2011)		
Tangibility	Trade-off (+)	Rajan & Zingales (1995), Bevan & Danbolt (2004), Margaritis & Psillaki (2007), De Jong et al. (2008), Frank & Goyal (2009), Antoniou et al. (2008), Kayo & Kimura (2011)	Booth et al. (2001)	Deesomsak et al. (2004)
Growth	Trade-off (-) Pecking Order (+)		Rajan & Zingales (1995), Booth et al. (2001), Antoniou et al. (2008), Frank & Goyal (2009), Kayo & Kimura (2011)	Deesomsak et al. (2004), De Jong et al. (2008)
Risk/Earnings Volatility	Trade-off (-)		Margaritis & Psillaki (2007)	Booth et al. (2001), Deesomsak et al. (2004), Antoniou et al. (2008), De Jong et al. (2008)
Profitability	Trade-off (+/-) Pecking Order (-)		Rajan & Zingales (1995), Booth et al. (2001), Deesomsak et al. (2004), Bevan & Danbolt (2004), Margaritis & Psillaki (2007), De Jong et al. (2008), Antoniou et al. (2008), Frank & Goyal (2009), Kayo & Kimura (2011)	
Liquidity	Pecking Order (-)		Deesomsak et al. (2004), De Jong et al. (2008)	

2.2.1 Firm Level Capital Structure Determinants

Table 2.1 shows the firm level variables along with a brief overview of how these variables are linked to the trade-off and the pecking order theories and the evidence found by prior literature. This table also presents a summary of empirical evidence from prior studies.

2.2.1.1 Size

If firms apply the trade-off theory, the expectation is that the optimal level of debt will change partially depending on the size of the firm. The risk of bankruptcy is usually higher in small firms. Larger firms are usually more diverse, have more stable cash flows and therefore are able to service higher levels of debt (De Jong et al., 2008) suggesting that the optimal level of debt is higher for larger firms because the bankruptcy risk associated with debt is lower.

Table 2.1 shows that prior empirical studies usually find a positive relationship between size and leverage. This is not standard across countries and some international studies find a negative relationship between size and leverage (De Jong et al., 2008; Deesomsak et al., 2004). Rajan and Zingales (1995) look at the capital structure determinants of listed firms in the G7 countries and suggest size could be an inverse proxy for default probability but they also say that the relationship between leverage and default probability does not completely explain the relationship between size and leverage. De Jong et al. (2008) conduct a study examining the capital structure determinants of listed firms in 42 countries. They support the argument of Rajan and Zingales (1995). Deesomsak et al. (2004) also conduct a cross-country study on the capital structure determinants of listed firms. They report that the only country in their sample of listed firms where there is not a positive relationship between size and debt (Singapore) provides governmental support for firms where they are provided capital in times of financial distress regardless of their size, thus explaining the abnormal relationship between size and capital structure in this country.

Zimmerman (1983) looks at taxes and firm size and finds that smaller firms pay lower tax rates. If tax rates are lower, the debt tax shelter is reduced and debt is less beneficial to the firm, reducing the benefits of debt for smaller firms and lowering their optimal

debt levels. This suggests tax rate and leverage are positively related and could partially explain why smaller firms tend to have lower levels of debt.

2.2.1.2 Growth

Firms with high growth potential usually require large amounts of capital to in order to fund growth. When external finance is required, firms can either issue debt or equity. In accordance with the pecking order theory, debt is preferable to equity but some firms may wish to avoid the required interest payments. Interest payments are an expense and absorb internal cash that firms with high growth prospects could use to fund growth elsewhere. This could lead to firms avoiding debt finance and restricting themselves to internal finance. If the firm's growth projects are successful then they will generate internal cash which could then be used to fund further growth.

Generally, any firm will experience an element of risk with any investment they choose. If the risk associated with growth projects is comparatively high and the trade-off theory is applied, the firm will have lower optimal level of debt, indicating that growth is negatively related to leverage. However, the pecking order theory suggests the opposite. Firms will take on debt to fund growth projects once available internal finance has been used.

Prior empirical literature often finds a negative relationship between growth and leverage for listed firms (see Table 2.1), implying application of the trade-off theory. However, this relationship is not consistent and results vary between countries and studies. This could be partially due to different proxies being used to measure growth. For example, some studies use change in assets (Chen, 2003), change in sales (Gianetti, 2003), market to book value ratios (De Jong et al., 2008; Antoniou et al., 2008) or capital expenditure (Harvey et al., 2004). There could also be an institutional effect on this relationship as a result of government policies. For example, governmental research and development grants may be available to some firms and reduce the need for debt.

Deesomsak et al. (2004) find a significant negative relationship between growth and leverage in Singapore and Thailand when considering listed firms in Malaysia, Australia, Singapore and Thailand. They suggest this could be because firms with high growth prospects for generating intangible assets prefer not to be constrained by debt

covenants or committed to servicing high debt levels and prefer to minimize their exposure. Deesomsak et al. (2004) also suggests firms with high leverage and growth opportunities may invest sub-optimally or accept higher risk projects in order to move the wealth of the firm from the debt holders back to the shareholders. If debt providers suspect that this will happen, this could increase the cost of borrowing so, in the first instance, these firms should choose to fund their operations using internal finance.

2.2.1.3 Earnings Volatility and Firm Risk

If a firm makes high risk investments then high earnings volatility is expected. Some high risk investments will generate losses and this could render the firm unable to meet debt servicing requirements and, in more extreme cases, its creditors could force it into bankruptcy. If the firm is a high risk firm and applies the trade-off theory, a low optimal level of debt is expected as the firm has a higher bankruptcy risk. The opposite is true if the pecking order theory is applied. A high risk firm may issue excess amounts of leverage to take advantage of business opportunities they would otherwise forgo.

Jensen and Meckling (1976) suggest that contrary to the above discussion it may be the firm's leverage that determines the level of risk. For example, firms with high levels of debt may take on higher risk projects. This places the debt holder's wealth at a higher level of risk than would ordinarily be associated with debt holdings. If debt holders expect this type of behaviour, this will increase the firm's cost of debt. However, this does not apply to all firms. The opposite may also be true. Firms with low levels of leverage may take on high risk projects on the premise that even if these projects fail, the firm is not likely to get into financial difficulty. Highly levered firms may opt for low risk projects to ensure that they can meet the servicing requirements on their debt.

Table 2.1 shows there is a sometimes a negative relationship between leverage and risk. This suggests firms which opt for high risk projects tend to have less debt, suggesting the trade-off theory is applied in this instance. However, the empirical results regarding risk and leverage are inconclusive. De Jong et al. (2008) find that in one third of the countries in their sample, leverage has a significant, negative relationship with risk but the remaining countries have mixed results for this variable. In some countries an insignificant relationship is found and in some countries there is a positive and significant relationship indicating an institutional factor affects this relationship.

There are few empirical studies that specifically consider earnings volatility as a proxy for risk. Titman and Wessels (1988) and Deesomsak et al. (2004) did not find a relationship between earnings volatility and leverage. Deesomsak et al. (2004) also suggest that firms may ignore earnings volatility when the costs of entering into liquidation are low.

2.2.1.4 Profitability

Theoretically, the profitability of a firm could affect capital structure positively or negatively depending on which capital structure theory is applied. If the pecking order theory is applied one would expect to find a negative relationship on the basis that if firms are highly profitable, then they are more likely to have sufficient internal finance and not require debt. If the trade-off theory is applied, the opposite is expected. If a firm is highly profitable, the firm will be able to meet required interest payments on higher debt levels, reducing bankruptcy risk and increasing the optimal level of debt.

Table 2.1 shows that the empirical studies on listed firms conclude that profitability is negatively correlated with leverage, suggesting that firms apply the pecking order theory before considering the optimal level of debt. Rajan and Zingales (1995) found that the strength of this relationship increased as firms got larger and suggest this is because larger firms issue less equity.

2.2.1.5 Tangibility

If a firm has a high proportion of tangible assets, it is expected that the firm will have higher debt levels. Firms with tangible assets could use them as collateral when obtaining finance. Using collateral can reduce the cost of debt, which in turn reduces the risk of debt. Application of the trade-off theory suggests a positive relationship between tangibility and leverage because if the risks associated with debt are reduced, the optimal debt level increases.

This is supported by the empirical evidence shown in Table 2.1. Lemmon et al. (2008) also suggest that firms use collateral to reduce their cost of debt because they find that firms' debt levels are positively related to the proportion of the debt that is secured by tangible assets.

2.2.1.6 Liquidity

The liquidity of the firm depends on the amount of internal cash available to deal with short term liabilities. If a firm is very liquid, it will probably have large cash reserves which are easily accessed and used, when required to meet current liabilities. If firms apply the pecking order theory, it is expected that highly liquid firms have less debt because they have more internal finance available to subsidise new investments. High levels of liquidity could suggest that firms maintain certain levels of cash to be able to fund investment quickly without having to resort to external finance which takes time.

Empirical evidence suggests that liquidity is negatively related to leverage but this relationship is rarely tested. De Jong et al. (2008) find a limited number of significant results for this variable and also note that the significant results tend to be in countries with more advanced economies. Deesomsak et al. (2004) find a stronger negative relationship between liquidity and leverage using the same ratio of current assets to current liabilities to measure liquidity. Deesomsak et al. (2004) also comment that these results indicate application of the pecking order theory.

2.2.1.7 Industry

Industry affects a number of firm factors which contribute towards capital structure. The most prominent of these is firm risk (Kayo and Kimura, 2011). As discussed above, firm risk is a major factor in both the cost of debt and calculating the optimal level of debt, and a significant proportion of firm risk is directly attributable to industry (both the economic condition of the industry and the industry itself). In extreme circumstances, the cost of leverage may be so high that it alters the pecking order theory by making equity less expensive than debt. This is expected in industries with high risk and growth potential. Industry and individual research and development projects could also attract grants and subsidies which may reduce a firm's requirement for external finance and lower debt ratios.

There is some discussion in prior literature over the importance of industry as a capital structure determinant. Myers (1984) suggests that industry may not be a significant capital structure determinant because any differences in capital structure are more likely to be caused by firm specific factors. Balakrishnan and Fox (1993) find evidence which

supports Myers (1984) and conclude that industry is not as important as firm specific factors. Prior studies which conclude industry is not an important capital structure determinant tend to be older studies, suggesting that improvements in methods and data have enabled more thorough testing.

Despite Myers (1984) and Balakrishnan and Fox (1993), more recent results (e.g., Kayo and Kimura, 2012) find that industry does play an important role in capital structure decisions. Angelo and Masulis (1980) develop a theoretical model based on optimal levels of debt and suggest the debt tax shield varies between industries. As this is an important benefit of debt, this could result in variations in the optimal level of debt dependent on industry.

Prior literature suggests managers have been known to use the industry leverage median as a benchmark for an optimal level of debt for their firm (Frank and Goyal, 2009) and this measure is often used to capture industry in empirical studies which provides further evidence that industry is a significant capital structure determinant. But, if managers do consider the industry median when choosing their capital structure, this would be one of several factors taken into consideration.

Mackay and Phillips (2005) look at the relative importance of industry to firm level financial decisions and find there is wide variation in debt levels within industries and although industry is considered, higher priority is given to other factors. So, although Mackay and Phillips (2005) acknowledge that industry does play a role in determining capital structure, they find some support for Myers (1984) and Balakrishnan and Fox (1993).

Not all empirical studies use industry medians to capture industry when looking at capital structure determinants but several do (e.g., Hovakimian et al., 2001; Flannery and Rangan, 2006 and Frank and Goyal, 2009). Some studies use industry dummy variables (e.g., Mackay and Phillips, 2005, De Jong et al., 2008, Antoniou et al., 2008) and some use more unusual ways of determining industry classifications, (e.g., Kayo and Kimura, 2011, use a model based on the levels of dynamism and munificence of the industry) but regardless of the method used, more recent empirical results generally find that industry does play a significant role in determining capital structure.

2.2.1.8 Firm Level Capital Structure Determinants and Private Firms

Private firms can be any size but they are not listed. The relationship between firm level capital structure determinants and capital structure appears to be very similar in these firms, although, there is a limited amount of empirical evidence. Brav (2009) looks at the capital structure and financing of both public private firms in the UK and Goyal et al. (2011) look at public and private companies from a sample including observations from eighteen European countries. These studies focus on firm level capital structure determinants and find similar results to those described above, but there are some differences.

The positive relationship found between tangibility and leverage in listed firms is stronger in private firms suggesting that private firms use collateral to reduce their cost of debt, because the option of turning to financial markets is unavailable. Once firms are able to use financial markets, the cost of debt becomes more competitive and the benefit of using collateral becomes redundant.

Brav (2009) and Goyal et al. (2011) both find the relationship between firm size and leverage is weaker in private firms than for listed firms. Goyal et al. (2011) suggest this is caused by high transaction costs incurred by private firms. This indicates that private firms are less likely to strictly apply the trade-off theory and that the capital structure determinants which are linked with the trade-off theory will have weaker relationships with leverage in private firms because these firms are less able to maintain an optimal level of debt. Goyal et al. (2011) argue that the strong negative relationship they find between leverage and profitability indicates that private firms are more likely to apply the pecking order theory.

Private firms with high growth opportunities could have particularly high levels of debt because these firms are likely to require large amounts of finance and they cannot off-set increases in leverage by issuing equity. Although there tends to be a negative relationship between growth and leverage in listed firms, the opposite is expected in private firms. Goyal et al. (2011) find that this is true. None of the available studies on the capital structure determinants of private firms consider liquidity or risk as capital structure determinants.

Despite the relationships between firm level determinants and capital structure, De Jong et al. (2008), Deesomsak et al. (2004) and Antoniou et al. (2008) all suggest that although firm level factors play an important role in capital structure, these factors do not fully account for capital structure choices. This tells us that there must also be institution level capital structure determinants contributing to the capital structure decision.

2.2.2 Institutional Capital Structure Determinants

Institutional capital structure determinants affect all firms from the same country in the same way. Institutional determinants include examples such as legal systems, financial markets, taxation and the macro-economic conditions of a country. These variables have the same response for all the firms within any given country. In prior literature, there has been some discussion about the importance of institutional variables.

Rajan and Zingales (1995) conclude that, overall, firm leverage is fairly similar across international boundaries. However, they also say that firms in Japan and Continental Europe generally have higher debt levels than those in Anglo-American countries but the international differences in capital structure are small. However, the countries in their study are similar in terms of their economic development. The small differences found by Rajan and Zingales (1995) may be exacerbated in samples with greater international differences. Booth et al. (2001) look at listed firms from developing countries and compare the capital structure of these firms with the sample Rajan and Zingales (1995) use. They find evidence that there is little variation in capital structure between countries, indicating that institutional factors have a limited effect on capital structure.

However, Booth et al. (2001) make the assumption that the effect of firm specific variables is equal in all countries when testing institutional variables. De Jong et al. (2008) and Deesomsak et al. (2004) show this is not true. De Jong et al. (2008) suggest that institutional factors could explain why the relationships between firm level capital structure determinants vary across countries suggesting that institutional factors can have an indirect effect on capital structure. Booth et al. (2001), among others, ignores this indirect effect and the differing relationships between capital structure and firm level capital structure determinants across countries which may give the impression that

institutional variables are less significant than they actually are.

More recent studies on listed firms (e.g., Deesomsak et al., 2004; De Jong et al., 2008; Antoniou et al., 2008), conclude that institutional variables play an important role in capital structure. Antoniou et al. (2008: 87) conclude by saying "the capital structure decision of the firm is not only the product of its own characteristics, but is also the result of the environment and traditions in which it operates".

However, there are instances where their effects may not appear significant depending on the variation between countries in the sample. For example, if the countries in a particular sample are all in the EU, they are likely to have similar financial and legal characteristics. A more global approach is required to obtain a more accurate representation of the effect of institutional factors. The following discussion comments on each institutional capital structure determinant and its effects.

2.2.2.1 Legal Systems and Enforcement

The effect of a country's legal system on capital structure is two-fold. First, the type and development of a legal system can affect capital structure and secondly, the enforcement of the legal system can also affect capital structure.

There are two main types of legal systems: common law and civil law. A common law system is developed through precedence in the courts and civil law relies on statutes predetermined by governmental bodies. Bancel and Mittoo (2004) look at capital structure determinants in European firms and find evidence the type of legal system does have an impact on capital structure and the development of a country's legal system can play a major role in capital structure decision making.

Alves and Ferreira (2011) examine how legal systems affect capital structure using a sample of listed firms from 30 countries. They also find a connection between legal systems and leverage and report a negative relationship between shareholder rights and leverage. If shareholder rights are greater, then investors feel more protected which could reduce the cost of equity capital to the firm.

Firms in countries with greater creditor protection and enforcement of legal systems may take on less debt because their creditors have greater rights to press them into

bankruptcy if they do not meet required interest payments. Taking on debt in these environments increases bankruptcy risk, lowering the optimal level of debt. De Jong et al. (2008) find evidence of a negative relationship between leverage and creditor right protection supporting this, but the empirical evidence is inconclusive. Deesomsak et al. (2004) unlike De Jong et al. (2008) find a positive relationship between creditor right protection and leverage. They suggest that creditors may be more willing to lend money if they have sufficient protection, should the borrower get into financial difficulty. Bae and Goyal (2009) investigate the relationship between legal protection and the size, maturity and interest rate spread on bank loans in 48 countries and find that in countries with weaker creditor protection, banks reduce loan amounts, shorten loan maturities and increase interest rate spreads to protect themselves against defaulters. This would suggest a positive relationship between enforcement and leverage which agrees with the results Deesomsak et al. (2004) find.

Based on this, one would expect a greater impact on private firms. If creditor right protection is weak then debt financing should be more expensive. Due to greater asymmetric information, private firms generally pay a premium on debt financing regardless, so once this is incorporated into the cost of debt, debt is expected to be particularly expensive. Goyal et al. (2011) finds that private firms, in these circumstances, are dependent on professional relationships with banks and other financial institutions because they can often help reduce the cost of debt.

Alves and Ferreira (2011) find leverage and corruption are positively related. They suggest that this may be because potential shareholders are not comfortable investing in firms in countries where the relationships between firms, government agencies and justice is not clearly defined which leaves firms no other option but to issue debt.

2.2.2.2 Financial Systems

Although leverage is partially determined by the manager's capital structure choice, it is also partially determined by the availability and cost of finance to the firm. The financial systems within a country include stock and bond markets, and banks. Listed firms are able to obtain external finance from both financial markets and banks, whereas private firms are usually limited to borrowing from banks.

Bond Markets: It would be expected that if the bond market in a country is well developed then the cost of debt will be more competitive. This should lower the cost of debt, resulting in lower interest payments, thus lowering the level of risk to the firm. If the firm applies the trade-off theory, the optimal level of debt for firms with access to developed bond markets would be higher. Where the pecking order theory is applied a positive relationship is also expected. If debt is more readily available and more competitively priced, firms may be willing to issue more debt when external finance is required.

The empirical evidence generally supports the theory. De Jong et al. (2008) and Faulkender and Petersen (2006) both find firms with access to developed bond markets tend to have higher debt ratios. Contrary to these findings, Kayo and Kimura (2011) report a negative relationship. De Jong et al. (2008) use a two stage process accounting for variations in the relationships between firm level variables across countries. However, this method gives all of the observations from the same country the same figure for the dependent variable when testing institutional determinants which could limit the predictive ability of the model.

Stock Markets: Based on capital structure theory, a highly developed, easily accessible stock market would have a negative relationship with firm debt levels. If equity finance is easily accessible and more competitively priced, firms may prefer to issue equity which could alter the pecking order. If a firm issues equity instead of debt, should the firm enter financial difficulties, it can reduce dividend payments to suit its financial position. This may be particularly applicable to firms with high growth prospects who prefer not to be constrained by having large amounts of interest payment requirements. Generally, the empirical evidence for listed firms supports the theory (Deesomsak et al. 2004; Kayo and Kimura, 2011). However, De Jong et al. (2008) find insignificant results suggesting that further investigation may be required.

On reflection, the findings of prior literature are not as straightforward as they might suggest from a practical perspective. Generally, if there is a developed bond market then it is highly likely there will also be an equivalent stock market and strong creditor protection. If this is the case then the positive and negative relationships between these variables and leverage contradict each other which could identify why the empirical

evidence is inconclusive.

Generally, a country is either bank-orientated or capital market-orientated. This separates countries into two categories; one where lending is primarily facilitated by financial markets and another, where banks are the main source of finance (Beck and Levine, 2002; Antoniou et al., 2008). The ownership structure of firms is often more concentrated in bank-orientated economies because firms are unable to, or prefer not to raise finance using financial markets. The opposite is also true. Firms in capital market orientated economies usually have a less concentrated ownership structure because they are able to easily issue equity or debt using financial markets (Antoniou et al., 2008).

The discussion in Section 2.1.1 suggests that debt can be used to reduce agency costs to shareholders. It is more likely that agency costs will be incurred if the firm has a less concentrated ownership structure with many detached shareholders (Jensen and Meckling, 1976). As debt can be used to reduce agency costs, this suggests that firms in a country where there is a capital market-orientated economy should have higher debt levels, despite the idea that a capital market-orientated economy would suggest better developed financial markets and increased equity finance use. If a firm operates in a bank-orientated economy, then a more concentrated ownership structure would be expected. When the ownership structure of the firm is concentrated, there is a higher possibility that the manager will be a major shareholder. Moh'd et al. (1998) found that managers reduce the debt levels in their firms when their own personal wealth is tied to the firm thus indicating that firms in bank-orientated economies are more likely to have lower levels of debt than those in capital market-orientated economies. This connection between ownership structures, the agency theory and debt levels, provides an alternative explanation to why empirical evidence is inconclusive.

Antoniou et al. (2008) test for differences in capital structure between bank-orientated and capital market-orientated institutions and find that there are significant differences. The problem with this study is that differing sources of finance may have acted as a proxy for something else, and although differences between these two types of economies are found, it may not be this which is making the difference. It could be the ownership structure of the firm.

2.2.2.3 Tax systems

Most industrialised institutions have what Swoboda and Zechner (1995) describe as a classical tax system where interest payments are tax deductible at the corporate level. This debt tax shelter is an important benefit of debt and benefits of debt play a major role in determining the optimal debt level described by the trade-off theory. The greater these benefits are, the more likely the firm is to have high debt levels. Graham (2000) finds that the tax shelter can be worth approximately 9% of the company value so being able to maximise the debt tax shelter could significantly impact the value of the firm.

Corporate taxation systems vary between countries. So too will the value of the debt tax shield. This means that firms in different countries will have different optimal levels of debt. Graham (2003) finds that firms often act in a conservative manner with regards to debt and do not fully employ the available tax shelter. This could indicate that they prefer to minimise their bankruptcy risk or they make use of other, non-debt tax shields which also vary across countries. Blouin et al. (2010) reinvestigate the evidence presented by Graham (2003) and find that the marginal benefit of debt decreases as the amount of debt increases and in fact, the benefits of increasing debt levels are much lower than prior literature suggests. They conclude that the majority of firms have tax-efficient capital structures.

Although the tax system itself is specific to each institution, how the manager makes use of the tax system is firm specific. Graham (2003) reviews tax related research and comments that prior literature usually finds that tax does effect capital structure decisions but the actual effect on capital structure is minimal. Bartholdy and Mateus (2011) look at debt and taxes of private firms and to an extent, agree but they also find that although small, it is significant so should not be ignored.

2.2.2.4 Macroeconomic Conditions

The economic conditions of a country change over time depending on market cycles. When an economy is expanding, firms are more likely to be able to expand, unemployment will decrease and the general population will have increased spending power. When spending is high, this increases turnover in firms, resulting in higher profit levels which can either be distributed to the shareholders or reinvested into other

projects. If firms have high profit levels, it would be expected that they will have high levels of internal finance. The application of the pecking order theory suggests firms will use internal finance primarily thus, suggesting firms have lower debt levels. When the economy is shrinking, firms are less likely to have large amounts of internal cash. Their turnover will likely have decreased, and debt often becomes more expensive due to financial market conditions. This could alter the pecking order, making equity less expensive than debt, reflecting the windows of opportunity theory (Baker and Wurgler, 2002).

Firms that apply the trade-off theory may respond differently to macroeconomic conditions than those applying the pecking order theory. During a period of economic expansion, debt is often more competitively priced and more readily available. If firms are more profitable and debt is cheaper due to market conditions, it would be reasonable to predict that firms may take on more debt because the risk associated with it is reduced if interest payments are lower.

Korajczyk and Levy (2003) conduct a study on the capital structure of listed firms and macroeconomic conditions and find that firms will issue debt or equity depending on market conditions providing empirical evidence supporting the windows of opportunity theory. Hackbarth et al. (2006) develop a theoretical model on capital structure, credit risk and macroeconomic conditions which suggests that firms will generally be able to borrow more in a 'boom' period. They go on to say that a firm's debt capacity can be as much as 40% larger than when an economy is shrinking.

Levy and Hennessy (2007) develop and test a model which explains financing throughout the business cycle, but to reduce the effect of agency costs, they stipulate that the manager must be a major shareholder. They find that firms tend to increase their debt levels when an economy is expanding but economic contractions have a less pronounced effect in terms of lowering the debt levels. They also find that leverage ratios for more constrained firms tend to remain flatter throughout the business cycle.

2.3 Small and Medium Enterprises

SMEs are the focus of this study. This subsection discusses SMEs, their characteristics and their connection to the capital structure theories and determinants discussed above.

The effect of culture on the capital structure of SMEs is currently unexplored. It cannot be assumed that empirical tests on SMEs will provide the same results as those conducted on listed firms as there are important differences between the two types of firms. Hall et al. (2004:712) say that "SMEs will demonstrate greater inter-country variability than large firms" and suggest this is because SMEs are unable to access financial markets and are not subject to the same level of international scrutiny. Welsh and White (1981), state that small businesses are not simply, small, big businesses. SMEs have different organisational structures to listed firms and are often managed by a major shareholder indicating that the capital structure determinants described above may affect capital structure differently. If this is the case then national culture may also affect capital structure differently. SMEs can be divided into three subsamples; micro, small and medium and due to the large sample size, the relationship between culture and capital structure in these subsamples is examined separately.

The majority of prior capital structure literature focuses on listed firms. This is largely due to the vast amount of information available on these firms. Literature which focuses on SMEs is becoming more extensive as data availability improves. Nevertheless, Psillaki and Daskalakis (2009: 319) describe SMEs as "important engines of economic growth". SMEs play a vital role in any economy and make up the majority of firms in any country. Van Caneghem and Van Campenhout (2012) and Sogorb-Mira (2005) both state that SMEs make up approximately 99% of firms[7] and are responsible for approximately two-thirds of the total turnover and employment in Europe. Although the majority of the countries used in this study are outside Europe, there is no reason to suggest that these proportions do not apply in other parts of the world.

2.3.1 Characteristics of SMEs

SMEs are defined by several factors. One of the most significant differences is that the manager is often a major shareholder. Ang (1991) says owners have undiversified portfolios and the majority of their personal wealth is tied to the SME. SMEs are often firms where an entrepreneur has started their own business. Over time this business has grown or at least continued to operate. Additionally, it may have been passed down through generations within the same family.

[7] Ghobadian and Gallear (1996) state that within SMEs, Micro firms make up approximately 91.4% of SMEs.

Cassar and Holmes (2003) look at Australian SMEs. They discuss the ability of SME managers to successfully manage their firms. They suggest that managers of smaller businesses may have constrained management skills, limited knowledge of the available sources of finance and operate "without access to appropriate professional advice" (Cassar and Holmes, 2003:124). This could be a particularly important issue in family firms as they are more likely to incur intergenerational transfer problems (Ang, 1992) where the succeeding manager inherits the role, often regardless of their own personal experience and objectives. Fuller-Love (2006) conduct a literature review exploring managerial development within SMEs and comment that managers of small firms are more likely to be influenced by their education and background and not necessarily make the most appropriate managerial choices. SMEs generally have a short life expectancy (Ang, 1992) and if the manager's knowledge and skill set are limited, this could play a major role in determining a firm's life expectancy.

In terms of their business structure, SMEs are normally very straightforward and have few rules and regulations that they must comply with (Ghobadian and Gallear, 1996). A more straightforward business structure also allows managers to be flexible and make operational changes when required without having to be held accountable to shareholders, enabling them to respond to marketplace demands quicker and more efficiently.

There is less separation between managers, customers and low level employees (Torres and Julien, 2005), allowing for better communication between the three groups. This means that SMEs can tailor their services to meet the needs of specific clients allowing them to develop their products or services in a very specific way (Torres and Julien, 2005; Jordan et al., 1998). This results in large heterogeneity within SMEs and can enable them to specialise in areas where larger firms may not be able to which could result in them having significant proportions of their specialised markets (Stanworth and Curran, 1976). Due to their close proximity, SMEs, their clients and suppliers are often able to develop strong relationships which can be largely beneficial to the firm. Kinnie et al. (1999) say that the stability of an SME's profit can often be largely dependent on these relationships. In the event of these relationships disintegrating, this could significantly, adversely affect the firm's future profitability and operations. Particularly, because on average, SMEs have lower profit margins because they operate

in more competitive marketplaces (Van Caneghem and Van Campenhout, 2012).

This subsection demonstrates that there are important differences between SMEs and listed firms. This could indicate their capital structure policies are different to those of larger firms. The capital structure theories (discussed in Section 2.1) may not apply or may apply differently to SMEs, and the capital structure determinants (discussed in Section 2.2) may not have the same effect on these firms. The following subsections discuss the capital structure theories and determinants, and their effects on SME capital structure.

2.3.2 The Application of the Capital Structure Theories to SMEs

2.3.2.1 The Agency Cost Theory

SMEs are often managed by a major shareholder so it is expected that they have lower agency costs. Debt can be used to reduce agency costs (Jensen and Meckling, 1976), but this is not necessary to the same extent in most SMEs because agency costs are already low. Moh'd et al. (1998) finds support for this in that managers whose own wealth is tied to the firm tend to have lower debt levels. It is also true that managers who will suffer personally if the firm gets into financial difficulties are likely to perform better (Grossman and Hart, 1982). It is expected that if the manager's personal wealth is strongly connected to the success of the firm, particularly as the managers of SMEs often have undiversified portfolios (Ang, 1991), this would also result in reduced agency costs. A reduction in agency costs is a significant benefit of debt and if the benefits of debt are reduced, so too would the optimal level of debt.

SMEs may suffer from principal agency costs. These arise when the manager is a major shareholder and operates the firm in a way that reflects this which can be at the expense of minority shareholders. In contrast to the discussion above Ang (1992) argues that SMEs may suffer from greater levels of agency costs as the manager may forgo investment opportunities to avoid issuing debt, despite the potential for the investment opportunity to be beneficial. Ang (1992) also suggests the reason why managers avoid debt may be to ensure they retain complete control of their firm. Boyd and Gumpert (1983) interview SME owner/managers and find that one of the most important benefits to the manager, of having his own firm is "freedom in decision making". This could

indicate disregard for the minority shareholders' investment. If this is the case, agency costs to other shareholders, excluding the manager could be high.

2.3.2.2 The Pecking Order Theory

The pecking order theory predicts that the cost of capital increases with asymmetric information (Donaldson, 1961). SMEs tend to be more opaque than listed firms because listed firms are required to produce publically available annual reports including their audited financial statements. SMEs are not required to meet the same reporting standards and are often much younger than listed firms, therefore lacking in reputation and history.

These differences render SMEs more opaque than listed firms, thus they tend to suffer from higher levels of asymmetric information (Van Caneghem and Van Campenhout, 2012). When an external finance provider is evaluating a firm as a potential investment and there are high levels of asymmetric information, the finance provider may expect a higher return as the risk, from their perspective, is greater. Scherr et al. (1993) find that banks often see SMEs as more risky to lend to than listed firms and this could be partially attributable to asymmetric information levels. As a result, any debt issued to SMEs may be more expensive than debt available to listed firms.

Nguyen and Ramachandran (2006) consider Vietnamese SMEs to examine SME capital structure in a transitional economy. They consider the importance of relationships with banks and find that if there is a strong relationship between a bank and an SME, the SME can usually borrow larger amounts. A strong relationship between a bank and an SME suggests there will be less asymmetric information and a greater level of trust, enabling the bank to lend higher amounts and providing further evidence that asymmetric information plays a significant role in SME capital structure.

Potential equity investors may also expect an above normal rate of return if they perceive a higher level of risk. As there is a limited amount of information available regarding the firm's financial positions, the level of risk potential investors perceive will be comparatively high. This could result in the initial issuance being undervalued, making this a particularly expensive option for existing shareholders.

Based on the higher cost of debt and the even higher cost of equity, it would seem more

important for SMEs to follow the pecking order theory. Both Frank and Goyal (2003) and Fama and French (2002) conclude that if the costs of asymmetric information are high then it is particularly important that firms follow the pecking order theory to minimize the cost of capital.

2.3.2.3 The Trade-off Theory

The trade-off theory suggests an optimal level of debt calculated by "trading off" the risks and benefits of debt (Kraus and Litzenberger, 1973). The most significant difference between listed firms and SMEs where the trade-off theory is concerned is transaction costs. Listed firms have in the past issued or repurchased debt or equity to alter their capital structure without having any immediate need for capital (Frank and Goyal, 2003), but for SMEs, the transactions costs involved with altering their capital structure are significantly higher because they do not have access to financial markets (Hall et al., 2004). These costs could outweigh the benefits of maintaining an optimal level of debt.

This could indicate that SMEs find strictly applying the trade-off theory futile to them. However, they will still have an optimal debt level, so although it would not be expected they would alter their capital structure solely to meet their optimal debt level, Lopez-Gracia and Sogorb-Mira (2008) find that SMEs, when they require external finance, choose this finance in a way that allows them to slowly work towards achieving their optimal debt level, even if this takes long periods of time.

Based on the transaction costs associated with altering SME capital structure and the high levels of asymmetric information between SMEs and finance providers, the pecking order theory appears to fit these firms better. However, it is also expected that, when SMEs need to obtain external finance, they will use this as an opportunity to move towards their optimal debt level.

2.3.3 SME Capital Structure and Firm Specific Capital Structure Determinants

The majority of the firm specific variables discussed in Section 2.2.1 are also proven to affect the capital structure of SMEs. The exception to this is liquidity which does not appear to have been empirically tested as a capital structure determinant of SMEs. A summary of prior literature's findings is shown in Table 2.2. Generally, the

relationships between the firm level determinants and the capital structure of SMEs are similar to those of listed firms. However, as SMEs are more likely to apply the pecking order theory (Lopez-Gracia and Sogorb-Mira, 2008), stronger relationships are expected between the capital structure determinants linked to the pecking order theory and leverage than those connected to the trade-off theory. This is supported by the evidence shown in Table 2.2. When there is a theoretical connection between both the trade-off theory and the pecking order theory and a capital structure determinant, the empirical literature finds evidence that suggests SMEs follow the pecking order theory.

The most significant difference between listed firms and SMEs in terms of the firm level capital structure determinants is growth. In listed firms, a negative relationship is reported but in SMEs a positive relationship is reported in most studies. A positive relationship indicates application of the pecking order theory, suggesting that firms borrow to finance projects that will enable the firm to grow.

Michaelas et al. (1999) say that growth often creates a need for resources which may be unsatisfied by internal finance. SMEs, particularly, may not have sufficient internal finance to support growth projects (Carpenter and Petersen, 2002). This leaves them no option but to seek external finance. Evans (1987) shows that small firms often have higher growth rates than large firms so despite their financing restrictions, SMEs are still able to increase their size.

Risk and growth can be closely linked in the sense that high growth projects are often high risk. If growth is positively related to leverage, it would be reasonable to expect that risk would also be positively related to leverage. However, Table 2.2 shows mixed results for this relationship. This may be because each study uses data from different countries and unaccounted for institutional factors may affect this relationship or it may be because this capital structure determinant is linked to the trade-off theory which is not strictly applied by SMEs.

Table 2.2 Prior literature's empirical findings regarding the capital structure determinants of Small and Medium Enterprises

Capital Structure Determinant	Related Theories	+	-	Insignificant Findings
Size	Trade-off (+)	Michaelas et al. (1998), Cassar & Holmes (2003), Sogorb-Mira (2005), Nguyen & Ramachandran (2006), Daskalakis & Psillaki (2008), Psillaki & Daskalakis (2009), Degryse et al. (2012), Psillaki & Daskalakis (2009)	Van Caneghem & Van Campenhout (2012)	
Tangibility	Trade-off (+)	Van Caneghem & Van Campenhout (2012), Degryse et al. (2012), Sogorb-Mira (2005), Psillaki & Daskalakis (2009), Daskalakis & Psillaki (2008), Michaelas et al. (1998)	Cassar & Holmes (2003), Nguyen & Ramachandran (2006)	
Growth	Trade-off (-) Pecking Order (+)	Van Caneghem & Van Campenhout (2012), Degryse et al. (2012), Sogorb-Mira (2005), Daskalakis & Psillaki (2008), Michaelas et al. (1998), Cassar & Holmes (2003)		Nguyen & Ramachandran (2006)
Risk	Trade-off (-)	Michaelas et al. (1998), Nguyen & Ramachandran (2006)	Psillaki & Daskalakis (2009)	Cassar & Holmes (2003)
Profitability	Trade-off (+) Pecking Order (-)		Van Caneghem & Van Campenhout (2012), Degryse et al. (2012), Sogorb-Mira (2005), Psillaki & Daskalakis (2009), Daskalakis & Psillaki (2008), Michaelas et al. (1998), Nguyen & Ramachandran (2006), Cassar & Holmes (2003)	
Age	Trade-off (+)		Van Caneghem & Van Campenhout (2012), Michaelas et al. (1998), Chittenden et al. (1996), Romano et al. (2000), Hall et al (2004)	

The relationship between tangibility and leverage for SMEs is positive, but this relationship is stronger in SMEs. As SMEs do not generally have access to financial markets and suffer from increased levels of asymmetric information, debt is often more expensive. Van Caneghem and Van Campenhout (2012) find results that suggest collateral is vital for mitigating agency problems between the firm and the lender, thus reducing the lender's risk and the firm's cost of debt. Sogorb-Mira (2005), Chittenden et al. (1996) and Hall et al. (2000) all comment that the positive relationship between tangibility and leverage is much stronger when only long term debt is included in any empirical analysis, indicating that tangible assets are used as collateral when firms borrow over long time periods. This also indicates that short term debt is less likely to be secured and therefore, more expensive.

De Jong et al. (2008) find that the relationship between leverage and tangibility diminishes when financial markets come into play, suggesting that financial markets make the cost of debt more competitive. This option is not available to unlisted SMEs so to reduce their cost of debt they have no alternative but to use collateral.

The relationship between firm size and leverage is usually positive. However, Van Caneghem and Van Campenhout (2012) find a negative relationship. This could be related to the size of SMEs within the sample. A positive relationship is expected in small and medium firms but in micro firms this may not be the case. Micro firms in their initial periods after commencing trading may have to borrow to commence trading and develop their business to the point where it has established itself and become profitable, at which point it would be reasonable to expect that they will start to repay their debt. If this is the case, then a negative relationship between size and leverage is expected for micro firms. Based on the descriptive statistics provided by Van Caneghem and Van Campenhout (2012), the firms in their sample appear to be micro SMEs so this could explain why their results differ from other studies.

Table 2.2 shows that the relationship between leverage and profitability is negative as would be expected if SMEs apply the pecking order theory. Degryse et al. (2012) looks at the impact of firm and industry characteristics on the capital structure of Dutch SMEs and find that SMEs which are highly profitable use their profits to reduce debt. They also find that SMEs are more likely to repay short term debt than long term debt and

suggest this is because short term debt is more expensive and can be amortized more easily.

As previously discussed, industry is a significant influence on capital structure. However, Jordan et al. (1998) find evidence that industry is not an important factor in SME capital structure. They argue that SMEs are often so specialized and operate in niche markets that wider industry influences on capital structure are limited. Hall et al. (2000) and Degryse et al. (2012) find that despite there being great heterogeneity within industries, industry does play an important role in SME capital structure. Degryse et al. (2012) also comment that although industry is significant, the intra-industry variation indicates that many other factors are also important.

Additionally, the age of the firm is tested as an SME capital structure determinant. This variable is not considered in studies on listed firms. However, it could be linked to both the trade-off and the pecking order theories. If the firm is older it may be more established and have less information asymmetries so its cost of debt is lower. When the cost of debt is lower, the trade-off theory suggests the optimal debt level is higher. However, the empirical evidence on SMEs has conclusively finds a negative relationship (see Table 2.2). This indicates that young firms are not able to facilitate growth without leverage so in a firm's early years, it will borrow in order to establish itself, suggesting the application of the pecking order theory. Once the firm matures, it will then start to reduce its debt levels. The relationship between age and capital structure could be similar to that between size and capital structure as very small firms borrow in their initial periods (when they are very small) and then they repay the debt as they become more mature (increase in size). Then once firms become large (more like the size of a listed firm) they borrow more in accordance with the trade-off theory and increase debt levels.

When considering the firm level capital structure determinants and the capital structure theories for SMEs, the empirical results indicate the application of the pecking order theory with greater consistency than the trade-off theory. This is in line with expectations when taking into consideration the high levels of asymmetric information which probably increases the cost of external finance. Additionally, as the transaction costs associated with altering a firm's capital structure are high then the application of

the trade-off theory is limited because the cost of maintaining an optimal debt level will outweigh the benefits. Lopez-Gracia and Sogorb-Mira (2008) find evidence to support this and say that despite finding evidence that firms apply a funding source hierarchy, they also find that greater trust is placed in firms that aim to reach a target level of leverage.

2.3.4 SME Capital Structure and Institutional Capital Structure Determinants

This subsection changes the focus of the discussion from firm level variables to institutional variables. Like the firm level capital structure determinants, the effect of the institutional determinants is expected to be similar to that of listed firms although some differences are expected. However, both cross-country studies and prior literature which investigates the effect of institutional factors on SME capital structure are scare.

Hall et al. (2004) look at the capital structure of SMEs from eight European countries. Although, they do not empirically examine institutional capital structure differences, they comment that the differences found in leverage ratios and variation in the effect of the determinants between countries indicates that institutional factors play a role. However, they do not investigate which institutional factors or what impact they have.

Daskalakis and Psillaki (2008) and Psillaki and Daskalakis, (2009) both consider the impact of country and firm factors on SME capital structure. They both conclude that firm level capital structure determinants play a more important role in determining SME capital structure than institutional factors. However, these two studies only consider European countries. Daskalakis and Psillaki (2008) compare the capital structure of SMEs in only two countries: France and Greece. This severely limits the scope of the study. They say that both countries have similar legal systems and are both subject to trends in the regulation of their banking systems as part of EU law. Psillaki and Daskalakis (2009) look at a slightly wider sample from four European countries (France, Greece, Italy and Portugal) but these countries are also subject to similarities, again limiting the scope of the study.

Joeveer (2012) evaluates the effect of institutional variables on small firms' capital structure, comparing listed firms against unlisted firms using a sample of ten western European firms. Joeveer (2012) finds a positive relationship between macroeconomic

conditions and leverage suggesting firms borrow more during periods of economic growth. Michaelas et al. (1999) only use data from the UK but considers macroeconomic conditions, finding long term debt is positively related to changes in economic growth. However, during periods of recession, they also find that SMEs are more likely to have higher levels of short term debt which subside as economic conditions improve.

Joeveer (2012) also looks at institution level SME capital structure determinants and looks at the effect of corruption, shareholder and creditor right protection. This paper finds that creditor right protection is negatively related to leverage suggesting that when creditors have greater rights over the SME, SMEs are less likely to borrow. They also find shareholder right protection is negatively related to leverage suggesting that the manager of an SME will borrow less, in order to protect the wealth of the shareholders and prevent them taking any action against the manager. Finally, the corruption index was found to be positively related to leverage, suggesting that SMEs feel more comfortable borrowing when there is less evidence of corruption.

Further to the capital structure determinants more traditionally tested, Romano et al. (2000) conduct a survey on SMEs in Australia, more specifically, family firms and how they finance themselves. They find evidence that family control and business objectives are closely associated with debt. They also suggest that behavioural factors (e.g., the need for an owner to be in control) can also effect capital structure decisions. Michaelas et al. (1998) argue that capital structure is a result of internal and external factors combined with managerial behaviour and Nguyen and Ramachandran (2006) find evidence that manager behaviour can be important in obtaining short term finance.

This indicates that the capital structure of an SME is not only the result of firm and institutional factors, but is also influenced by the manager's behaviour, the business objectives they have developed and their determination to achieve their business objectives. National culture plays an important role in collective behaviour. It can determine the importance of a range of characteristics and values which can result in a variety of different actions, both in organisations and an individual's daily life.

2.4 Summary and Conclusions

This chapter begins by discussing the capital structure theories: the agency theory, the trade-off theory and the pecking order theory. Based on this discussion, prior literature suggests that firms often apply aspects of both the trade-off and the pecking order theories simultaneously. Following on from this, prior studies which have empirically tested several capital structure determinants are then discussed. The most commonly tested capital structure determinants are firm size and tangibility which are both positively related with debt and firm growth, firm risk and profitability, which are usually found to be negatively related with debt. Section 2.2.2 discusses institution level capital structure determinants and concludes that legal systems and strength of enforcement, macroeconomic conditions, financial systems and tax systems can all, also affect the debt levels within firms. This chapter then continues by discussing SMEs (Section 2.3) and the specific characteristics that differentiate them from other firms. The discussion then turns to the capital structure determinants and how these specifically affect SMEs. Section 2.3 concludes that there are some differences between the capital structure of SMEs and that of listed firms. SMEs are generally more likely to apply the pecking order theory than the trade-off theory. The discussion in Section 2.3.3 indicates that the relationships between debt and the previously tested capital structure determinants reflect this.

The review of the prior literature presented in this chapter indicates that prior studies on the capital structure determinants of SMEs have generally focused on firm level factors (e.g., Michaelas et al., 1998; Cassar and Holmes, 2003; Sogorb-Mira, 2005; Nguyen and Ramachandran, 2006; Degryse et al., 2012; Van Caneghem and Van Campenhout, 2012) and very few use samples from more than one country (i.e., Hall et al., 2004; Daskalakis and Psillaki, 2008; Psillaki and Daskalakis, 2009). Those which look at institution level capital structure determinants are scarcer (i.e., Joeveer, 2012). The present study complements these prior studies in the following way. Currently, the effect of national culture on SME capital structure is unexplored. There are three studies (Sekely and Collins, 1988; Gleason et al., 2000; Chui et al. 2002) which look at the effect of national culture on the capital structure of listed firms (discussed in the following chapter). However, as a result of the characteristics of SMEs, the known capital structure determinants can affect the capital structure of these firms differently

when compared to their listed counterparts so it cannot be assumed that the role of culture will be consistent across all types of firms. Hence, this study contributes to prior literature by empirically testing the effect of national culture on the capital structure of SMEs.

The next chapter focuses on national culture and how it has been quantified in order enable empirical testing in various contexts. The discussion then turns to prior literature which has used these methods of quantification in both a managerial and regulatory context. The chapter continues by focusing on literature which investigates the relationship between culture and the capital structure of listed firms and closes with a section developing the hypotheses to test in this study.

Chapter 3 The Role of Culture as a Capital Structure Determinant and Development of Hypotheses

Hofstede (1980) was one of the first to attempt to quantify culture. He defines culture as "Collective programming of the mind which distinguishes the members of one human group from those of another. Culture in this sense, is a system of collectively held values" (Hofstede, 1980:21). He claims that people develop values and thought processes as a result of their home life as a child. These values are then reinforced during education and later on, during working life.

Cultural values affect people and it is people that are the managers of firms. The manager of a firm is responsible for the decision making within the firm so intuition would suggest that cultural influences could affect managerial decision making. Prior literature in the business management discipline considers several managerial decisions which are effected by culture, some of which are discussed in Section 3.3.

The following subsection discusses methods of measuring culture, firstly Hofstede's cultural values, followed by Schwartz's cultural dimensions (1994 and 2008). Subsequently, the discussion changes to the culture's influence on managerial decision making (Section 3.4). Section 3.5 provides the hypotheses development. Section 3.6 concludes the chapter.

3.1 Hofstede's Cultural Values

Hofstede conducts a survey on employees from forty countries from the same multinational firm between 1968 and 1972. He uses the responses to develop his cultural values: Uncertainty Avoidance, Power Distance, Individualism and Masculinity. These cultural values are intended for use within organisations but also apply when dealing with wider cultural issues.

Uncertainty Avoidance: This cultural value measures a culture's ability to deal with an uncertain future. The higher the uncertainty avoidance value is, the greater the need for absolute truth and the greater lengths people will go to in order to reduce or protect themselves against future uncertainty. This value combines rule orientation, employment stability and stress. It is human nature to attempt to cope with the

uncertainties of the future, often through the use of religion, technology, insurance or law making. In a business context this could indicate that firms will protect themselves through the use of insurance, attempting maintain low risk operations or carrying out thorough due diligence on any proposed investments.

Power Distance: This cultural value considers the level of equality or lack thereof within an organisation. It incorporates prestige, wealth and power and evaluates a supervisor's decision making style and a subordinate's views and opinions regarding disagreements with supervisors. This can be directly applied in organisations and more specifically, to the distribution of power between employees and an employer. A high score in this cultural value indicates great separation between superiors and subordinates.

Individualism: This cultural value considers the relationship between the individual and the prevailing collective in any given cultural area. It looks closely at the manner in which people live and work together (nuclear families, extended families or tribes) and if individualism is accepted or considered as type of alienation. In organisations, a high individualism value indicates that employees work on a more individual level and a low value would signify employees work together and the firm takes responsibility for the collective unit.

Masculinity: A high score in this cultural value represents a culture where people are more assertive and value advancement, earnings and training. In a business context these values could lead to an aggressive, competitive work place. The opposite of masculinity is femininity which is more nurturing and values a friendly atmosphere, physical conditions and cooperation. Employees working in organisations in countries with low Masculinity values are more considerate of one another and work together harmoniously.

Hofstede and Bond (1988) later add a fifth cultural value: Confucian Dynamism. This cultural value measures the long or short term orientation of a culture by considering society's time perspective towards the gratification of people's needs. Short term orientation suggests that people value immediate gratification whereas long term orientation values virtuous living with thrift and persistence as key values. Applying

this to organisations, in a country with low Confucian Dynamism, a manager may prioritise short term profit or growth objectives which could jeopardize the longevity of future operations.

Hofstede's dimensions, despite a number of criticisms,[8] are applied by a wide range of researchers owing to their "clarity, parsimony and resonance with managers" (Kirkman et al., 2006:286). Hofstede's dimensions enable a comprehensive and straightforward means of dimensionalizing and quantifying national culture (Shackleton and Ali, 1990; Triandis, 1982). However, this does not mean the study of culture should end here. Schwartz endeavoured to build on Hofstede's cultural values and created his own cultural dimensions.

3.2 Schwartz's Cultural Dimensions – 1994 and 2008

Schwartz's 1994 cultural dimensions build on Hofstede's cultural values and provide an alternative method of quantifying culture. Hofstede's cultural values are based on culture in organisations whereas Schwartz takes a more general approach. He views culture as "the rich complex of meanings, beliefs, practices, symbols, norms, and values prevalent among people in a society" (Schwartz, 2006:138). Schwartz's earlier cultural dimensions are developed based on prior cultural theory and he uses his survey results to empirically test them.

Schwartz (1994) uses survey data from 38 countries and consists of a more diverse range of respondents than Hofstede's survey.[9] Schwartz surveys university students and school teachers. Hofstede himself claims that cultural values are installed during childhood, reinforced throughout education so Schwartz's choice of subjects seems ideal.

Schwartz's original survey takes place between 1988 and 1992 and consists of 56 value items, each followed with a short description of their meaning (Schwartz, 1992). Respondents receive the survey in their native language and rate the importance of each value item as a guiding principle in their own life. Schwartz takes value items from

[8] Criticisms and limitations of Hofstede's cultural values are discussed further in Section 6.4.
[9] Hofstede only surveyed people from one international, high-technology company so respondents are generally skilled professionals.

sources around the world to prevent a Western bias and captures individuals' responses from every inhabited continent. Of the original 56 value items, only 44 are directly connected to the theory of cultural orientations and are found to have similar meanings across countries. These value items are then sorted into the relevant dimensions and the mean scores of each value item is combined to calculate the dimension score for each country.

Schwartz's 1994 dimensions are designed to capture culture's influence on the daily decision making of individuals. They are created in an integrated non-orthogonal system, which explains his use of the two-dimensional smallest space diagram to illustrate his dimensions. In contrast, Hofstede's dimensions are conceptualised as individual level dimensions (Schwartz, 2006) rendering Hofstede's cultural values disjointed or disconnected whereas Schwartz's cultural dimensions provide a more encompassing view of culture.

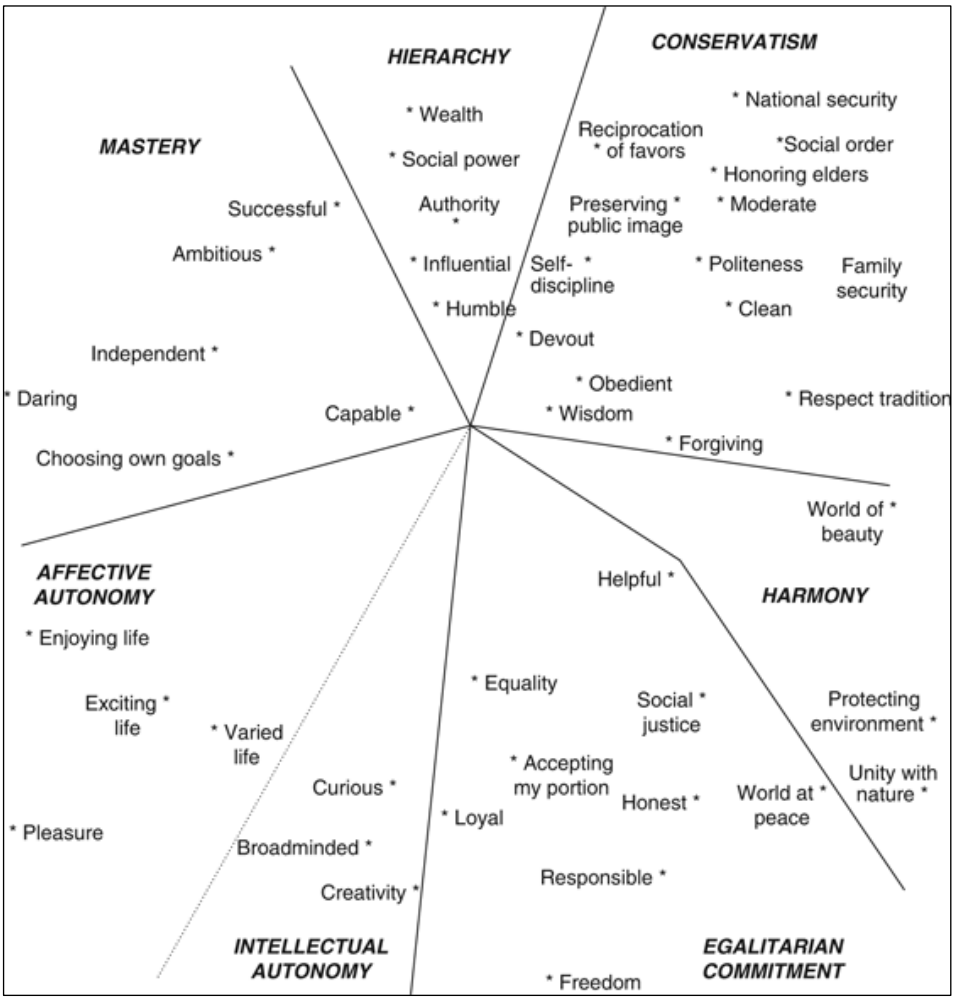
Schwartz's original cultural dimensions were Hierarchy, Conservatism, Harmony, Egalitarian Commitment, Intellectual Autonomy, Affective Autonomy and Mastery. Figure 3.1 shows which value items belong in each dimension and how the dimensions relate to each other. They are loosely created as three pairs of opposites: Conservatism vs. Autonomy (Intellectual and Affective), Mastery vs. Harmony and Hierarchy vs. Egalitarian Commitment. These dimensions can also be classified into two wider pairs of dimensions: Self-enhancement (Mastery and Hierarchy) vs. Self-transcendence (Egalitarian Commitment and Harmony) and Openness to Change (Conservatism vs. Autonomy). These broader dimensions allow culture to be analysed on another level, depending on what is most appropriate for the study in question. Chui et al. (2002) uses these wider cultural dimensions when investigating culture as a capital structure determinant in listed firms.[10] The following paragraphs provide further discussion on each cultural dimension.

Mastery: In a culture with a high Mastery score, individuals place value in mastering the social environment through self-assertion. Value items in this dimension include *Ambitious*, *Independent*, *Capable*, *Daring* and *Choosing own goals*. People in cultures with high Mastery values are expected to pursue their own personal objectives in a

[10] Chui et al. (2002) is discussed in more detail in Section 3.4.

daring and aggressive manner and this behaviour is considered normal within society.

Figure 3.1. Two-dimensional smallest space analysis diagram, showing Schwartz's cultural dimensions from 1994 and their value items. Schwartz (1994:102)



Harmony: Harmony is the opposite dimension to Mastery and contains the value items *World of Beauty*, *Protecting Environment* and *Unity with Nature*. A high score in this dimension indicates that people have no particular stance regarding individuality or collectivism. People with these values oppose those who wish to change the world through self-assertion and exploitation of people and resources.

Hierarchy: Value items in this dimension include *Wealth*, *Social Power* and *Authority*. This dimension has a high score when there is a clear hierarchical system within

society. The distribution of power and resources is unequal, with those at the top receiving the majority and having considerable influence and social power over others. The inclusion of the value item *Humble* in this dimension demonstrates that those at the top of the hierarchy accept the system and those at the bottom respect it and do not challenge it.

Egalitarian Commitment: This dimension consists of the value items *Equality*, *Social Justice*, *Responsible* and *Honest* and is the opposite dimension to Hierarchy. It represents a culture where individuals are more equal. Individuals will pursue their own personal interests but will also demonstrate a voluntary commitment to promoting the welfare of the less fortunate, perhaps by undertaking charity work or contributing towards charitable campaigns.

Conservatism: This dimension is directly opposite the Autonomy dimensions below and includes the value items *Family Security*, *Respecting Tradition*, *Politeness* and *Self Discipline*. Cultures with high Conservatism scores, value close knit, harmonious relationships within their communities. The individual's personal objectives coincide with the objectives of the group and individuals avoid actions or inclinations which may cause disturbance in the traditional order.

Intellectual and Affective Autonomy: High values in these dimensions represent a culture where the individual pursues their own personal objectives. Affective Autonomy includes the value items; *Varied Life*, *Exciting Life*, *Pleasure* and *Self-Indulgent* and focuses on the idea of self-gratification. Individuals aim to improve their own quality of life by satisfying their own personal objectives. Cultures with high Intellectual Autonomy (Value items include *Broadmindedness*, *Creativity* and *Curious*) seek self-satisfying intellectual stimulation and hedonism.[11]

Previous research suggests that Schwartz's cultural dimensions capture more aspects of national culture than Hofstede's (Ng, 2007; Steenkamp, 2001). Steenkamp (2001) finds that Schwartz's 1994 dimensions capture elements of culture that Hofstede's omit. For example, the Hierarchy and Egalitarianism dimensions. This additional aspect to Schwartz's dimensions suggests they are able to explain greater cultural variation than

[11] The pursuit of personal pleasure.

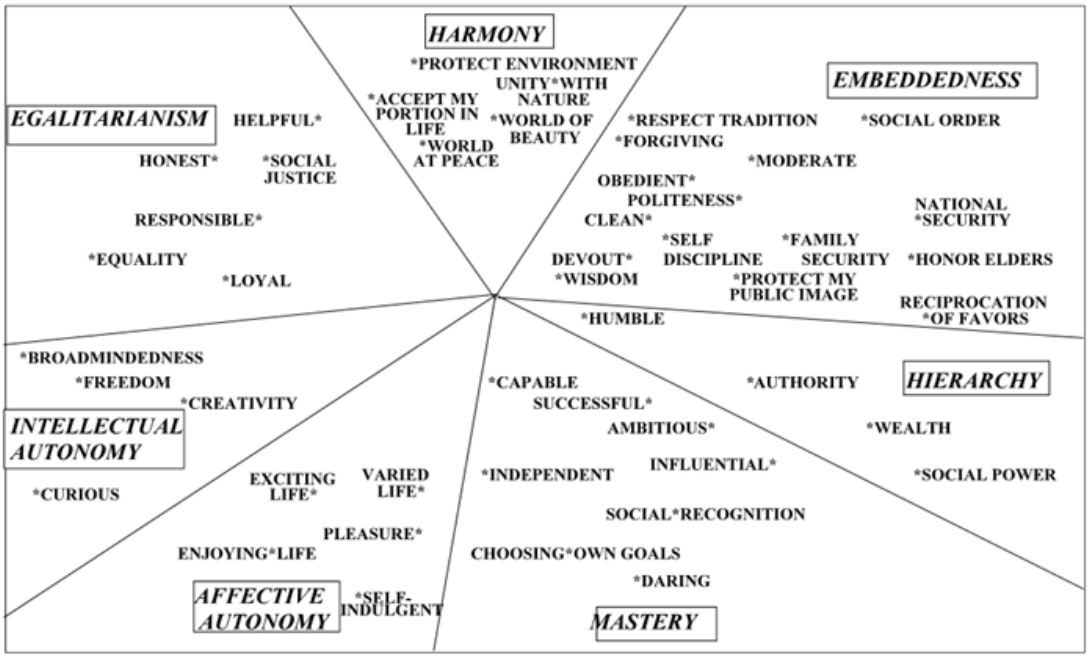
Hofstede's cultural values. Schwartz and Ros (1995) find that while Hofstede categorises Western European countries and the United States as individualistic cultures, these countries have significantly different values in six of Schwartz's cultural dimensions.

Schwartz (2005) comments, when discussing Hofstede's work, that major cultural changes have taken place in the last twenty years and may render Hofstede's cultural values inapplicable in today's society. Although changes in cultural values take place slowly (Schwartz, 2008), they are significant and periodic alterations to any quantification of culture is required. Based on this argument, Schwartz (2008) expands his original value survey. He combines previous survey results with more recent data from 75 countries, collected between 1993 and 2007. Using this more recent data he revises his original dimensions. The revised 2008 dimensions are shown in Figure 2.2. The 2008 dimensions are very similar to those from 1994. The larger number of countries enables Schwartz to generate scores for his dimensions for additional countries. The methods he uses for analysing survey data are similar to those used in 1994 but the additional data results in different means for each value item and consequently, different scores for each dimension.

The dimensions themselves change slightly between 1994 and 2008. There are two noticeable differences between them: Conservatism in the 1994 dimensions is renamed Embeddedness in the 2008 dimensions and Egalitarian Commitment from the 1994 dimensions is now entitled Egalitarianism. The underlying value items in these dimensions are almost identical so although these dimensions have changed their names, the cultural values they represent, do not change.

When comparing Figure 3.1 and Figure 3.2, the value items within each dimension do not generally change but there are a few which have moved from one dimension to the another (e.g., *Influential* has moved from Hierarchy to Mastery and *Freedom* has moved from Egalitarian Commitment to Intellectual Autonomy). A further, more subtle difference is that the two smallest space diagrams are organised differently. In both diagrams each dimension is adjacent and opposite the same dimensions but the latest diagram is almost a mirror image of the previous one. Schwartz (2008) does not provide insight into why this is the case.

Figure 3.2. Two-dimensional smallest space analysis diagram, showing Schwartz's revised cultural dimensions from 2008 and their value items. Schwartz (2008:66)



The present study employs Schwartz's 2008 cultural dimensions to quantify culture when considering it as a capital structure determinant as they include the widest range of countries, and are calculated using Schwartz's latest methods and most recent data.

3.3 Cultural Values Applied in a Business Context

Economists are often reluctant to view culture as a possible determinant of economic phenomena. It could be argued that culture and its possible effect on economic discourse is so vague that defining and testing hypotheses is difficult (Guiso, 2006). Despite this, through the application of cultural values, dimensions and clustering, culture is tested and found relevant as a determinant of several managerial and regulatory decisions.

Culture affects the decision making of people and the managers of organisations are people. This makes it reasonable to suggest that culture could affect a variety of decisions including those made within firms. High or low values in a particular

dimension may manifest in certain characteristics that could influence decision making within firms.

Gray (1988) links culture to the development of accounting systems. He identifies four societal values (Professionalism, Uniformity, Conservatism and Secrecy) and uses combinations of Hofstede's cultural values to develop a hypothesis for each societal value. These hypotheses can then be used to predict certain characteristics within a country's accounting systems.[12]

These hypotheses are created on a theoretical basis and are tested empirically by Salter and Niswander (1995). This paper uses data from 29 countries and concludes that not only do they have significant explanatory power for accounting practices, the strength of the hypotheses increases in countries with more developed financial markets and taxation rules.

The literature investigating the effect of culture on a variety of managerial decisions usually takes one of three approaches. Prior studies either apply Hofstede's cultural values, Schwartz's cultural dimensions or Gray's hypotheses. Alternatively some prior studies have grouped countries into culture clusters, but when doing so it is common to base the culture clusters on Hofstede's cultural values.

First, Kogut and Singh (1988) look at the relationship between culture and foreign market entry modes. They examine 228 entries into the United States market, based on the choice between acquisition, wholly owned greenfield and joint venture. They develop two hypotheses, the first focusing on the cultural distance between the US and the origin of the investing firm and the second on attitudes towards Uncertainty Avoidance within a culture. They find evidence supporting both of their hypotheses, concluding that culture does effect this managerial decision.

Subsequently, Harrison et al. (1994) use Power Distance, Individualism and Confucian Dynamism from Hofstede's values to investigate differences in organisational design, management planning and control systems. They survey 800 organisations in Anglo-American and East Asian countries and find that Anglo-American nations place greater

[12] A more detailed description of Gray's hypotheses can be found in Appendix 1.

emphasis on decentralisation and responsibility centres whereas East Asian cultures focus more on group-centred decision making.

Schuler and Rogovsky (1998) investigate the impact of culture on methods of managing human resources, more specifically, compensation practices. They create four hypotheses based on status, performance, social benefits and programs. They use Hofstede's cultural values and cross-sectional data from 24 countries to test them. Although they do not find conclusive results for all of their hypotheses, they do find sufficient evidence to be able to conclude that culture can influence some aspects of human resource management, particularly status and employee benefits.

Grinblatt and Keloharju (2001) look at the effect of distance, language and culture on intra-country stockholdings and trades. They specifically consider the trading of Finnish stock because Finnish investors can be divided into two distinct cultural groups: Swedish and Finnish speaking. These two groups not only have different languages, they have different cultures so this study examines cultural differences within one country. They find that investors are more likely to invest in Finnish firms which are in the same cultural group as the investor, communicate in the investor's language and have chief executives of the same cultural background.

Kwok and Tadesse (2006) examine the relationship between the predominant financial system in a country and culture. They look at the financial systems of 41 countries. Using Hofstede's cultural values they find that countries with high Uncertainty Avoidance scores are more likely to have bank-based financial systems. This could be because financial markets are associated with higher levels of uncertainty regarding future cash flows, whereas bank finance tends to be more predictable.

Nabar and U-Thai (2007) investigate the relationship between culture and earnings management using a sample of 30 countries and Hofstede's cultural values. They find that countries with high Uncertainty Avoidance scores tend to have higher levels of earnings management. This suggests investors in cultures with high Uncertainty Avoidance prefer firms to meet their expectations and firms are more likely to manage their earnings in accordance. Despite this, they also conclude after supplementary analysis that Uncertainty Avoidance is associated with earnings discretions but not

earnings smoothing which implies that where possible managers choose accounting policies which minimizes shocks to investors but they do not resort to unfavourable methods.

Tsakumis et al. (2007) investigate the effect of culture on tax compliance. They use Hofstede's cultural values to investigate the effect culture has on tax evasion and compliance. They develop four hypotheses, one for each of the cultural values and find that Power Distance and Uncertainty Avoidance are positively related to tax evasion and Individualism is negatively related to tax evasion. There is also some weak evidence that Masculinity is positively related to tax evasion. They conclude that countries are more likely to have high levels of tax evasion if they have high Uncertainty Avoidance and Power Distance and low Individualism.

Culture is also linked to auditor choice. Hope et al. (2008) use Gray's secrecy hypothesis[13] to investigate the effects of culture on auditor choice, more specifically, the choice between a 'big four' auditor and a smaller firm. They present evidence that using smaller audit firms usually indicates that the audit will be lower quality and therefore, less invasive. Using a sample from 37 countries, they find evidence that countries classified as more secretive prefer to use smaller audit firms. They went on to say that their results indicate a link between national culture and financial reporting quality.

Culture is also linked to the success of cross-border mergers and acquisitions. Chakrabarti et al. (2009) uses Hofstede's cultural values to measure the cultural distance between the acquirer and the acquired. Using a sample of 800 cross border acquisitions between 1991 and 2004, they find that mergers and acquisitions tend to perform better in the longer term when they come from countries that are very different compared to culturally similar acquisitions. When there is greater cultural disparity the acquirer tends to be more selective in the deals they opt for and perform more thorough due diligence. Although it could be argued that the better performance is a result of the increased due diligence and not culture, the increased due diligence performed by managers, shows that they acknowledge cultural differences can effect operations, when

[13] This hypothesis predicts that countries with high Power Distance and Uncertainty Avoidance and low Individualism and Masculinity will be more secretive.

making business decisions.

Shao et al. (2010) examine the relationship between culture and dividend policy, using Schwartz's 1994 dimensions. They use a sample from 21 countries and find that countries with high Conservatism scores usually pay higher dividends and countries with high Mastery scores tend to pay out lower dividends. They explain this by suggesting that countries with high Mastery scores prefer the firms they have invested in to reinvest and potentially increase the capital value of their investment rather than distributing large dividends. However, cultures with high Conservatism values prefer firms to distribute earnings because there is less risk to the investor, despite there being lower growth prospects.

Siegel et al. (2011) look at the effect of culture on personal investments from an international perspective. This study considers how the distance between Egalitarianism values[14] affects international investment. Egalitarianism is a dimension that values social justice. A high score in this dimension indicates low tolerance towards market power abuses and a desire to protect the less powerful. They find that Egalitarianism can influence the cross-border flow of various types of investment. They find that people tend to invest in countries with similar Egalitarianism scores to their own implying that people prefer to invest in countries with similar opinions regarding social justice. This paper also finds evidence that those who do not consider this evidence are more likely to suffer loses to their investment portfolios.

Culture is also linked to financial reporting in prior literature on several occasions post Gray (1988). Zarzewski (1996) investigate the effects of culture on accounting harmonization. They collect data from 256 companies from seven countries to investigate the effect of Gray's secrecy hypothesis and find that culture affects underlying disclosure practices but they find no evidence that suggests culture hinders accounting harmonization. Jaggi and Low (2000) consider the relationship between culture and financial disclosures. They apply Hofstede's cultural values to a sample of 964 firms from 37 countries and test the effect of culture, market forces and legal systems on financial disclosures. They find that culture has no impact on financial disclosures in common law countries but they find mixed results from code law

[14] Egalitarianism is from Schwartz's 2008 dimensions.

countries, suggesting that culture affects financial disclosures in certain circumstances. Ding et al. (2005) look at the differences between national Generally Accepted Accounting Principles (GAAP) and International Financial Reporting Standards (IFRS) and whether they can be partially attributed to culture. They conduct a survey which compares local GAAP to IFRS in 52 countries. They record their results in two indexes: One measures the absence of specific rules on recognition/measurement or disclosure, the second measures divergence from IFRS by recording inconsistencies that could lead to differences for many or some enterprises. They use Hofstede's cultural values and Schwartz's cultural dimensions and find evidence that culture is related to their divergence index but not their absence index.

The above literature shows that culture does affect several decision making processes regarding both management and regulatory issues so it is reasonable to suggest that culture could affect the capital structure. The next sub-section discusses prior literature which focuses on the effects of culture on the capital structure of listed firms.

3.4 Prior Evidence on Culture and Capital Structure

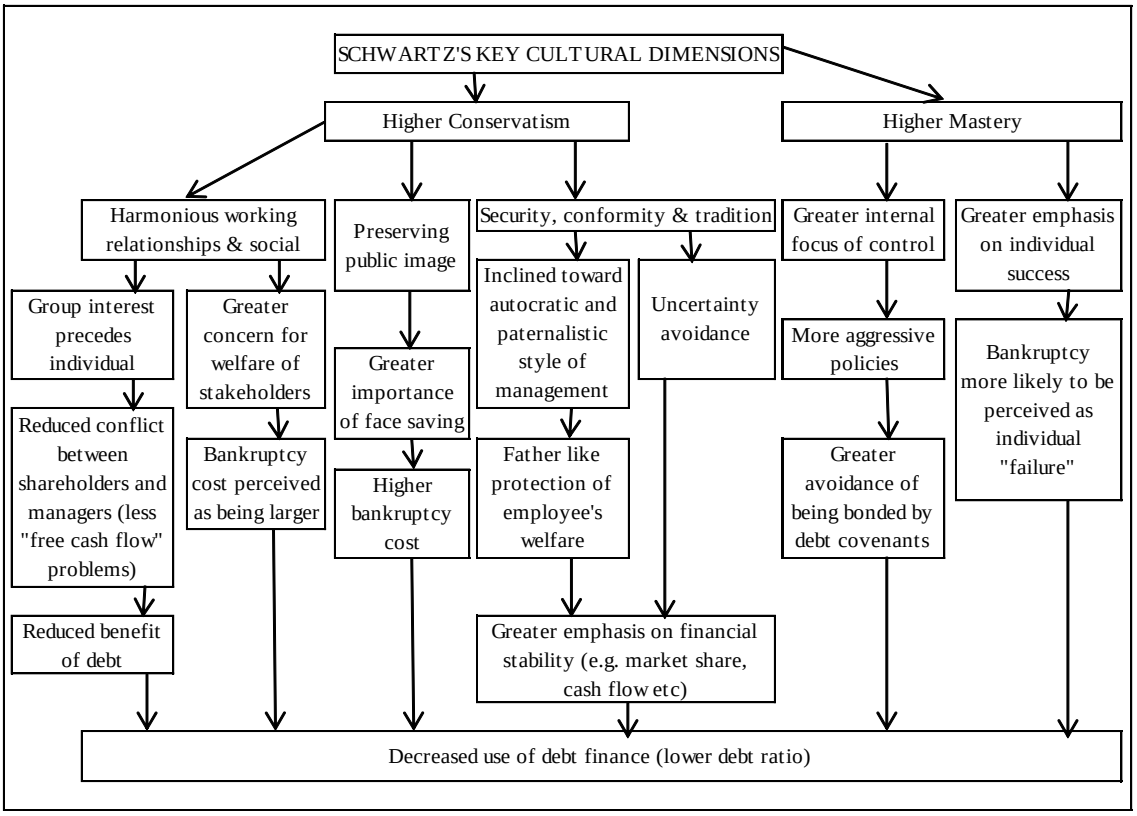
Empirical evidence linking culture to capital structure is very scarce and this relationship is only tested in listed firms. The earliest study examining the potential link between culture and capital structure is Sekely and Collins (1988). This study puts countries into cultural groups based on the Broek and James models (Broek and Webb, 1973; James 1976). These two studies group countries into cultural realms[15] based on the composition, arrangement and integration of particular traits within the country. Cultural realms enable the study of culture through the evaluation of similarities and differences within, and between them. Apart from the out-dated dataset and reliance on the Broek and James models, which are also outdated, the interpretation of the results of this study is limited. Clustering countries can only establish a connection between capital structure and culture. It cannot provide an indication of which cultural values effect capital structure and in what way.

Subsequent to Sekely and Collins (1988), this issue is revisited by Gleason et al. (2000)

[15] The cultural realms used by Sekely and Collins (1988) study are: Anglo-American, Latin American, West Central Europe, Mediterranean Europe, Scandinavia, Indian Peninsula and South East Asia.

who look capital structure and culture using Hofstede's dimensions. This study uses a cross-sectional sample from 1994 of 198 retail firms from fourteen European countries. The countries are arranged into clusters, based on Hofstede's cultural values and the variation between and within the cultural groups is tested. This paper concludes there is a significant relationship between the capital structure of retail firms and culture, but like Sekely and Collins (1998) the methodology prevents any further analysis into which cultural values might affect capital structure and in what way.

Figure 3.3 Diagram showing linkages between the Cultural Dimensions and Capital Structure Decisions from Chui et al. (2002)



Chui et al. (2002) is the most recent paper which looks at the relationship between culture and capital structure using Schwartz's 1994 cultural dimensions. This study is the most similar to the present study. This paper considers listed companies from 22 countries (including China, Japan, Malaysia, New Zealand, Taiwan and Thailand which are all used in this study) using cross-sectional data from 1996. They also use data from 1991 and 1994 but only for robustness purposes. This paper predicts that listed firms in cultures with high Mastery and Conservatism scores will have lower levels of debt based on Figure 3.3. Figure 3.3 shows the links between the Conservatism and

Mastery[16] dimensions and the decision making process behind capital structure policy. Relevant value items from each dimension are used to predict the effect that the dimensions have on the use of debt finance in capital structure. Chui et al. (2002) highlights items such as preserving public image, security and conformity, harmonious working relationships from Conservatism and retaining control and greater emphasis on individual success from Mastery. These qualities all lead to decision making that suggests managers will avoid debt financing. Chui et al. (2002) conclude their hypotheses are correct; listed companies in countries with higher values for the Conservatism and Mastery cultural dimensions appear to have lower levels of debt.

The latest study in this area is Chui et al. (2002) and this study uses cross sectional data which is almost twenty years old. One of the aims of this investigation is to expand on these conclusions and explore the connection between culture and capital structure further. This study uses a more recent, large, panel data sample. It uses the most recent cultural dimensions and considers unlisted SMEs instead of listed firms, which are the subject of previous studies. The next section provides the development of the hypotheses to be tested in this study. This section uses risk and control to develop connections between the cultural dimensions and the capital structure of SMEs in order to develop hypotheses which enable the empirical testing of the relationship between culture and SME capital structure.

3.5 Hypotheses Development

Chui et al. (2002) provide some evidence that some cultural dimensions are relate to the capital structure of listed firms. This and the ample evidence that the capital structure theories and determinants can have different effects on the capital structure of SMEs than listed firms (Hall et al., 2004; Sogorb-Mira, 2005; Van Caneghem and Van Campenhout, 2012) indicate that it cannot be assumed that culture effects capital structure in SMEs the same way it does listed firms. Thus, culture's influence on the capital structure of SMEs remains unknown.

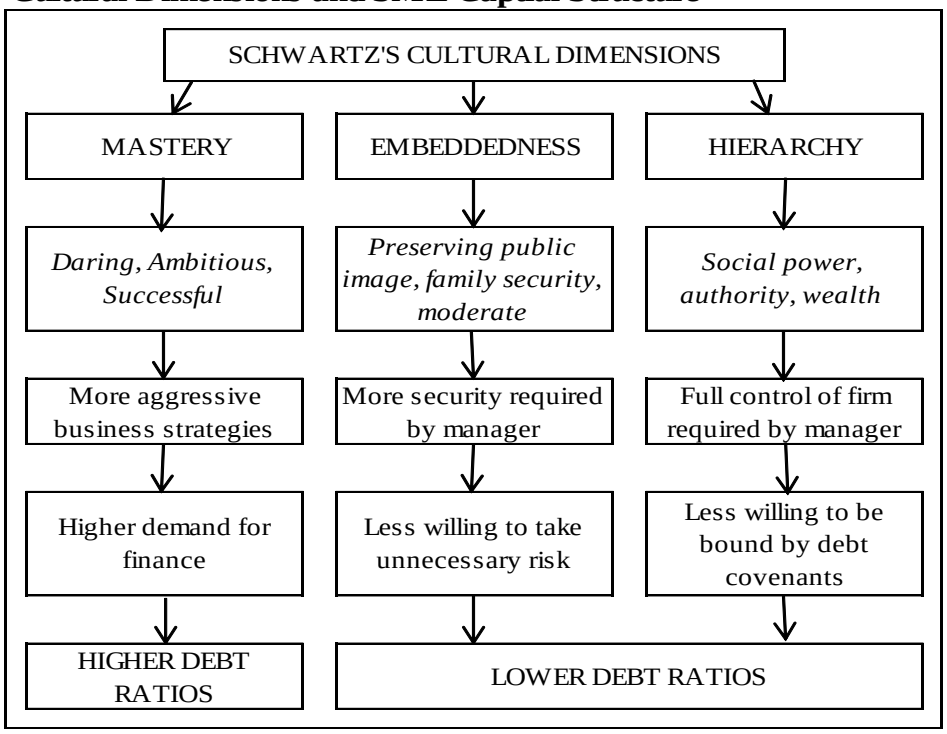
There are two key issues to be taken into consideration when testing cultural

[16] Although Chui et al. (2002) refer to Mastery throughout their study they actually test the Self-Enhancement dimensions from Schwartz's wiser cultural dimensions which is Mastery and Hierarchy combined.

dimensions as SME capital structure determinants. The first is what drives managers' decisions regarding capital structure. Second, is to consider which of these decision drivers could be connected to the manager's culture and are not fully attributable to the capital structure theories and determinants commonly tested. Prior literature suggests that risk (Kraus and Litzenberger, 1973; Psillaki and Daskalakis, 2009) and control (Romano et al., 2001; Nyguman and Ramachandran, 2006; Nini et al., 2009) are two significant factors behind the capital structure decision making process of managers. Additionally, risk and control are both areas which vary between cultures (Hofstede, 1980; Schwartz, 1994; Bontempo et al., 1997; Bhimani, 1999).

Figure 3.4 is a flow diagram showing the links between Schwartz's cultural dimensions and the debt ratios of SMEs. This diagram provides an overview of the following discussion. It shows the relevant value items within each dimension, the characteristics they are likely to bring out in a manager and the resulting effect for the SME and its leverage ratios.

Figure 3.4 Diagram showing the link between Schwartz's Cultural Dimensions and SME Captial Structure



3.5.1 Risk

The application of the trade-off theory and the pecking order theory are both connected to risk tolerance. The trade-off theory suggests that every firm has an optimal level of debt where the risks and benefits of debt are balanced. The pecking order theory suggests a maximum proportion of debt in a firm's capital structure before the firm risks bankruptcy. This optimal or maximum debt level varies depending on several firm factors including what the manager perceives as an acceptable level of risk.

SMEs are usually dependent on debt finance when internal finance is insufficient (Van Caneghem and Van Campenhout, 2012). A high debt level increases the volatility of earnings (Psillaki and Daskalakis, 2009) and therefore, firm risk which in the context of SMEs is particularly important because risk is directly associated with SME failure (Psillaki and Daskalakis, 2009). SMEs tend to be less developed and diversified, which means they are generally less able to absorb a period of poor performance (Joeveer, 2012) so managers' attitude towards risk can play a vital role in SME survival.

Within SMEs, the manager is usually a major shareholder and his personal wealth is usually linked very closely to the success of the firm. On that basis, when making capital structure decisions the manager's personal attitude and perceptions of risk are particularly relevant. Small business owners tend to have high levels of risk tolerance as their entrepreneurial nature renders them in a position where they take on uninsurable risk of business failure (Deakins, 1996). However, a manager perception of risk in each business decision will vary greatly. If a high risk is perceived, they may not increase the firm's debt levels and may bypass investment in projects which would enable the firm to grow. As growth is important to SMEs, this could have long term ramifications for the success of the firm.

The above discussion is relevant given that it has been well established in sociology literature that cross-cultural differences in risk perception and attitudes to risk are significant (McDaniels and Gregory, 1991; Palmer, 1996; Bontempo et al., 1997; Weber and Hsee, 1998; Renn and Rohrmann, 2000). Moreover, it is found in prior capital structure literature that risk is an important capital structure determinant (De Jong et al., 2008; Psillaki and Daskalakis, 2009). Thus, it is inferred that culture could

affect debt levels though managers' risk tolerance and therefore, capital structure.

However, the direction of the effect of specific cultural dimensions may vary. One needs to reflect on the particular value items within specific cultural dimensions and then examine the relationship between each individual cultural dimension and capital structure. Upon closer examination of the three pairs of dimensions created by Schwartz in 2008 and their value items, it becomes clear that Mastery and Embeddedness are the two cultural dimensions most closely associated with risk.

As shown in Figure 3.1 above, the value items in Mastery (e.g., *Capable*, *Ambitious*, *Choosing own Goals* and *Daring*) emphasize self-assertion (Schwartz, 1994; Schwartz, 2008). Managers of SMEs in countries with high Mastery values are expected to be more driven, ambitious and prepared to do what is necessary to achieve their objectives which may include growing the firm because this is so important to SME survival. As a result, it is expected that managers of SMEs in cultures with high Mastery values have more aggressive business strategies and are more willing accept a greater level of risk. It is expected that they have higher debt levels in order to increase growth levels and achieve the objectives of the firm. These more ambitious and daring managers will not be afraid of the risk that accompanies high debt levels. They will see debt finance as an opportunity to obtain capital which can be used by the firm to meet its objectives rather than as a threat. Based on this, the following hypotheses are tested:

$H1_0$: There is no relationship between the debt levels of SMEs and the Mastery value of the country the SME originates from.

$H1_1$: There is a positive relationship between the debt levels of SMEs and the Mastery value of the country the SME originates from.

Contrary to the features of Mastery, Embeddedness has value items which indicate that a high value in this dimension could reduce a manager's risk tolerance. The value items within Embeddedness, such as, *Security*, *Preserving Public Image* and *Self-discipline* imply that managers are not only increasing firm risk (and their own personal wealth, which is usually the case with SMEs) by issuing debt, managers are risking their relationships with the firm's clients, employees and creditors.

Countries with high Embeddedness scores attach great importance to maintaining close-knit, harmonious relationships (Schwartz, 2008) and SMEs are often dependent on a small number of clients and suppliers and form strong relationships with them. The stability of an SME's profitability is dependent on these relationships (Kinnie et al., 1999; Uzzi and Gillespie, 2002) so if SMEs enter into financial difficulties it may be that these relationships are severed and managers may be unable to re-develop them. This could be a particularly important factor if the other shareholders are family members. In this case, the manager not only risks, their own personal wealth but that of the entire family by having large proportions of debt in the SME's capital structure.

These factors suggest that managers acting in countries with high Embeddedness values prefer to maintain their firm's stability and security and issue less debt, even if this means opting out of opportunities which could benefit the firm in the long term but involve increasing the firm's debt levels. Thus, it would be reasonable to predict that in countries with high Embeddedness scores, managers have a more conservative attitude to debt because the risks involved are high and therefore, they will choose to have lower debt levels in their capital structures. Chui et al. (2002) predict and find this for listed firms based on the links shown in Figure 3.3 above, it is an empirical question whether this is also the case for SMEs. The following hypotheses are tested:

$H2_0$: There is no relationship between the debt levels in SMEs and the Embeddedness value of the country the SME originates from.

$H2_1$: There is a negative relationship between the debt levels in SMEs and the Embeddedness value of the country the SME originates from.

3.5.2 Control

The other major capital structure decision driver considered in the present study is control (Chava and Roberts, 2008). This is particularly relevant to SMEs as the manager is often a major shareholder and the smaller the firm is, the more likely this is to be true (McConaughy et al., 2001). When SMEs issue debt, they are required to comply with the conditions of the loan. These conditions are usually in the form of debt covenants which are specified by the finance provider. These can include restrictions on operations, future borrowing or require certain profit levels to be met. As the manager's

personal wealth is closely related to the success of the firm, it is expected that managers will be reluctant to relinquish any control of their firm (Nyguman and Ramachandran, 2006) and prefer to avoid any outside influences.

SMEs usually suffer from high levels of asymmetric information (Van Caneghem and Van Campenhout, 2012) which is an important component of the pecking order theory (Myers, 1984). This means that finance providers often feel they are taking a comparatively greater risk lending to an SME (Scherr et al., 1993), and they are more likely to increase the cost of the debt to the firm, limit the amount of debt, or impose more restrictive covenants, in order to protect the capital they have provided.

Chava and Roberts (2008) and Berlin and Mester (1992) both acknowledge that control is given to creditors in the event of debt covenants being broken. Nini et al. (2009) find evidence that creditors exert the control they obtain when managers break debt covenants and can play an active role in corporate governance. Having debt covenants in loan agreements is particularly important in countries where creditor protection is strong because, in the event of a debt covenant being broken, there is a higher risk of the manager losing some control over the firm and the firm facing bankruptcy (Bae and Goyal, 2009). This shifts control of the firm away from managers and into the hands of the debt providers. Vickery (1989:206) says "Control is an emotionally charged subject, since the majority of owner-managers are highly motivated by a desire for independence". Vickery (1989) goes on to say that owner-managers may develop a more cautious business model in order to defend their independence. This suggests firms with managers who prefer to maintain complete independence from finance providers and control over their firms have lower debt levels in their capital structures.

It could also be argued that firms give away control when they issue equity but issuing equity is rarely an option for SMEs and SME manager/owners often strongly oppose any dilution of ownership (Holmes et al., 2003). Usually the manager/owner determines the level of control given to the new shareholders and who the new shareholders are. This shows that SMEs would be under less external control or certainly less unwanted external control, should they issue equity instead of debt.

There is also the possibility that the managers of SMEs may put control aversion aside

if it is perceived to be essential to the firm's growth. Growth rates of SMEs are often relatively high and growth is often perceived to be essential to the survival of the SME (Berggren et al., 2000). Higher growth rates usually create a need for resources which cannot be satisfied by internal finance (Michaelas et al., 1999). SMEs in particular, often lack the sufficient internal finance to support growth projects (Carpenter and Petersen, 2002). This means that although the expectation is that SMEs use external debt finance, this may not be the case in all SMEs. Romano et al. (2001) say that capital structure is a result of several behavioural factors, for example, a manager's need to be in control. If the level of control required by managers depends on behavioural factors and behavioural factors are subject to cultural influences, then cultural influences could result in some managers having a greater need to maintain control of their SMEs which indicates they would use debt finance to a lesser extent.

Both Hofstede and Schwartz have cultural values or dimensions which are associated with control demonstrating that the level of control required by individuals varies between cultures. Bhimani (1999) and Harrison and McKinnon (1999)[17] provide further evidence that culture effects the level of control required by individuals in certain circumstances, as does Hsu (1981) and Ji et al. (2000).

Of Schwartz's 2008 dimensions, the dimension most closely associated with control is Hierarchy (based on the value items *Wealth*, *Social Power* and *Authority*). A high score in this dimension represents a culture where there is a clear hierarchical system within society, with an uneven distribution of resources and a small number of individuals who have power and control over the majority. In a business context, the firm manager is at the top of the hierarchy and will exert authority over the firm and its employees.

The Hierarchy dimension could have greater influence on the managers of SMEs than listed firms. SMEs tend to have simplified business structures (Ghobadian and Gallear, 1996) and the manager is usually in close proximity to the daily operations of the firm (Torres and Julien, 2005). This indicates that they have a greater level of control over

[17] Bhimani (1999) and Harrison and McKinnon (1999) both investigate the relationship between national culture and differing control systems. However, this research can be controversial (Baskerville, 2003; Hofstede, 2003; Baskerville-Morely, 2005) because prior studies in this area make differing assumptions regarding what exactly constitutes a control system. This renders results incomparable and difficult to interpret.

all aspects of the SME and may be particularly reluctant to relinquish control to outsiders due to the ties between the firm's success and the manager's personal wealth. As taking on debt means giving away an element of control over the firm, it is expected that managers in countries with high Hierarchy scores will have less debt in their capital structures. This leads to the following hypotheses:

$H3_0$: There is no relationship between the debt levels in SMEs and the Hierarchy value of the country the SME originates from.

$H3_1$: There is a negative relationship between the debt levels in SMEs and the Hierarchy value of the country the SME originates from.

3.5.3 Size Categories within SMEs

SMEs can be divided into three size categories: micro, small and medium. The characteristics that distinguish SMEs from larger, listed firms become more prolific as the size of the SME decreases. This being the case, the hypotheses proposed above may hold to differing degrees or may not hold across all three size categories. Reflecting on this, the present study not only explores whether specific cultural dimensions are a capital structure determinant but also proceeds by evaluating the effect of culture on each size category.

The managers of SMEs from a variety of countries and industries, with a variety of different sizes of firms are expected to have great variation in their managerial skill levels and their ability to manage their firms. Berryman (1982) provides evidence from several prior studies that lack of managerial competence and behavioural aspects of the owner/manager are generally responsible for SME failure and a significant proportion of SMEs enter financial difficulty in their first two years,[18] i.e., when they are small, indicating that inexperienced, new managers may be responsible for this.

Managers of smaller firms are likely to be entrepreneurs who are very knowledgeable regarding the particular product or service they provide but may lack managerial knowledge, experience or access to professional advice regarding decisions like capital

[18] Perry and Pendelton (1983: 13) estimate that "50% of new small businesses fail within the first two years" and "only 20% of new small businesses survive ten years."

structure (Ang, 1991). Managers of smaller firms may not be aware of the pros and cons of debt. The more experienced manager who has the skills to make important managerial decisions will be better equipped to do so and is better expected to act in a manner best suited to the firm. Furthermore, a manager with a lower managerial skill levels may be more susceptible to cultural influences on their behaviour compared to a manager who is equipped with the necessary skills and experience. As a result, it would be reasonable to predict that the effect of the cultural dimensions may vary between size categories.

3.6 Summary and Conclusions

This chapter begins by discussing Hofstede's cultural values, their development and what behaviour each cultural value represents. Drawing on the way these values were developed and on the criticism they receive from relevant literature (e.g., Sivakumar and Nakata, 2001), these cultural values are now considered outdated. Thus, the discussion then turns to Schwartz's cultural dimensions. Schwartz's cultural dimensions capture slightly different aspects of culture and were developed much more recently using more recent data. Considering these features, it is considered more appropriate for this method of quantifying culture to be used in this study.

Following on from this, the discussion then turns to prior literature which has investigated the effect of culture on various managerial and regulatory decisions. This review concludes that culture does affect managerial decisions (e.g., companies' compensation practices, dividend policy, foreign market entry modes). Based on this, it would be reasonable to expect that it would also influence capital structure. Thus, the discussion then turns to the three prior studies which have examined the effect of culture on the capital structure of listed firms (Sekely and Collins, 1988; Gleason et al., 2000 and Chui et al., 2002). These studies conclude that the capital structure of listed firms is affected by the culture in which they operate. The results of these papers, combined with the discussion in Chapter 2, which indicates that there are differences between the capital structure determinants of SMEs and listed firms, suggest that the effect of national culture on the capital structure of SMEs could be different to that of listed firms, calling for investigation.

The chapter finishes with the development of hypotheses section. Three hypotheses are developed by using risk and control issues to connect the capital structure of SMEs and to various characteristics represented by Schwartz's cultural dimensions: Mastery, Embeddedness and Hierarchy. These hypotheses enable empirical testing of the relationship between SME capital structure and national culture, not only using the full sample, but using each of the subsamples of micro, small and medium firms.

The next chapter presents the data which is used to test the hypotheses developed in this chapter and discusses the empirical strategy used.

Chapter 4 Methodology

This chapter presents the methodology of the present study. Section 4.1 discusses the definition of SMEs used in this study. Section 4.2 provides descriptive tables showing the structure of the data. Section 4.3 presents the individual country scores for the cultural dimensions. Subsequently, the definitions of the dependent and independent variables are discussed in Sections 4.4 and 4.5 and Sections 4.6 to 4.9 provide a detailed description of the methodology used to test the hypotheses. Section 4.10 provides concluding remarks.

4.1 Sample Selection: SME Definition and Size Classification

SMEs are small and medium sized enterprises but their exact size definition is not globally consistent. There are several different organisations which set their own individual criteria for identifying SMEs. McMahon et al. (1993:9) say "small enterprises are easier to describe than to define in precise terms" but this does not mean that governmental bodies do not try to do so for the purposes of accounting and taxation. For example, EU law defines SMEs using guidelines presented by the European Commission (EC). However, individual member states may not apply this in all aspects relating to the firm. In fact, sometimes even within one country different bodies' use their own measurements. For example, the Department of Trade and Industry in the UK defines SMEs and sub-groups within SMEs using only the number of employees, but Her Majesty's Revenue and Customs (HMRC) uses number of employees, turnover and balance sheet total. Yet the definition varies slightly even within HMRC as it depends on which area of corporation tax is being applied.

As a starting point, this study uses the definition set out in the UK Companies Act 2006 (hereafter CA 2006). More specifically, the CA 2006 provides criteria for the number of employees (maximum 250), turnover (maximum £25.9 million) and total assets (maximum £12.9 million) an SME is permitted to have in order to be classified as an SME. Additionally, it states that to qualify as an SME, the company must satisfy two or more of these requirements. During data collection, for the present study, the number of employees for each firm was unavailable for the majority of observations. So, in order to be classified as an SME, the firm's turnover and total assets must be equal to or

below the maximum limits.

Nevertheless, the CA 2006 only defines small and medium enterprises without providing a specific definition for micro firms. As a result, this study applies the CA 2006 guidelines to define small and medium firms and, in order to define a micro firm, the EU guidelines issued in 2005 are also applied (EC, 2005). These guidelines provide maximum turnover, number of employees and balance sheet total figures like the CA 2006. However, the figures for defining micro firms are in Euros instead of GBPs. The maximum turnover (€2million) and total asset figures (€2million) are converted to GBPs based on the exchange rate on 31st December 2006. This date is chosen because the CA 2006 is dated 2006 and results in the turnover and total asset figures being of the corresponding value. Table 4.3 summarises the criteria a firm must meet in order to be included in size category for this study.

Table 4.1 Size Classification within SMEs

Size Classification	Annual Turnover	Total Assets
Medium	≤ £25.9m	≤ £12.9m
Small	≤ £6.5m	≤ £3.26m
Micro	≤ £1.35m	≤ £1.35m

This table shows the maximum annual turnover and total asset figures for each size classification. For a firm to be classified in a particular category it must meet both the Total Assets and Annual Turnover figures.

4.2 Data

The sample is collected from FAME (UK observations) and ORIANA (all other countries) which both are Bureau Van Dijk platforms. As a result, the data used in the study is limited to what was available in these databases at the time of the data collection. The original sample included observations from eleven countries, covering the period from 2006 to 2010 and had 1,364,546 observations. The countries chosen for this study are selected based on three criteria: 1) They must be included in Schwartz's cultural dimensions; 2) There must be sufficient available data on unlisted SMEs within each country; and 3) the countries included must represent a diverse mix of cultures. Observations with missing values, non-actively trading observations, financial firms and all firms that met the size requirement but were listed on a stock market were subsequently removed leaving 898,046 observations. Within this sample, Australia and

Hong Kong were left with very few observations (30 and 8 respectively).[19] Given that the number of 30 and 8 observations were too small for drawing any conclusions about the effect of culture on capital structure in these countries, these observations were excluded leaving a final sample of 898,008 observations from nine countries. Table 4.2 shows the distribution of these observations by year and country.

Table 4.2 Observations by Year and Country

Country	Year					
	2006	2007	2008	2009	2010	**Total**
China	115,368	105,748	76,423	73,500	63	**371,102**
Japan	36,242	56,621	76,833	78,234	47,456	**295,386**
Korea	16,031	16,408	18,630	14,865	8,909	**74,843**
Malaysia	119	26	23	24	1	**193**
New Zealand	6	19	49	44	1	**119**
Philippines	561	428	685	823	0	**2,497**
Taiwan	131	130	132	108	18	**519**
Thailand	11,674	5,946	2,522	0	0	**20,142**
UK	29,737	28,571	27,862	29,463	17,574	**133,207**
Total	**209,869**	**213,897**	**203,159**	**197,061**	**74,022**	**898,008**

The number of observations is fairly consistent over the first four years but drops in 2010 with zero or few observations in some countries. In some countries, the number of observations drops significantly over time. For example, observations from Thailand decrease from 11,674 in 2006 to 5,946 in 2007, 2,522 in 2008 and 0 in 2009 and 2010 and observations from China drop from 73,500 in 2009 to 63 in 2010. The number of observations for all countries is lower in 2010 than the previous years. This is likely due to the time when the data was collected (beginning of 2011). It is highly probable that most of the SMEs would not have produced their financial statements for 2010 at that time and/or the databases are not been updated accordingly. However, there is significant variation in some countries in other years. This makes the panel particularly unbalanced. In fact, the average number of observations per firm is 2.6. This could be partially attributable to the comparatively high death rates and turnover of SMEs (Perry and Pendleton, 1983). A large number of SMEs have relatively short periods in operation which could explain why the average number of observations is only 2.6.

[19] In the original sample, Australia had 6,077 observations and Hong Kong had 2,180. Of the Australian observations, 2,335 were listed and the majority of the remaining observations were excluded due to missing values required by the regression models. Of the observations from Hong Kong, 2,097 were listed, leaving only 83 unlisted observations. When observations with missing values are removed from the sample, only 8 remain.

Table 4.2 also shows that there is a wide range in the number of observations for each country with China having the highest (371,102) and New Zealand (119) the lowest. The low number of observations from some countries (New Zealand, the Philippines, Malaysia and Taiwan) means that the sample used only makes up a small proportion of the total population of SMEs from these countries. This means that there is an increased possibility the observations in the sample, from these countries, may not be fully representative of all of the SMEs in these countries. Tests were conducted using only the five countries with the higher numbers of observations (China, Japan, Korea, Thailand and the UK) but were unsuccessful due to multicollinearity discussed in Section 4.7 and 4.8. This, and the preference to maintain the greatest cultural diversity within the sample lead to all nine countries being included, despite the issues within the sample.

As Section 2.2.1.7 discusses, industry type can play a significant role in determining a firm's capital structure. Considering this, the present study applies the North American Industry Classification System (NAICS) for dividing the observations between industries. This classification system was developed for the purposes of collecting and analysing statistical data replacing the Standards Industrial Classification (SIC) system (US Department of Commerce website, 2012). Since its development and adoption in 1997, it has been widely used not only by governmental agencies but also in academic literature (e.g., King and Santor, 2008; Kolasinski, 2009 and Bae et al., 2011) demonstrating its appropriateness for this study. Table 4.3 shows the industry code for each industry and how the observations are distributed within each country.

Table 4.3 Observations by Country and Industry

NAICS 2007		China	Japan	Korea	Malaysia	New Zealand	Philippines	Taiwan	Thailand	UK	Total
11	Agriculture, Forestry & Fishing	152	623	595	3	0	2	0	113	2,586	**4,074**
21	Mining, Quarrying, Oil & Gas Extraction	13,542	329	193	2	0	10	0	168	307	**14,551**
22	Utilities	4,830	132	275	0	0	30	6	111	223	**5,607**
23	Construction	133	191,779	12,783	3	1	111	60	1,111	23,939	**229,920**
31	Manufacturing	345,737	22,776	27,416	89	20	902	185	5,301	15,678	**418,104**
42	Wholesale Trade	1,916	22,569	13,616	43	43	545	215	3,508	11,454	**53,909**
44	Retail Trade	303	9,622	1,017	8	0	432	1	1,344	7,871	**20,598**
48	Transportation & Warehousing	515	5,457	2,668	11	5	92	6	998	5,455	**15,207**
51	Information	79	2,348	3,881	12	11	49	7	211	1,945	**8,543**
53	Real Estate & Rental & Leasing	26	8,020	2,630	1	6	43	0	2,760	12,896	**26,382**
54	Professional, Scientific & Technical Services	393	10,586	4,115	15	11	120	34	1,820	8,760	**25,854**
55	Management of Companies & Enterprises	0	0	5	1	9	9	0	87	1,998	**2,109**
56	Admin & Support & Waste Management & Remedial Services	721	8,424	2,970	3	4	58	5	1,006	20,255	**33,446**
61	Educational Services	1	234	246	0	0	8	0	58	1,009	**1,556**
62	Healthcare & Social Assistance	0	7,011	722	0	7	22	0	95	2,523	**10,380**
71	Arts, Entertainment & Recreation	49	651	248	0	2	6	0	101	2,682	**3,739**
72	Accommodation & Food Services	57	1,595	525	0	0	43	0	899	4,920	**8,039**
81	Other Services (Except Public Administration)	2,644	3,230	928	1	0	15	0	362	8,568	**15,748**
92	Public Administration	4	0	10	1	0	0	0	89	138	**242**
Total		**371,102**	**295,386**	**74,843**	**193**	**119**	**2,497**	**519**	**20,142**	**133,207**	**898,008**

This table shows that the sample firms operate in a wide range of industries. The industries with the largest number of observations are construction and manufacturing. The majority of the construction firms (191,779) are from Japan. This industry represents approximately two thirds of the Japanese observations. The majority of the observations from Chinese firms are manufacturing firms (345,737). These figures mean that using a control variable for industry is particularly important because, if this is omitted, the differences in leverage between countries may partially result from the difference in the industry status of the firms rather than institutional factors.

After applying the CA 2006 and the EU guidelines to define SMEs, as described above, the observations are divided into three categories: micro, small and medium firms. The following tables (4.4, 4.5 and 4.6) show the number of observations in each size category for each year.

Micro firms make up approximately half of the sample (451,083), small firms approximately one third of the sample (284,027) and medium firms, the remainder (162,898). These tables show that the issues with the data described above regarding the number of observations from each country are consistent throughout the subsamples and the empirical analysis must be developed to account for this.[20] Tables 4.4 and 4.5 show that there are very few observations of micro and small firms in New Zealand so when each size group is looked at individually, New Zealand is excluded from tests using only micro and small firms.

Table 4.4 Micro Firms: Observations by Year and Country

Country	2006	2007	2008	2009	2010	Total
China	54,471	40,001	16,111	18,373	12	**128,968**
Japan	23,435	38,909	49,872	48,010	26,832	**187,058**
Korea	9,874	9,899	10,022	7,341	3,630	**40,766**
Malaysia	46	10	7	8	0	**71**
New Zealand	0	2	4	2	0	**8**
Philippines	4	0	18	49	0	**71**
Taiwan	31	26	31	25	4	**117**
Thailand	10,972	5,251	1,688	0	0	**17,911**
UK	18,635	17,827	16,713	14,654	8,284	**76,113**
Total	**117,468**	**111,925**	**94,466**	**88,462**	**38,762**	**451,083**

[20] The empirical methods used are described in Section 4.8.

Table 4.5 Small Firms: Observations by Year and Country

Country	2006	2007	2008	2009	2010	Total
China	43,741	46,039	36,285	32,279	18	**158,362**
Japan	9,202	12,720	18,656	20,454	13,542	**74,574**
Korea	5,025	5,060	6,404	5,333	3,332	**25,154**
Malaysia	38	4	4	4	0	**50**
New Zealand	1	5	14	15	0	**35**
Philippines	66	14	114	216	0	**410**
Taiwan	39	43	45	37	7	**171**
Thailand	551	542	676	0	0	**1,769**
UK	5,691	5,321	5,087	4,699	2,704	**23,502**
Total	**64,354**	**69,748**	**67,285**	**63,037**	**19,603**	**284,027**

Table 4.6 Medium Firms: Observations by Year and Country

Country	2006	2007	2008	2009	2010	Total
China	17,156	19,708	24,027	22,848	33	**83,772**
Japan	3,605	4,992	8,305	9,770	7,082	**33,754**
Korea	1,132	1,449	2,204	2,191	1,947	**8,923**
Malaysia	35	12	12	12	1	**72**
New Zealand	5	12	31	27	1	**76**
Philippines	491	414	553	558	0	**2,016**
Taiwan	61	61	56	46	7	**231**
Thailand	151	153	158	0	0	**462**
UK	5,411	5,423	6,062	10,110	6,586	**33,592**
Total	**28,047**	**32,224**	**41,408**	**45,562**	**15,657**	**162,898**

4.3 Cultural Dimensions

As previously discussed, this study uses Schwartz's 2008 cultural dimensions to quantify culture. The numerical figures for the three dimensions being tested are shown in Table 4.7.

Although Schwartz states that the numerical value for each cultural dimension ranges between -1 and 7 the majority of the numerical values fall within a much narrower range as is shown in Table 4.7. These scores do not change over time so regardless of the year of the observation, every observation from the same country has the same value for each dimension. This table shows that Embeddedness ranges from 3.27 for New Zealand to 4.35 for Malaysia, Mastery ranges from 3.76 for the Philippines to 4.41 for China and Hierarchy from 2.25 for Malaysia to 3.49 for China, thus demonstrating

enough cultural variation to enable empirical testing. Schwartz (1994) presents evidence that there is no correlation between the three dimensions used in the present study[21] although these dimensions have negative relationships with their opposite dimensions as shown in Figure 3.1 and 3.2 so, one of the objectives of the empirical analysis is to test all three cultural dimensions in the same model with the control variables.

Table 4.7 Schwartz's 2008 Cultural Values

Country	EMB	MAS	HIER
China	3.74	4.41	3.49
Japan	3.49	4.06	2.65
Korea	3.68	4.21	2.90
Malaysia	4.35	3.91	2.25
New Zealand	3.27	4.09	2.27
Philippines	4.03	3.76	2.68
Taiwan	3.82	4.00	2.69
Thailand	4.02	3.88	3.23
UK	3.34	4.01	2.33

From Schwartz's 2008 Cultural Dimensions: EMB, Embeddedness; MAS, Mastery; HIER, Hierarchy

4.4 Leverage

There are several options that can be used to measure leverage. Prior literature focusing on SMEs uses a variety of ratios, in fact some prior studies use multiple ratios in order to provide some depth and add robustness to their results. The leverage ratio options available include long term debt to total assets, total liabilities to total assets and total debt to total assets.[22] In addition, some prior studies (e.g., Hall et al., 2004; Beck et al., 2008) have looked at the determinants of different types of financing within the firm using a range of ratios which capture each aspect. For example, Michaelas et al. (1999), Sogorb-Mira, (2005) and Hall et al. (2004) all use both short term debt and long term debt to total assets and Beck et al. (2008) uses a range of methods to capture different types of finance.

[21] Using Schwartz's 2008 dimensions for 80 countries the R squared values for these dimensions are as follows: Mastery/Hierarchy 0.157; Mastery/Embeddedness 0.007; Embeddedness/Hierarchy 0.258 which confirms they are not related.

[22] These ratios use book values but another possible option is the market value of debt and/or equity. Some prior studies have used ratios which include market values as either an alternative to book value or additionally (e.g., Kayo and Kimura, 2011; Antoniou et al. 2008). This option is not appropriate for this study as only unlisted SMEs are included in the sample.

There are advantages and disadvantages to each ratio. There a limited number of studies which use long term debt to total assets (e.g., Hall et al., 2004; De Jong et al., 2008). However, Hall et al. (2004) looks at the determinants of both long and short term debt and De Jong et al. (2008) use multiple debt ratios and do not solely rely on this one. This suggests that although it is a valid measure of capital structure, it is not suitable as the sole measure of capital structure in any given study. This could be because it only captures one type of finance. Cassar and Holmes (2003) say that long term debt when compared to short term finance is more fixed and has greater contractual obligations and screening requirements. This may deter SMEs from long term debt and may encourage them to seek other forms of external finance which is easier to obtain.

Daskalakis and Psillaki (2008), Psillaki and Daskalakis (2009) and Van Caneghem and Van Campenhout (2012) all use total liabilities to total assets as their dependent variable. Winborg and Landstrom (2000) suggest SMEs use financial bootstrapping[23] to meet their financial resource needs. Furthermore, Daskalakis and Psillaki (2009) argue that liabilities, such as leasing, accounts payable and receivable and trade credit are all important means of finance for SMEs which is why they consider this broader definition. However, using total liabilities does not capture the debt to equity ratio and, although financial bootstrapping may be applied by several firms, there is no evidence to suggest it is used by all SMEs. Therefore, from the perspective of capturing capital structure in the most representative manner, this ratio may not be the most appropriate.

The present study investigates capital structure which generally refers to how the firm finances itself. If only long term debt is used other aspects of how the firm finances itself (i.e., short term debt) is ignored. This would be a significant limitation considering that short term borrowing is very important in smaller firms (Nguyen and Ramachandran, 2006; Garcia-Teruel and Marinez-Solano, 2007; Daskalakis and Psillaki, 2008). If total liabilities to total assets is used other aspects of financial statements (e.g., trade creditors), which are not directly relevant to capital structure are included. Considering these, and in line with Cassar and Holmes (2003) and Degryse et al. (2012), this study uses the ratio of total debt to total assets.

To enhance the study and act as robustness tests, further tests are conducted splitting the

[23] Methods employed by SMEs to gain finance through informal or short term resources, for example, through absorbing resources from customers, suppliers and the owners own personal finance.

total debt ratio into long and short term debt ratios. Long term debt is defined as long term debt and long term leases or more generally any debt which is repayable in over one year. Short term debt includes short term loans and overdrafts which are generally payable in the next twelve months. Both are divided by total assets. This is done to provide a more in-depth analysis into the relationship between the cultural dimensions and debt levels in SMEs and contributes to prior literature which has merely explored the relationship between culture and capital structure and does not expand on this to explore the relationship between culture and different types of debt.

4.5 Estimation of Independent Variables

This subsection defines the independent variables used in the analysis, beginning with the firm level variables and then moving onto the institution level variables.

4.5.1 Firm-Specific Independent Variables

Because there is large variation in the size of firms, these independent variables are based on ratios, where possible, which standardises the measures and allows for a more direct comparison of the effects of those capital structure determinants used as control variables, regardless of the firm's size. All of the variables are estimated using book values. The ratios used to define the firm-specific variables are shown in Table 4.8. The ratios selected and described below were chosen based on data availability and prior literature's findings.

In order to capture size, prior literature uses either the natural logarithm of turnover or the natural logarithm of total assets. Previous studies which use the natural logarithm of turnover tend to examine listed firms (e.g., De Jong et al., 2008; Kayo and Kimura, 2011) although there are some which look at SMEs (Margaritis and Psillaki, 2007; Margaritis and Psillaki, 2010). The majority of studies conducted on SMEs use the natural logarithm of total assets (e.g., Cassar and Holmes, 2003; Van Caneghem and Van Campenhout, 2012; Degryse et al., 2012). As SMEs are the focus of this study, the natural logarithm of total assets is used to capture firm size *(SIZE)*.

Profitability measures the amount of profit the firm makes in relation to its size. The ratios prior literature uses to capture profitability vary slightly but the most common are earnings before interest and tax (Margaritis and Psillaki, 2009), operating profit (De

Jong et al., 2008) or net income before tax (Daskalakis and Psillaki, 2008), all over total assets regardless of whether the studies are on listed firms or SMEs. This variation does not appear to cause any variation in the results, as profitability is consistently negatively related to leverage in SMEs. This study uses operating profit over total assets *(PROF)* as, at the time of data collection, the operating profit figure was available for the highest number of observations.

The tangibility of a firm is also used as a control variable. Prior literature, considering both listed firms and SMEs consistently uses the ratio of fixed assets to total assets *(TANG)* as a proxy for tangibility (De Jong et al., 2008; Deesomsak et al., 2004; Antoniou et al., 2008; Van Caneghem and Van Campenhout, 2012; Sogorb-Mira, 2005) so this ratio is also applied here.

Table 4.8 Firm Level Variables

Firm Characteristic	Variable Name	Ratio	Prior Studies which have used this measure
Leverage	LEV	Total debt over total assets	Antoniou et al. (2008), Margaritis & Psillaki (2009), Cassar & Holmes (2003), Degryse et al. (2012),
Size	SIZE	Natural logarithm of total assets	Titman & Wessels (1988) Michaelas et al. (1999), Hall et al. (2004), Sogorb-Mira (2005), Degryse et al (2012)
Profitability	PROF	Operating profit over total assets	Kayo & Kimura (2011), De Jong et al. (2008), Antoniou et al. (2008)
Risk	RISK	The squared deviation of each year's earnings before taxes from the period average	Psillaki & Daskalakis (2009), Castanias (1983), Mackie-Mason, (1990)
Tangibility	TANG	Fixed assets over total assets	De Jong et al. (2008), Sogorb-Mira (2005), Van Cangehem & Van Campenhout (2012), Booth et al. (2001), Hall et al. (2004)
Growth	GROW	Increase in total assets over total assets	Hall et al. (2004)
Liquidity	LIQ	Current assets over current liabilities	De Jong et al. (2008)
Industry	IND	Industry median	Hovakimian et al. (2001), Flannery and Rangan (2006), Goyal et al. (2011), Frank and Goyal (2009)

Firm risk can be measured in several different ways. Prior literature uses measures including the standard deviation of operating income (De Jong et al., 2008), the

standard deviation of annual earnings before taxes (Margaritis and Psillaki, 2007), Altman's Z score, altered by Mackie-Mason (1990) (Kayo and Kimura, 2012) and the standard deviation of the return on assets (Booth et al., 2001). For this study, risk is defined as the squared deviation of changes (based on first differences) in each year's earnings before taxes from the period average *(RISK)*. This measure is used by Castanias (1983), Mackie-Mason (1990) and Psillaki and Daskalakis (2009).

Firm growth is also measured in several different ways in prior studies. Some studies use the ratio of the market value of the firm to total assets (De Jong et al., 2008), the annual percentage change in sales (Hall et al., 2004) or earnings (Psillaki and Daskalakis, 2009), capital expenditure (Harvey et al., 2004) or total asset growth (Chen, 2003). The latter is chosen for this study *(GROW)* based on data availability allowing for the maximum number of observations in the analysis. Other measures would reduce the number of observations significantly.

Although the pecking order theory suggests a negative relationship between liquidity and capital structure but there are a limited number of prior studies which empirically test this relationship. Deesomsak et al. (2004) and De Jong et al. (2008) use the ratio of current assets to current liabilities to define liquidity and it is this ratio that the present study uses *(LIQ)*.

Industry is the final firm level variable. Each observation is allocated a number based on the two digit NAICs classification system. Then all of the observations are pooled across all five years and then divided into groups based on the NAICs codes. An industry leverage median is then calculated for each industry group of observations. Once this process is complete for all of the NAICs codes, a new variable is created where each observation is assigned the industry leverage median based on its NAICs code *(IND)*. This means that instead of using industry dummy variables, one variable is used to capture the effect of industry on capital structure. This method is used in several studies including Hovakimian et al. (2001), Flannery and Rangan (2006) and Frank and Goyal (2009).

4.5.2 Institutional Independent Variables

As Section 2.2.2 discusses, institutional variables can play a significant role in capital

structure and they must be included in the analysis. Table 4.9 shows the definitions of the institutional variables used in this study.

All of the institutional independent variables which relate to legal systems were collected from La Porta et al. (1998).[24] The legal variables from this study have been used in several prior empirical studies (e.g., De Jong et al., 2008 and Alves and Ferreira, 2011). The institutional variable which is used to capture legal systems is divided into two parts. Firstly, there is one binomial categorical variable which captures whether a country has a code or civil/common legal system. Secondly, there is a variable which measures the enforcement of those legal systems and the extent to which providers of finance are protected by that legal system. This variable incorporates shareholder rights, creditor rights, the efficiency and integrity of the judicial system and the level of corruption within a country, which are all proven capital structure determinants (Alves and Ferreira, 2011, De Jong et al., 2008; Deesomsak et al., 2004). These measures are combined into one variable because they are often related and, if included in the same model as four separate variables, cause multicollinearity issues.[25] De Jong et al., (2008) use a similar method to measure standardized enforcement. They use the same measures of the efficiency of the judicial system and corruption and two other measures of enforcement to calculate an average measure of enforcement of legal systems within a country.

Although the present study uses different measures to include creditor right protection and shareholder right protection the principle is very similar. The variable which is used to capture how well finance providers are protected within a country *(STPRO)* is calculated as follows:

$$STPRO = \frac{JUD + CRED + SHARE + CORR}{4}$$

[24] Although aware of Spamman (2010) and the indexes generated in this paper, the decision was made to use only indexes from La Porta et al. (1998). Not all required indexes were available from Spamman (2010) and, as they were being used to generate a composite index, it seemed appropriate to use all the indexes from the same paper despite La Porta et al. (1998) being the older of the two.

[25] Preliminary analyses using all four variables separately were found to be unstable and have abnormally large standard errors, suggesting that some of these variables are related to each other. Pearson correlation coefficients calculated confirmed this.

Table 4.9 Institutional Variables Definition

Country Characteristic	Variable Name	Description
Legal Tradition	LEGTRA	Identifies the legal origin of the present legal system within a country (La Porta et al. 1998). Zero represents a code law system and one represents a civil law system.
Judicial System	JUD	Assessment of the "efficiency and integrity of the legal environment as it effects business" (La Porta et al. 1998: 1124). Scores range between zero and ten with low scores indicating lower efficiency levels.
Creditor Rights	CRED	An index aggregating different creditor rights. Values range between zero and four. One is added to the value each time a country satisfies one of the four criteria (see La Porta et al. 1998 for full details)
Shareholder Right Protection	SHARE	Shareholder right protection, an index aggregating different shareholder rights as defined by La Porta et al. (1998). Values range from zero to five. One is added each time a country satisfies one of the five criteria.
Corruption	CORR	Measure of assessment of the corruption in government (La Porta et al. 1998). Scores range from zero to ten. Lower scores indicate that government officials are more likely to demand special payments in the form of bribes and that corruption is a problem within a country.
Standardised Enforcement and protection for finance providers	STPRO	The mean value of the standardized values JUD, CRED, SHARE and CORR
Bond Market Development	BDMK	Total bond market capitalisation (private and public) as a percentage of GDP

La Porta et al. (1998) does not include China in their study but states that China used numerous examples from the German legal system during its modernisation. The average value for the countries with a German origin legal system was used for the variables values collected from La Porta et al. 1998.

To capture the development of a country's financial systems, bond market development is used. This variable is captured as bond market capitalisation as a percentage of GDP as in De Jong et al. (2008) and Kayo and Kimura (2012). This is the total of both private and public bond market capitalization, except in the case of New Zealand which does not have an active private bond market. Hence, only the public bond market capitalisation figure is used for this country. This variable is captured from the World

Development Indicators.[26]

4.6 Panel Data

As indicated above, panel (or longitudinal) data is used in this study. This is a combination of cross sectional and time series data and includes multiple observations for each firm and these observations are collected annually. Despite some prior studies using cross sectional data (e.g., Chui et al., 2002; Rajan & Zingales, 1995), more recent studies (Daskalakis & Psillaki, 2012; Degryse et al., 2012; Sogorb-Mira, 2005) have chosen to use panel data.

Panel data can provide a superior analysis when compared with cross sectional or time series data and offers a number of advantages. These advantages are outlined by Baltagi (1995) and Wooldridge (2013) as follows:

- Controls for unobserved firm characteristics, thus permitting conclusions to be drawn from heterogeneous samples.
- Provides a more informative dataset with more variability, less co-linearity between variables, more degrees of freedom and more efficiency in terms of standard errors of coefficients.
- Enables the measuring of effects which may not be detectable in pure cross sectional or time series data (e.g., panel data can measure lags in behaviour or the result of a particular decision that would not be found in cross-sectional data)
- Permits the testing of behavioural models while avoiding biases that result from the aggregation of firms or individuals.

Although panel data provides a more thorough analysis, it requires more sophisticated modelling techniques. Given that there are multiple observations for each firm, the observations are not fully independent and there is likely correlation between the error terms. This is controlled for in the statistical analysis (see Section 4.8).

[26] The World Development Indicators are compiled from officially recognized international sources. They present the most current and accurate global development data available (www.WorldBank.org, 2013).

4.7 Multicollinearity

After several univariate tests, it became clear that any traditional regression model containing the required independent variables would suffer severely from multicollinearity and generate very high variance inflation factor (VIF) figures.[27] This was particularly true of the cultural dimensions and the institutional variables preventing the testing of multiple dimensions in the same model and requiring the exclusion of multiple institutional control variables to reduce multicollinearity and generate a stable model. This would significantly reduce the quality and validity of the statistical analysis.

Table 4.10 is a correlation matrix showing the Pearson correlation coefficients for the independent variables.[28] This table shows the strength of the relationships between the independent variables. Paying particular attention to the correlation coefficients of the cultural dimensions, it appears that there are strong relationships between them. This not only prevents the testing of multiple cultural dimensions simultaneously but results in the effect of each dimension being indistinguishable from the effect of others.

However, Schwartz (1994) and Schwartz (2008) both indicate that there are only correlations between opposite pairs of dimensions. Of the three dimensions included none are opposite pairs so these correlation coefficients appear very high and prompt further investigation. As an example, Figure 4.1 shows a scatter plot using one point for each of the nine countries in the dataset comparing Mastery and Hierarchy. Upon inspection of Figure 4.1, there does not appear to be a relationship between these variables.

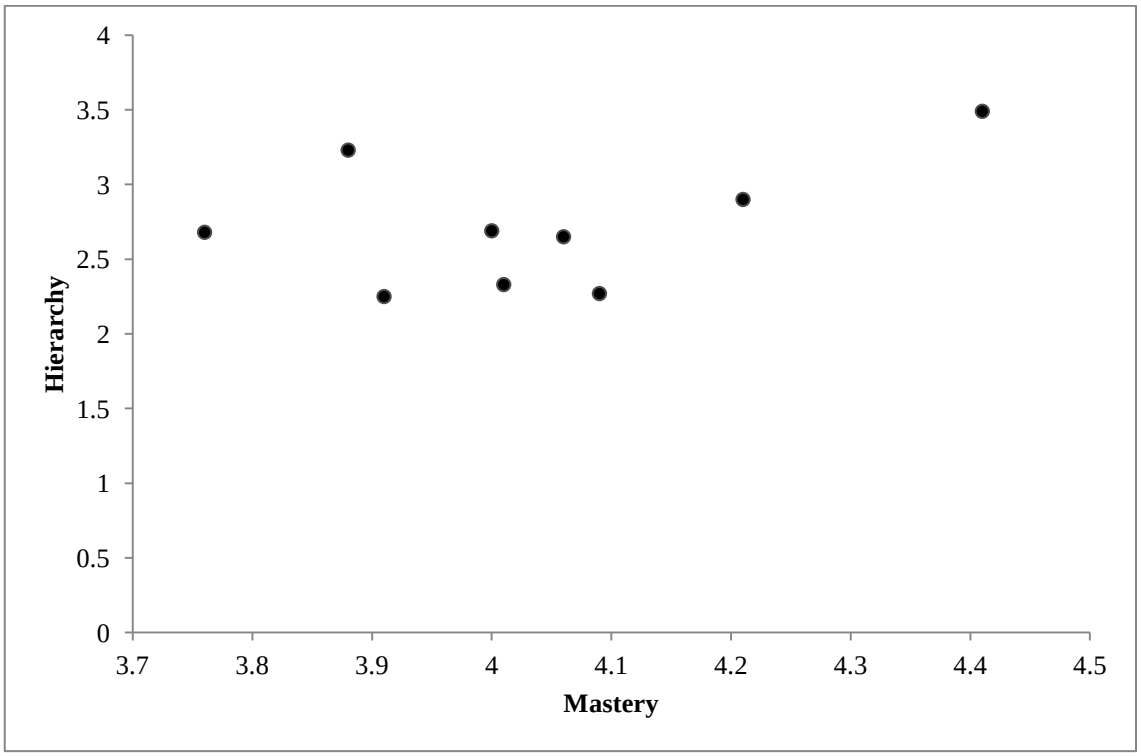
[27] The VIF measures the degree to which each explanatory variable is explained by the other explanatory variables. Traditionally multicollinearity is not considered to be a problem if the VIF figures are below 10 (Ding et al. 2005) although below 5 is preferable (Van Caneghem and Van Campenhout, 2012).

[28] Appendix 2 is also a correlation matrix showing the Spearman correlation coefficients. This table provides further evidence of the relationships between the independent variables.

Table 4.10 Pearson Correlation Coefficients for the Independent Variables

	EMB	HIER	MAST	SIZE	RISK	PROF	TANG	GROW	LIQ	IND	LEGTRA	STPRO	BDMK
EMB	1.000												
HIER	0.900	1.000											
MAST	0.701	0.922	1.000										
SIZE	0.145	0.230	0.291	1.000									
RISK	-0.065	-0.034	0.003	-0.101	1.000								
PROF	0.071	0.128	0.168	-0.089	0.035	1.000							
TANG	0.015	0.022	0.020	0.099	-0.014	0.033	1.000						
GROW	0.085	0.091	0.097	0.132	0.010	0.067	-0.025	1.000					
LIQ	0.061	-0.014	-0.075	-0.089	-0.036	0.012	-0.100	-0.013	1.000				
IND	-0.634	-0.763	-0.777	-0.311	-0.015	-0.171	-0.017	-0.083	0.077	1.000			
LEGTRA	-0.469	-0.533	-0.531	-0.157	0.148	0.082	0.063	-0.057	-0.003	0.256	1.000		
STPRO	-0.729	-0.429	-0.242	-0.009	0.054	0.001	-0.003	-0.074	-0.134	0.268	0.224	1.000	
BDMK	-0.451	-0.544	-0.577	-0.166	-0.132	-0.256	-0.079	-0.054	0.063	0.629	-0.346	0.234	1.000

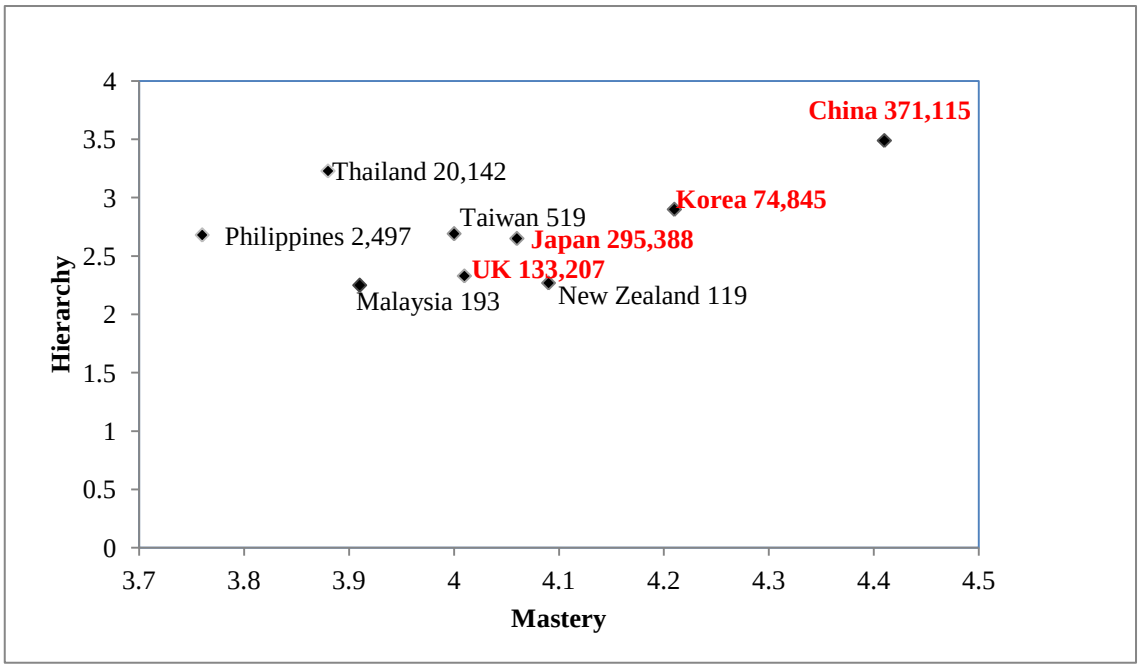
Figure 4.1 Scatter plot showing the relationship between Hierarchy and Mastery



The above scatter plot shows the relationship between Hierarchy and Mastery using nine points. Each point represents one country in the sample. R squared equals 0.20.

Nevertheless, Table 4.10 shows that for these two variables, the Pearson correlation coefficient equals 0.92 but when the R^2 value is calculated based on nine points (one for each country) it equals 0.20. So what is causing the difference between the R^2 values? It is the uneven number of observations in each country. Figure 4.2 shows the same scatter plot as Figure 4.1 but also includes the country and number of observations beside each point. The points with the highest numbers of observations (i.e., UK, Japan, Korea and China) create a line imitating a positive relationship between the two variables, although this is not a true linear relationship. If the number of observations from each country was equal, there would be a more balanced representation of the cultural dimensions from different countries limiting the presence of multicollinearity in a regression model.

Figure 4.2 Scatter plot showing the relationship between Hierarchy and Mastery and the number of observations in each country



The above scatter plot shows the uneven number of observations in each country and demonstrates that the countries with the highest number of observations are forming a line which imitates a positive relationship between these variables although as it can be seen from Figure 3.1, there is no significant positive relationship between these two variables. R squared equals 0.92.

4.8 Bootstrapping, Clustering & Stratified Sampling

The issues with the data described in Section 4.2 and those regarding the false multicollinearity discussed in Section 4.7 result in the failure of more traditional empirical methods, so the combination of bootstrapping, clustering and stratified sampling is used. This section explains what these methods are and why they are appropriate for this study. It could also be argued that the cultural dimensions should be tested individually. This may solve the multicollinearity problem but it raises another issue. Going back to example of the relationship between Mastery and Hierarchy, if one of these dimensions is found to be a significant determinant of capital structure, then the other would likely be found to be significant with a similar coefficient due to the high correlation between them. This means it is impossible to determine which cultural dimension is having the effect on leverage. This is particularly a problem with these two dimensions because Mastery is predicted to have a positive relationship with leverage and Hierarchy is predicted to have a negative relationship. If they were tested in separate models using the full sample, it is impossible to find results to support both

H1 and H3. Additionally, the idea of using country average leverage ratios is considered. This was rejected because it was felt that reducing such a large number of observations to a small number of country average values would negatively impact on the significance of the results of the study and not fully utilize the relatively large sample.

It could be argued that the countries with the fewest observations should be removed and the study should proceed without them because there is a greater likelihood that the observations from these countries are not wholly representative of the country they originate from because they are few in number. However, if New Zealand, the Philippines, Malaysia and Taiwan are all excluded, this would further reduce the number of countries in the sample from nine to five. This significantly reduces the cultural diversity within the sample and limits the ability of the sample to be used to test for cross-country variations in capital structure.

However, it is also true that, if the countries with the lowest numbers of observations are removed, the multicollinearity between Hierarchy and Mastery becomes real and not consequential of the distribution of the observations. This is because, as discussed in Section 4.7, the countries with the highest number of observations have a positive relationship, regardless of the relationship between the dimensions outside the sample. Preliminary tests show that removing the countries with few observations from the sample results in reduced cultural diversity and if only the countries with higher numbers of observations are used, then the false multicollinearity is no longer false and the model suffers from instability and inflated standard errors.[29]

Even though the inclusion of New Zealand, the Philippines, Malaysia and Taiwan means that a less traditional method of empirical analysis is used, it is for these reasons that the empirical analysis proceeded with these countries included in the sample.

One potential solution to the false multicollinearity problem is to make the number of

[29] A random effects model conducted using only observations from China, Japan, Korea, Thailand and the UK suffered severely from multicollinearity (mean VIF 502.80, highest VIF 3,290.76). Due to multicollinearity the standardised enforcement variable was excluded and there were five correlation coefficients over 0.70 when looking at pairs of country level variables. Acknowledging the multicollinearity issues caused by the uneven numbers of observations in each country, the test was repeated using a random sample of an even number of firms from each country. These results also suffered from multicollinearity and the standardised enforcement variable was also excluded. The VIF figures (mean 255.09, highest 1,715.38) are lower but are still too high for the model to be stable.

observations in each country equal. However, this would mean excluding the majority of the data. New Zealand is the country in the sample with the fewest number of observations (119) and this would mean using 1,071 (119 multiplied by nine countries) observations instead of 898,008.

However, using an equal number of observations would mean excluding over 99% of the sample and adversely impact on the significance of the results. Thus, in order to solve the multicollinearity problem and also deal with the issues inherent to panel data, the present study applies the bootstrap re-sampling method to clustered observations randomly selected from stratified samples from within the data. The steps involved in this technique are described below.

As discussed above, in panel data sets residuals may be correlated across firms or across time which can render ordinary least squares (OLS) estimates biased and result in over or under estimation of the true variability of coefficient estimates (Drukker, 2003; Petersen, 2009). Clustering is a technique which groups together the observations from one particular firm. This recognises that the observations from the same firm are not independent and computes standard errors and test statistics that are robust to any form of serial correlation or heteroskedasticity (Wooldridge, 2013).

Standard stratified sampling is a sampling method in which the data is divided into strata and then a fixed number of observations (or clusters of observations) are randomly selected from each stratum for testing. It is usually applied when different subsets of the population are sampled with different frequencies which results in a sample which is not representative of the population[30] (Wooldridge, 2010). Stratified sampling is used in several prior studies from a range of areas within finance literature, including Altman (1968), Gilson (1989), Opler and Titman (1994), Uzzi and Gillespie (2002), Ayyagari et al. (2010) where a particular group of observations is under or over represented. In the present study, the strata are the countries and the uneven number of observations from each country results in an under or over representation of each country in any statistical tests.

[30] This is not necessarily the case for the sample used in this study. The sample is representative of the population of firms available from the Bureau Van Dijk database. Although there is no complete certainty that these firms are representative of the population of SMEs within the country, it is assumed that this is the case.

The stratified sampling method is altered slightly to account for the data being panel data. If 100 observations were randomly selected from each country, out of the countries with the larger numbers of observations, the likelihood of selecting two observations from the same firm is small. This would result in the loss of the benefits obtained from using panel data over cross-sectional data. In order to solve this, clustering is used as part of the sampling process. Instead of 100 observations from each country being selected, 50 firms and all of the observations from those firms are randomly selected from each stratum.

However, this does raise another issue. The number of observations from each firm is not equal. The data covers a five year period and the number of observations per firm ranges from one to five. If these methods are employed in order to eliminate the multicollinearity caused by the uneven number of observations from each country, does clustered stratified sampling not also result in an uneven number of observations from each country? The answer to this question is yes. However, the number of observations from each firm, and as a result each country, will not be equal, but even in the worst case scenario (the random sampling selects 50 firms with one observation from one country and 50 firms with 5 observations each so 250 observations for another country) multicollinearity is not present.

The non-parametric bootstrap is a resampling approach developed by Efron (1979). Bootstrapping treats the observed sample as the population and repeatedly tests smaller, bootstrap samples from within the population in order to generate its own sampling distribution. This type of analysis does not lead to traditional asymptotic inference, but is used to obtain a portrayal of the sampling properties using the sample data itself (Greene, 2000). That is, it uses the distribution of the results of the various iterations from which to obtain statistical inference for the population. It then uses backwards elimination to develop a parsimonious predictive model (Austin and Tu, 2004) and reports coefficients and standard errors calculated using the following methods as described by Amemiya (1986).

1. Firstly, the model is specified based on the entire sample and the error term is calculated for each observation using the following formula, where ε_t is the error term of the vector, y_t is the dependent variable and β is the model estimator.

$$\mathcal{E}_t = y_t - f_t(\beta)$$

2. The bootstrap now calculates the empirical distribution function,[31] F of $\{\varepsilon_t\}$.
3. Next, $\{\varepsilon_{it}^*\}$ is generated based on t = 1, 2, …, T repetitions of i = 1, 2, …, N observations. These standard errors from the repeated iterations of the model using the bootstrap samples are collected.
4. Using these standard errors and F, the following formula is calculated:

$$y_{it}^* = f_t(\hat{\beta}) + \varepsilon_{it}^*$$

5. The model estimator β_i^* that minimizes the following formula is estimated:

$$\sum_{t=1}^{T}[y_{it}^* - f_t(\beta)]^2 \quad for\ i = 1, 2, \dots, N$$

6. Finally, the distribution of $\hat{\beta}$ is approximated by the empirical distribution function of $\{\beta_i^*\}$

Ordinarily, the bootstrap selects random bootstrap samples from within the full sample. However, in this study, the bootstrap will select bootstrap samples based on the stratified sampling method described above. Bootstrapping has become increasing popular as a method of analysing data, largely due to advances in statistical software and increased computing power (Davison et al., 2003). It can improve inference based on asymptotic theory generated from more traditional testing methods and is often used to refine any inference made from the usual asymptotic theory (Li and Wang, 1998; Wooldridge, 2010).

Wu (1986) advises against the use of bootstrapping as an independent method where there is no exchangeable component within a model (e.g., heteroskedasticity, generalized linear models) as it can result in biased estimators or inconsistencies in results. This study, applies both OLS and random effects models[32] to the data. When the two sets of results were compared, the random effects model exhibited marginally smaller standard errors but significantly higher levels of bias in the coefficients. On that

[31] The empirical distribution function or cumulative distribution function is used to compute probabilities for continuous random variables. It gives "the probability of a random variable being less than or equal to any specified real number" (Wooldridge, 2013:840).

[32] The random effects model was chosen over the fixed effects model as the most appropriate method. The fixed effects model uses the variation of an independent variable within each firm to estimate the "fixed effect" an omitted variable may have on the dependent variable. The cultural dimensions have no variation at firm level and when used in a fixed effects model are excluded from the results rendering this model inappropriate.

basis, the OLS model is deemed most suitable. Brownstone and Valletta (2001) commented that bootstrapping can be used independently to generate statistical inference when more traditional methods are not suitable which appears to be the case in this study.

To summarize, the combination of clustering, stratified sampling and bootstrapping allows the testing of all three cultural dimensions and control variables without subjecting the model to multicollinearity, whilst dealing with the lack of independence of between observations from the same firm, and without reducing the number of observations in the analysis. This analysis divides the data into nine strata (countries) and through the application of bootstrapping, uses the observations from 50 randomly selected firms from each stratum. The bootstrapping then runs the regression model on the randomly selected firms using 1,000 repetitions.[33]

4.9 Regression Model

In order to test the hypotheses developed in Section 3.5, an OLS regression model is employed in conjunction with the techniques described above. *LEV* is the dependent variable and the cultural dimensions, firm level and institution level factors are the independent variables.

$$LEV = \alpha + \beta_1 EMB + \beta_2 HIER + \beta_3 MAST + \beta_4 SIZE + \beta_4 PROF + \beta_5 TANG + \beta_6 GROW + \beta_7 LIQ + \beta_8 RISK + \beta_9 IND + \beta_{10} LEGTRA + \beta_{11} BDMK + \beta_{12} STPRO + \varepsilon$$

The model above is used to test the full sample and the subsamples of micro, small and medium firms. The only difference between the models for the full sample, micro, small and medium firms is the industry variable. As the industry leverage median is used, the industry leverage median is calculated for the full sample, micro, small and medium firms separately.

[33] Between 200 and 500 repetitions is usually sufficient to obtain accurate standard errors where bootstrapping is being used as a robustness check (Efron and Tibshirani, 1993). Where multiple regression models and confidence intervals are being calculated over 1,000 repetitions is required (Efron, 1982). This study conducted the bootstrap analysis multiple times using various numbers of repetitions. The results were consistent at 250, 500, 1,000, 2,000 and 5,000 repetitions. In order to use a number of repetitions that falls within the recommend range whilst minimising the time required to conduct each test 1,000 was the number of repetitions chosen for each test.

Additional variables which captured the effects of macroeconomic conditions, stock market development and tax rate are excluded from the regression model because, despite the findings of prior literature which suggest that these variables can have an effect on the capital structure of firms, in this study, this is not the case. Macroeconomic conditions are defined as GDP growth rates, as used by De Jong et al. (2008) and Kayo and Kimura (2012). Stock market development is captured as stock market capitalisation as a percentage of GDP, also used by De Jong et al. (2008) and Kayo and Kimura (2012) (both captured from WDI) and the country's highest marginal corporate tax rate is used to capture the effect of the debt tax shield as used by Frank and Goyal (2009).

They were all found to be highly insignificant, therefore not contributing towards the predictive ability of the model, and merely inflating standard errors. Upon further investigation into these variables, and those included in the model, the discovery is made that some variables, particularly the institution level variables, exhibit high levels of bias. The removal of the very insignificant institutional variables (which also exhibit the highest levels of bias) reduces the bias in the remaining estimators, therefore not only reducing the standard errors, but reducing bias in the model.

4.10 Summary and Conclusion

This chapter begins by providing the definition of an SME for the purposes of this study. This is unlisted firms which meet the size criteria set out by The Companies Act 2006. Additionally, the EU SME definition is used when dividing the SMEs into micro, small and medium firms. Following on from this, tables are presented which show the structure of the sample. The data is from nine countries and covers the period 2006 – 2010. This section highlights that with the limitations of the data. More specifically, the number of data points varies greatly between countries (China has 371,102 observations and New Zealand has 119) and across time (In 2006 there are 209,869 observations and in 2010 there are 74,022).

The discussion then moves on to defining the dependent and independent variables which are used in the empirical analyses. These variables are based on those used in prior studies on the capital structure of SMEs where possible or listed firms where this is not.

After defining the variables, the empirical methods are described. This study uses a clustered stratified re-sampling method in conjunction with an ordinary least squares regression model to account for the uneven number of observations in the sample from each country. The uneven number of observations causes a false multicollinearity issue between the cultural dimensions. The stratified re-sampling method evens out the number of observations from each country in the empirical testing which eliminates the false multicollinearity.

The following chapter proceeds with the empirical results of the study obtained by using the methods described in this chapter.

Chapter 5 Results

This chapter presents the results and discussion of the empirical analysis. It begins by presenting descriptive statistics (Section 5.1), followed by univariate tests (Section 5.2). Then, the results of the multivariate analysis are presented in Sections 5.3 and 5.4. Finally, robustness tests using the tobit model, lagged asset values as the denominator of independent variables, Hofstede's cultural values as an alternative to Schwartz's cultural dimensions and further testing using alternative debt ratios are presented in Section 5.5. Section 5.6 concludes the chapter.

5.1 Descriptive Statistics

Table 5.1 presents descriptive statistics for the institutional variables including the cultural dimensions. This table shows summary statistics for the full sample and each subsample of SMEs. The institutional variables have the same value for all observations within the same country, regardless of the firm's size category. The variation in the descriptive statistics between subsamples is caused by the variation in the number of observations from each country. These descriptive statistics tables have the same number of observations as the following empirical analysis which is lower than the number of observations presented in Chapter 4.

In order to reduce the effect of outlying observations on the descriptive statistics, the univariate tests and the multivariate analysis two methods are used. Firstly, variables are winsorised at the one and the ninety-nine percentiles. Secondly, a regression model is calculated and so too are the residuals. Any observation with a residual of more than two standard deviations from the mean of the residuals is removed from the sample.[34]

[34] The number of excluded observations from tests on the full sample is 29,324 and from the subsamples of micro, small and medium firms, 21,837, 10,970 and 6,460 respectively. To ensure that the removal of outlying observations does not remove all observations from one or multiple countries, tables were created which show the excluded observations by country from each sample tested (Appendix 3).

Table 5.1 Descriptive Statistics for Institutional Variables

Sample Firms (N)		EMB	HIER	MAST	LEGTRA	CORR	SHARE	CRED	JUD	STPRO	BDMK
Full Sample	Mean	3.60	3.00	4.21	0.17	8.03	3.21	2.53	8.87	5.42	1.01
(868,684)	1st Quartile	3.49	2.65	4.06	0.00	8.03	2.33	2.00	8.54	5.31	0.44
	Median	3.68	2.90	4.21	0.00	8.03	2.33	2.33	8.54	5.31	0.49
	3rd Quartile	3.74	3.49	4.41	0.00	8.53	4.00	3.00	10.00	5.88	1.99
	SD	0.17	0.46	0.18	0.37	1.06	1.08	0.68	1.44	0.80	0.72
Micro	Mean	3.58	2.90	4.16	0.21	8.04	3.40	2.56	8.92	5.44	1.14
(429,246)	1st Quartile	3.49	2.65	4.06	0.00	8.03	2.33	2.00	8.54	5.31	0.48
	Median	3.49	2.65	4.06	0.00	8.53	4.00	2.33	10.00	5.88	0.55
	3rd Quartile	3.74	3.49	4.41	0.00	8.53	4.00	3.00	10.00	5.88	2.04
	SD	0.17	0.43	0.17	0.41	1.15	1.09	0.72	1.66	0.89	0.75
Small	Mean	3.64	3.14	4.27	0.08	7.97	2.92	2.43	8.75	5.35	0.91
(273,057)	1st Quartile	3.49	2.65	4.06	0.00	8.03	2.33	2.00	8.54	5.31	0.44
	Median	3.74	3.49	4.41	0.00	8.03	2.33	2.33	8.54	5.31	0.49
	3rd Quartile	3.74	3.49	4.41	0.00	8.53	4.00	2.33	10.00	5.88	1.18
	SD	0.14	0.43	0.17	0.27	0.95	0.95	0.52	1.19	0.68	0.68
Medium	Mean	3.61	3.05	4.24	0.20	8.13	3.18	2.60	8.93	5.48	0.82
(156,438)	1st Quartile	3.49	2.65	4.06	0.00	8.03	2.33	2.33	8.54	5.31	0.48
	Median	3.74	3.49	4.41	0.00	8.03	2.33	2.33	8.54	5.31	0.49
	3rd Quartile	3.74	3.49	4.41	0.00	8.53	4.00	3.00	10.00	5.88	1.02
	SD	0.17	0.49	0.19	0.40	1.00	1.12	0.77	1.13	0.69	0.63

Outlying observations more than two standard deviations from the mean of the residuals are removed from the sample before these statistics are calculated. The data relates to the total period examined. The variable definitions are provided in Table 4.9 on page 75.

The majority of the numerical values for Schwartz's cultural dimensions range between 2.5 and 4.5. The mean values for Embeddedness, Mastery and Hierarchy are 3.60, 4.21 and 3.00 and the standard deviations are 0.17, 0.18 and 0.46 respectively. The majority of the data is collected from South East Asia which might have resulted in very similar cultural dimensions scores but these figures indicate that, despite this, there is sufficient cultural diversity to test for the effect of culture on capital structure in the sample used.

The descriptive statistics show that over 75% of the data belongs to countries which have code law systems. This is because Korea, China and Japan all have code law systems and these countries have many observations. Despite this, the number of countries with each type of legal system is divided fairly evenly. Four countries (Malaysia, New Zealand, Thailand and the UK) have civil law systems and five countries (China, Japan, Korea, Philippines, Taiwan) having code law systems.

Bond market development may be the same for each observation in the same country but this institutional variable changes depending on the year of the observation. Japan has the highest value of any country for this variable (with a mean of 2.01 over the total period). This value is almost double that of Korea (1.09) which has the second most developed bond market suggesting that companies in Japan could have high debt ratios. New Zealand has the lowest mean value for bond market development (0.15). New Zealand does not have a private bond market so this figure only includes the public bond market which explains why it is so low compared with the rest of the sample.

As explained in Section 4.5.2, corruption, shareholder rights, creditor rights and the efficiency of the judicial system variables are combined into one variable which captures the enforcement of legal systems and protection of those who provide finance. The mean of the four values is *STPRO*. The possible values for this variable range between 0 and 7.5 but most values are between 5 and 6. This suggests that, in this sample, protection and enforcement are relatively high.

Table 5.2 Descriptive Statistics for Firm Specific Variables (Full Sample)

Country (N)		LEV	SIZE	PROF	TANG	RISK	GROW	LIQ
Total	Mean	0.214	13.486	0.106	0.393	0.464	0.293	2.988
(864,929)	1st Quartile	0.000	12.605	0.005	0.169	0.000	-0.069	0.903
	Median	0.000	13.529	0.045	0.358	0.082	0.108	1.346
	3rd Quartile	0.397	14.486	0.134	0.585	0.576	0.416	2.400
	SD	0.299	1.407	0.267	0.263	0.696	0.755	6.392
China	Mean	0.004	13.892	0.160	0.405	0.503	0.356	2.364
(370,869)	1st Quartile	0.000	13.126	0.019	0.204	0.000	-0.082	0.829
	Median	0.000	13.845	0.066	0.385	0.000	0.136	1.147
	3rd Quartile	0.000	14.650	0.187	0.582	1.920	0.513	1.839
	SD	0.037	1.077	0.286	0.242	0.844	0.845	5.292
Japan	Mean	0.426	13.207	0.011	0.363	0.308	0.222	3.467
(237,557)	1st Quartile	0.125	12.245	-0.031	0.155	0.006	-0.064	1.140
	Median	0.411	13.196	0.014	0.328	0.253	0.127	1.761
	3rd Quartile	0.668	14.175	0.054	0.543	0.507	0.366	3.139
	SD	0.329	1.377	0.170	0.244	0.294	0.530	6.273
Korea	Mean	0.302	13.407	0.080	0.375	0.459	0.435	4.601
(73,753)	1st Quartile	0.078	12.619	0.028	0.146	0.000	-0.009	1.057
	Median	0.258	13.333	0.070	0.310	0.188	0.154	1.703
	3rd Quartile	0.492	14.161	0.126	0.577	0.509	0.481	3.572
	SD	0.253	1.129	0.145	0.271	0.647	0.929	9.176
Malaysia	Mean	0.073	14.118	0.071	0.257	0.195	0.140	2.456
(192)	1st Quartile	0.000	13.142	0.013	0.052	0.000	-0.107	0.925
	Median	0.009	14.208	0.043	0.182	0.018	0.042	1.243
	3rd Quartile	0.093	15.242	0.128	0.418	0.126	0.225	1.746
	SD	0.126	1.365	0.179	0.233	0.481	0.590	6.619
New	Mean	0.126	15.157	0.088	0.336	0.486	0.189	2.494
Zealand	1st Quartile	0.000	14.502	0.022	0.077	0.000	-0.071	0.935
(118)	Median	0.000	15.349	0.072	0.287	0.000	0.080	1.541
	3rd Quartile	0.195	15.944	0.149	0.510	0.676	0.199	2.227
	SD	0.213	0.897	0.194	0.287	0.786	0.723	3.383
Philippines	Mean	0.103	15.095	0.057	0.301	0.037	0.077	2.767
(2,445)	1st Quartile	0.000	14.622	0.007	0.105	0.000	-0.110	0.984
	Median	0.000	15.309	0.041	0.242	0.000	0.055	1.307
	3rd Quartile	0.136	15.831	0.096	0.448	0.000	0.248	2.129
	SD	0.178	0.948	0.168	0.240	0.115	0.424	6.172
Taiwan	Mean	0.189	14.414	0.056	0.324	0.040	0.220	1.749
(509)	1st Quartile	0.000	13.630	0.003	0.108	0.000	-0.128	0.807
	Median	0.151	14.631	0.030	0.291	0.000	0.046	1.089
	3rd Quartile	0.301	15.664	0.090	0.504	0.035	0.364	1.519
	SD	0.192	1.499	0.191	0.245	0.084	0.715	3.528
Thailand	Mean	0.104	11.504	0.017	0.454	0.271	0.232	9.412
(18,555)	1st Quartile	0.000	10.258	-0.028	0.101	0.000	-0.075	0.833
	Median	0.000	11.335	0.026	0.406	0.000	0.045	1.954
	3rd Quartile	0.055	12.551	0.102	0.811	0.217	0.304	8.063
	SD	0.222	1.497	0.233	0.355	0.564	0.782	15.909
UK	Mean	0.340	13.193	0.185	0.428	0.733	0.195	1.892
(124,931)	1st Quartile	0.091	11.694	0.018	0.127	0.088	-0.081	0.719
	Median	0.279	13.247	0.080	0.368	0.332	0.020	1.146
	3rd Quartile	0.534	14.897	0.243	0.714	1.920	0.206	1.803
	SD	0.287	1.897	0.359	0.326	0.785	0.748	3.854

Outlying observations more than two standard deviations from the mean of the residuals are removed from the sample before these statistics are calculated. The data relates to the total period examined. The variable definitions are provided in Table 4.8 on page 72.

Table 5.3 Descriptive Statistics for Firm Specific Variables for (Micro Firms)

Country (N)		LEV	SIZE	PROF	TANG	RISK	GROW	LIQ
Total	Mean	0.284	12.448	0.079	0.384	0.498	0.214	3.542
(429,761)	1st Quartile	0.000	11.843	-0.009	0.156	0.000	-0.095	0.890
	Median	0.111	12.625	0.036	0.338	0.167	0.066	1.413
	3rd Quartile	0.513	13.237	0.119	0.578	0.663	0.336	2.765
	SD	0.356	1.050	0.272	0.269	0.684	0.660	7.551
China	Mean	0.002	13.003	0.091	0.371	0.543	0.177	2.275
(128,932)	1st Quartile	0.000	12.580	0.012	0.173	0.000	-0.113	0.834
	Median	0.000	13.072	0.048	0.343	0.000	0.052	1.141
	3rd Quartile	0.000	13.522	0.118	0.541	1.920	0.341	1.788
	SD	0.027	0.677	0.191	0.236	0.864	0.610	5.074
Japan	Mean	0.473	12.355	-0.002	0.364	0.339	0.207	3.937
(172,122)	1st Quartile	0.125	11.719	-0.066	0.154	0.000	-0.093	1.086
	Median	0.439	12.456	0.007	0.327	0.262	0.103	1.819
	3rd Quartile	0.729	13.090	0.054	0.548	0.550	0.357	3.484
	SD	0.388	0.962	0.210	0.247	0.348	0.555	7.279
Korea	Mean	0.278	12.683	0.071	0.362	0.523	0.410	6.189
(40,278)	1st Quartile	0.064	12.206	0.022	0.152	0.034	-0.021	1.195
	Median	0.215	12.729	0.063	0.293	0.206	0.133	2.202
	3rd Quartile	0.452	13.230	0.119	0.542	0.587	0.453	5.108
	SD	0.253	0.752	0.156	0.259	0.695	0.911	11.093
Malaysia	Mean	0.090	12.685	0.016	0.293	0.167	0.078	3.613
(71)	1st Quartile	0.000	12.050	-0.024	0.067	0.000	-0.099	0.703
	Median	0.022	12.815	0.023	0.238	0.027	0.027	1.080
	3rd Quartile	0.109	13.400	0.063	0.457	0.162	0.182	1.701
	SD	0.149	0.878	0.134	0.247	0.398	0.326	10.542
Philippines	Mean	0.031	13.124	-0.070	0.399	0.019	-0.320	3.651
(68)	1st Quartile	0.000	12.786	-0.177	0.181	0.000	-0.727	0.419
	Median	0.000	13.253	0.012	0.346	0.000	-0.229	1.329
	3rd Quartile	0.000	13.715	0.050	0.554	0.000	-0.044	2.805
	SD	0.090	0.748	0.227	0.260	0.083	0.326	9.069
Taiwan	Mean	0.110	12.293	0.098	0.227	0.014	0.220	3.289
(112)	1st Quartile	0.000	11.628	0.005	0.048	0.000	-0.195	0.704
	Median	0.000	12.396	0.060	0.158	0.000	0.080	1.250
	3rd Quartile	0.208	13.224	0.174	0.351	0.000	0.461	2.517
	SD	0.158	1.185	0.292	0.224	0.054	0.694	6.932
Thailand	Mean	0.113	11.201	0.011	0.464	0.288	0.202	10.162
(16,605)	1st Quartile	0.000	10.139	-0.035	0.103	0.000	-0.087	0.843
	Median	0.000	11.094	0.022	0.423	0.000	0.029	2.188
	3rd Quartile	0.042	12.131	0.100	0.831	0.242	0.254	9.520
	SD	0.251	1.240	0.239	0.359	0.582	0.761	16.440
UK	Mean	0.380	11.824	0.275	0.448	0.833	0.189	1.849
(71,573)	1st Quartile	0.103	10.890	0.027	0.137	0.133	-0.103	0.574
	Median	0.321	11.902	0.138	0.396	0.451	0.009	1.035
	3rd Quartile	0.602	12.800	0.422	0.756	1.920	0.211	1.744
	SD	0.317	1.239	0.435	0.334	0.796	0.759	4.018

Outlying observations more than two standard deviations from the mean of the residuals are removed from the sample before these statistics are calculated. The data relates to the total period examined. The variable definitions are provided in Table 4.8 on page 72.

Table 5.4 Descriptive Statistics for Firm Specific Variables (Small Firms)

Country (N)		LEV	SIZE	PROF	TANG	RISK	GROW	LIQ
Total	Mean	0.140	13.964	0.135	0.382	0.450	0.338	2.470
(273,271)	1st Quartile	0.000	13.532	0.014	0.172	0.000	-0.048	0.927
	Median	0.000	14.096	0.058	0.354	0.000	0.154	1.320
	3rd Quartile	0.234	14.480	0.160	0.562	0.496	0.482	2.172
	SD	0.231	0.676	0.261	0.249	0.722	0.753	4.939
China	Mean	0.002	13.915	0.196	0.410	0.515	0.382	2.402
(158,030)	1st Quartile	0.000	13.453	0.025	0.211	0.000	-0.066	0.833
	Median	0.000	14.056	0.085	0.394	0.000	0.172	1.151
	3rd Quartile	0.000	14.462	0.242	0.587	1.920	0.557	1.871
	SD	0.024	0.711	0.312	0.240	0.850	0.822	5.335
Japan	Mean	0.366	14.055	0.024	0.332	0.275	0.244	2.598
(68,656)	1st Quartile	0.128	13.679	-0.003	0.142	0.046	-0.031	1.217
	Median	0.367	14.143	0.018	0.298	0.246	0.156	1.713
	3rd Quartile	0.582	14.496	0.053	0.489	0.453	0.386	2.673
	SD	0.260	0.582	0.095	0.226	0.234	0.495	3.651
Korea	Mean	0.300	13.907	0.096	0.354	0.406	0.478	2.857
(24,162)	1st Quartile	0.090	13.453	0.044	0.127	0.000	0.021	1.046
	Median	0.279	13.974	0.083	0.295	0.177	0.197	1.493
	3rd Quartile	0.484	14.414	0.138	0.549	0.452	0.543	2.478
	SD	0.229	0.647	0.124	0.262	0.601	0.933	5.663
Malaysia	Mean	0.051	14.179	0.110	0.195	0.195	0.278	1.909
(50)	1st Quartile	0.000	13.897	0.031	0.017	0.000	-0.112	1.086
	Median	0.006	14.235	0.064	0.102	0.010	0.032	1.294
	3rd Quartile	0.034	14.502	0.160	0.374	0.085	0.238	1.637
	SD	0.105	0.411	0.252	0.211	0.522	0.998	2.692
Philippines	Mean	0.061	14.185	0.022	0.320	0.025	-0.129	2.807
(390)	1st Quartile	0.000	13.819	0.003	0.129	0.000	-0.340	0.882
	Median	0.000	14.314	0.036	0.276	0.000	-0.080	1.457
	3rd Quartile	0.032	14.689	0.086	0.469	0.000	0.095	2.534
	SD	0.130	0.614	0.172	0.245	0.083	0.390	5.516
Taiwan	Mean	0.146	14.141	0.054	0.293	0.033	0.204	1.282
(156)	1st Quartile	0.000	13.818	0.006	0.088	0.000	-0.173	0.738
	Median	0.103	14.266	0.026	0.225	0.000	0.036	0.977
	3rd Quartile	0.253	14.595	0.067	0.465	0.006	0.414	1.301
	SD	0.153	0.598	0.139	0.252	0.075	0.706	1.578
Thailand	Mean	0.104	13.538	0.070	0.348	0.139	0.446	3.829
(1,608)	1st Quartile	0.000	13.100	0.009	0.085	0.000	0.030	0.852
	Median	0.005	13.640	0.055	0.248	0.003	0.252	1.245
	3rd Quartile	0.149	14.242	0.114	0.563	0.148	0.558	2.133
	SD	0.168	0.937	0.165	0.305	0.327	0.855	9.455
UK	Mean	0.270	14.129	0.087	0.374	0.618	0.153	2.004
(20,219)	1st Quartile	0.071	13.741	0.012	0.085	0.047	-0.066	0.898
	Median	0.218	14.265	0.063	0.275	0.214	0.032	1.269
	3rd Quartile	0.429	14.618	0.153	0.625	0.856	0.205	1.899
	SD	0.228	0.634	0.190	0.323	0.768	0.577	3.912

Outlying observations more than two standard deviations from the mean of the residuals are removed from the sample before these statistics are calculated. The data relates to the total period examined. The variable definitions are provided in Table 4.8 on page 72.

Table 5.5 Descriptive Statistics of Firm Specific Variables (Medium Firms)

Country (N)		LEV	SIZE	PROF	TANG	RISK	GROW	LIQ
Total	Mean	0.159	15.322	0.130	0.432	0.403	0.428	2.354
(156,222)	1st Quartile	0.000	15.062	0.013	0.212	0.000	-0.032	0.884
	Median	0.000	15.370	0.052	0.413	0.005	0.155	1.252
	3rd Quartile	0.286	15.764	0.138	0.632	0.418	0.502	2.007
	SD	0.241	0.633	0.267	0.265	0.686	0.948	4.943
China	Mean	0.008	15.215	0.199	0.447	0.417	0.583	2.437
(83,365)	1st Quartile	0.000	14.995	0.019	0.247	0.000	-0.030	0.818
	Median	0.000	15.302	0.074	0.432	0.000	0.260	1.149
	3rd Quartile	0.000	15.704	0.234	0.632	0.000	0.708	1.867
	SD	0.045	0.710	0.335	0.249	0.790	1.102	5.549
Japan	Mean	0.397	15.438	0.034	0.418	0.285	0.233	2.585
(31,541)	1st Quartile	0.153	15.133	0.005	0.208	0.046	-0.011	1.123
	Median	0.414	15.420	0.026	0.404	0.253	0.157	1.582
	3rd Quartile	0.622	15.789	0.059	0.610	0.469	0.360	2.530
	SD	0.270	0.474	0.075	0.251	0.245	0.452	4.107
Korea	Mean	0.385	15.283	0.083	0.468	0.285	0.421	2.252
(8,270)	1st Quartile	0.147	15.051	0.022	0.174	0.000	-0.013	0.689
	Median	0.395	15.300	0.063	0.469	0.119	0.146	1.157
	3rd Quartile	0.598	15.667	0.121	0.733	0.388	0.451	1.823
	SD	0.264	0.580	0.141	0.309	0.452	0.946	5.418
Malaysia	Mean	0.070	15.446	0.094	0.263	0.246	0.111	1.667
(72)	1st Quartile	0.000	15.164	0.020	0.049	0.000	-0.133	1.037
	Median	0.002	15.494	0.069	0.209	0.022	0.089	1.267
	3rd Quartile	0.107	15.926	0.155	0.443	0.148	0.275	1.935
	SD	0.112	0.659	0.148	0.228	0.563	0.361	1.069
New Zealand	Mean	0.154	15.730	0.065	0.260	0.314	0.164	2.237
(62)	1st Quartile	0.000	15.412	0.027	0.061	0.000	-0.084	1.099
	Median	0.034	15.699	0.073	0.197	0.000	0.037	1.602
	3rd Quartile	0.273	16.167	0.150	0.467	0.226	0.199	2.071
	SD	0.205	0.385	0.169	0.234	0.646	0.697	2.960
Philippines	Mean	0.088	15.360	0.070	0.292	0.031	0.134	2.750
(1,899)	1st Quartile	0.000	15.069	0.008	0.100	0.000	-0.069	1.000
	Median	0.000	15.516	0.043	0.232	0.000	0.103	1.303
	3rd Quartile	0.126	15.925	0.106	0.436	0.000	0.283	2.059
	SD	0.148	0.793	0.164	0.236	0.096	0.414	6.190
Taiwan	Mean	0.194	15.677	0.046	0.398	0.052	0.243	1.403
(207)	1st Quartile	0.032	15.409	0.001	0.226	0.000	-0.093	0.921
	Median	0.190	15.766	0.028	0.400	0.000	0.040	1.149
	3rd Quartile	0.294	16.059	0.088	0.551	0.072	0.312	1.514
	SD	0.155	0.505	0.147	0.225	0.087	0.762	1.107
Thailand	Mean	0.148	15.154	0.043	0.467	0.197	0.526	3.896
(419)	1st Quartile	0.000	15.052	-0.007	0.125	0.000	0.016	0.644
	Median	0.011	15.327	0.030	0.472	0.007	0.269	1.068
	3rd Quartile	0.285	15.770	0.092	0.749	0.262	0.575	2.046
	SD	0.201	0.950	0.156	0.332	0.382	1.037	10.135
UK	Mean	0.271	15.503	0.057	0.407	0.547	0.227	1.878
(30,387)	1st Quartile	0.084	15.181	0.011	0.141	0.048	-0.052	0.926
	Median	0.231	15.507	0.051	0.356	0.186	0.039	1.258
	3rd Quartile	0.418	15.872	0.105	0.636	0.594	0.198	1.830
	SD	0.217	0.469	0.129	0.300	0.730	0.804	3.386

Outlying observations more than two standard deviations from the mean of the residuals are removed from the sample before these statistics are calculated. The data relates to the total period examined. The variable definitions are provided in Table 4.8 on page 72.

Table 5.2 shows descriptive statistics for the firm level variables (both the dependent and independent) for the full sample and for each country individually. The subsequent tables (5.3, 5.4 and 5.5) show the same descriptive statistics but for each subsample of micro small and medium firms individually.[35]

Table 5.2 shows that there is substantial variation in leverage ratios between companies across different countries. China reports the lowest mean debt ratios (0.004) and Japan reports the highest (0.426). Of the remaining countries, the UK and Korea have higher mean debt levels. Japan, Korea and the UK also have the highest standard deviation for leverage, demonstrating high levels of in-country variation of leverage. Japan has the most developed bond markets, followed by Korea which may explain why these countries have higher debt ratios. Tables 5.3, 5.4 and 5.5 show the same information as Table 5.2 but for micro, small and medium firms individually. The debt ratios are highest in Japan, the UK and Korea in all three subsamples and China consistently has the lowest debt ratios.

Tables 5.2-5.5 shows that a significant proportion of SMEs from some countries (China, New Zealand, the Philippines and Thailand) have no debt in their capital structures. Romano et al. (2001:286) suggest that "Small family businesses and owners who do not have formal planning processes in place tend to rely on family loans as a source of finance" thus suggesting that they choose to avoid debt finance. The go on to say that small firms in particular tend to rely on equity finance provided by the owner and the owners family members. As the smallest SMEs; micro firms make up over half the sample this could explain why a significant proportion of the observations have no debt at all in their capital structures.

This means that for a large proportion of the data, the dependent variable is zero.[36] When a significant proportion of the observations have the same value (zero) for the dependent variable, this often reduces the variation in debt levels. For example, China

[35] In order to further reduce the effect of outliers, like Table 5.1 and the following analysis, preliminary regression models were used to calculate residual values in order to exclude outlying values. Outlying observations of more than two standard deviations from the mean of the residuals are removed prior to the calculation of descriptive statistics which again, explains the reduced number of observations when compared with the tables presented in Chapter 4.

[36] In order to ensure that the large number of observations with zero for the value of the dependent variables does not adversely affect the empirical results, robustness tests are conducted using the tobit model. This is discussed and the results are presented in Section 5.5.1.

has the highest proportion of observations with no debt (over 75%) and the lowest standard deviation (0.037) whereas Japan has less than 25% of firms with no debt and a much higher standard deviation of 0.329.

Although some other countries have a significant proportion of SMEs without debt (Malaysia, the Philippines and Thailand), Chinese firms are unusual as very few SMEs have any debt at all (less than 25%). This is particularly relevant as Chinese firms make up a significant proportion of the data. Wu et al. (2008) investigate SME financing in China and argue that despite the Chinese government lifting barriers for SMEs to encourage their development, they still have difficulty obtaining external finance. They say that the majority of SMEs are privately owned in China. However, privately owned SMEs are often discriminated against when attempting to obtain external finance when compared to state owned enterprises. They suggest that this is because the largest banks in China are also state owned and they are more willing to lend to state-owned enterprises. This suggests that Chinese SMEs will find it particularly difficult to obtain external finance and are more likely to rely on finance from the owner/manager or through private equity investments, often from other family members.

Additionally, Hillier et al. (2010) also report that when Chinese firms become listed, their initial public offerings are usually significantly under-priced. This may suggest that Chinese SMEs aim to become listed as soon as they can so they can obtain external finance from financial markets, despite having to under-price their initial offering of their shares.

Table 5.2 also shows that Chinese firms have a comparatively high proportion of tangible assets (mean 0.405) but very low debt levels (mean 0.004). This is consistent across all three subsamples. This is inconsistent with prior capital structure literature usually finds a positive relationship between tangibility and leverage.[37]

Additionally, Chinese SMEs have one of the highest profitability ratios of all countries in the full sample and across all three subsamples. This could also contribute towards

[37] Referring to Appendices 5 and 7, it can be seen that contrary to expectations, tangibility is negatively related to leverage in China in the full sample and small firms. Chen (2003) finds a positive relationship between leverage and tangibility but examines the capital structure of Chinese listed firms. The relationship between tangibility and leverage is often stronger in private firms (Goyal et al., 2011) than it is in listed firms. Thus, this finding is unusual but could be explained by the difficulties that Chinese SMEs encounter when obtaining external finance.

explaining why these SMEs have such low debt levels. The pecking order theory suggests that firms will use internal cash (profits generated) before borrowing. If Chinese firms apply the pecking order theory and are often highly profitable, then this suggests that they are less likely to require external finance.

These tables also show that throughout the subsamples, the UK has the highest level of firm risk. Additionally, the UK also has relatively high debt levels which could result in more firms from the UK getting into financial difficulties but could also indicate firms from the UK take on debt in order to generate growth. The growth figures for the UK across all subsamples are all below average which suggests that even though these firms are borrowing and have comparatively high levels of firm risk, they are not experiencing high growth rates.

In the full sample and throughout the subsamples, Japanese firms have high leverage ratios (mean 0.426) and low profitability (mean 0.011). This is accompanied by comparatively low levels of growth (mean 0.222) and risk (0.308). These characteristics of Japanese firms indicate that they may try to minimise the level of risk associated with the projects they choose and therefore, reduce the level of firm risk in order to ensure they meet the servicing requirements of their debt. They likely use the majority of their profits to do so which leaves little excess internal finance to fund growth.

This table also shows that Thai SMEs have very high liquidity ratios (mean 9.412) compared with 2.988 which is the mean of the full sample). This means that they have much higher amounts of current assets compared with current liabilities. This suggests that Thai SMEs do not make use of financial bootstrapping techniques as described by Holmes et al. (2003). This may differentiate Thai SMEs and the way they finance themselves from SMEs in other countries. The next subsection discusses the univariate tests performed and their results.

Comparing the leverage ratios in Tables 5.3, 5.4 and 5.5, the SMEs with the highest leverage ratios are micro firms (mean 0.214) and small firms have the lowest leverage ratios (mean 0.140). This order (micro firms with highest leverage ratios, followed by medium firms and small firms with the lowest) is not consistent throughout the sample, for example Korean micro firms have the lowest leverage ratios in Korea (mean 0.278) and leverage ratios increase in small firms (mean 0.300) and are higher still in medium

firms (mean 0.385). However, Thai micro firms have the highest leverage ratios (mean 0.380) and these decrease as firm size increases (small firm's mean 0.270 and medium firm's mean 0.148).

Looking at the profitability ratios, these are lowest in micro firms (mean 0.079) and slightly higher in small and medium firms (means 0.135 and 0.130). These figures indicate that small and medium firms, on average, are almost twice as profitable as micro firms. As micro firms also have the highest leverage ratios, a large proportion of their profits will likely to be used to make interest payment. This appears to limit their growth as micro firms also have the lowest growth rates (mean 0.214) compared with small (mean 0.338) and medium (mean 0.428) firms.

5.2 Univariate Tests

This section describes the results from a series of univariate tests carried out on the data prior to the multivariate analysis. Firstly, tests are carried out to establish any significant relationships between leverage and the independent variables for the full sample and each subsample. Then, the Levene test and *t*-tests are used to establish whether there are differences in the leverage ratios between countries and between size categories.

5.2.1 Pearson's Correlation Coefficients

Table 5.6 shows the Pearson correlation coefficients between the leverage ratio and the independent variables for the full sample and each subsample.[38] The information in this table provides an indication of how the cultural dimensions and the control variables will behave in the multivariate analysis that follows.

Table 5.6 shows some evidence there is a negative relationship between Embeddedness and Hierarchy and leverage (coefficients -0.433 and -0.505 respectively). This provides some support for H2 and H3. However, Table 5.6 shows that there is also a negative relationship between leverage and Mastery which is against the expectation of H1 (-0.499).

[38] This table is repeated in Appendix 4 using the Spearman correlation coefficients.

Table 5.6 Pearson correlation coefficients between the leverage ratio and the independent variables

Independent Variable	LEV			
	Full	Micro	Small	Medium
EMB	-0.433	-0.367	-0.557	-0.500
HIER	-0.505	-0.437	-0.627	-0.575
MAST	-0.499	-0.422	-0.623	-0.564
SIZE	-0.248	-0.265	0.118	0.169
PROF	-0.235	-0.208	-0.260	-0.253
TANG	0.099	0.123	0.062	0.138
GROW	-0.064	-0.026	-0.052	-0.107
LIQ	-0.049	-0.082	-0.023	-0.053
IND	0.471	0.419	0.519	0.473
RISK	0.180	0.237	0.059	0.100
LEGTRA	0.119	0.044	0.198	0.258
BDMK	0.457	0.411	0.545	0.452
STPRO	0.195	0.211	0.142	0.186

All reported values are significant at the one per cent level. The variable definitions are provided in tables 4.8 and 4.9 on pages 72 and 75.

Beyond this, some evidence that the control variables may affect different subsamples differently is shown. For example, size is negatively and significantly related to leverage in micro firms (coefficient -0.265). This would be expected based on the rationale that small firms borrow in order to establish themselves and as they start to grow and generate profits they repay their debts and decrease their debt levels. For small and medium firms, size is positively related to leverage (0.118 and 0.169 respectively). This is more in line with the trade-off theory and suggests that as firms grow they increase their debt capacity and make use of the benefits of debt.

Profitability, tangibility, liquidity, risk and industry all behave as would be expected based on prior capital structure literature. Profitability is negatively related to leverage (coefficient -0.235) as is liquidity (coefficient -0.049). Industry and tangibility are both positively related to leverage, as is risk (coefficients 0.471, 0.009 and 0.180 respectively). Growth is negatively related to leverage (coefficient -0.064) which is unexpected and more in line with prior studies' findings on listed firms than SMEs.

5.2.2 *T*-tests

T-tests are performed to determine whether the means of two sets of data are significantly different to each other. These tests are appropriate for this study because

they determine whether there are significant differences in leverage ratios between size categories and countries. When performing *t*-tests, it must first be established whether the two samples being compared have equal variances. When *t*-test statistics are calculated it is usually assumed that the variances are equal unless the calculation is altered to account for unequal variances. In order to test for equal variances, the Levene test is used. This is a robust method of assessing the equality of variances in two or more samples (Levene et al., 1960). It tests the null hypothesis that the variances of the two samples are equal. If the Levene test statistic is greater than 1.96 and $p<0.05$ then the *t*-test is conducted based on unequal variances. If $p>0.05$ then the t-test is performed based on the assumption that the two samples could have equal variances.

Table 5.7 shows the results of the Levene and *t*-tests when testing for leverage differences across countries. Most of the results for the Levene test show that the samples have different variances ($p<0.01$). There are three exceptions. When the Philippines and Taiwan are compared, the significance level is lower ($p<0.05$) and when New Zealand is compared with Taiwan and the Philippines the test results are insignificant (Levene's test statistic 0.03 and 1.24 respectively).

Most of the *t*-test results show that the samples from each country are different to those in the remaining countries although, there are a few exceptions. When the leverage ratios in Taiwan and Thailand and New Zealand and the Philippines are compared there are no significant differences found between these samples (*t*-statistics of 1.48 and 0.68 respectively). The remaining tests show there are significant differences between leverage ratios across countries providing evidence that institutional effects play a role.

Table 5.7 Results of the Levene and *t*-tests when testing for differences in leverage ratios between countries.

	China	Japan	Korea	Malaysia	New Zealand	Philippines	Taiwan	Thailand
Japan	393,442.70*** (560.00***)							
Korea	503,157.40*** (300.00***)	11,966.12*** (156.62***)						
Malaysia	669.31*** (7.47***)	125.94*** (49.69***)	141.41*** (26.19***)					
New Zealand	1,791.72*** (6.08***)	36.80*** (18.02***)	11.69*** (8.12***)	38.36*** (2.71***)				
Philippines	27,697.16*** (25.70***)	914.38*** (87.21***)	426.87*** (40.88***)	34.21*** (4.82***)	1.24 *(0.68)*			
Taiwan	7,935.39*** (18.71***)	155.74*** (29.03***)	45.11*** (9.44***)	46.79*** (9.58***)	0.03 *(2.89***)*	6.24** (7.37***)		
Thailand	205,835.35*** (62.66***)	282.73*** (82.53***)	3,045.00*** (23.57***)	73.54*** (15.70***)	18.12*** (4.08***)	462.28*** (18.08***)	75.73*** (1.48)	
UK	361,523.11*** (340.00***)	3,458.11*** (86.31***)	4,602.70*** (57.07***)	105.92*** (35.67***)	23.19*** (12.14***)	621.70*** (59.19***)	96.59*** (17.38***)	85.86*** (46.83***)

Levene's robust test statistic and *t*-statistic (in parentheses) when testing for differences in leverage ratios between countries. *T*-test results shown in italics are performed based on the assumption that the two samples compared may have equal variances. * p<0.10, ** p<0.05, *** p<0.01.

Reflecting back on Table 5.2, it can now be said that Japan has the highest leverage ratios (mean 0.426), followed by the UK (mean 0.340) and Korea (0.302) and the leverage ratios in these countries are significantly different to the leverage ratios in all other countries ($p<0.01$). Taiwan (mean 0.189), New Zealand (mean 0.126), Thailand (mean 0.104) and the Philippines (mean 0.103) are those countries with some insignificant results which could indicate that either, the leverage ratios could be similar or that these results could be coincidental based on lower numbers of observations.[39] Finally, Malaysia (mean 0.073) and China have the lowest leverage ratios (mean 0.004) and also have significantly different leverage ratios to all other countries. These results confirm that leverage ratios differ between countries and further suggest that institutional factors may indeed play a role in determining the capital structure of SMEs.

Table 5.8 provides the results of the same tests as Table 5.7 when testing for differences in leverage ratios between size categories.

Table 5.8 Results of the Levene and *t*-tests when testing for differences in leverage ratios between size categories

	Micro	Small
Small	48,640.36*** (202.88***)	
Medium	27,073.88*** (163.23***)	192.57*** (19.33***)

Levene's robust test statistic and t-statistic (in parentheses) when testing for differences in leverage ratios between size categories. * p<0.10, ** p<0.05, *** p<0.01.

Prior literature usually finds a positive relationship between size and leverage (e.g. Michaelas et al., 1998; Degryse et al., 2012) so the expectation would be that micro firms have the lowest debt ratios followed by small firms and medium firms would have the highest. However, looking back at Tables 5.3, 5.4 and 5.5 the mean debt ratio is highest in micro firms (0.284), lowest in small firms (0.140) and medium firms have

[39] Both the Levene's test statistic and *t*-statistics are sensitive to the number of observations in the samples. Lower numbers of observations could result in insignificant test statistics even when samples do not have equal variances. This could explain why insignificant results were found in tests using New Zealand and Taiwan.

slightly higher ratios (0.159) than small firms.[40] These test results confirm that these differences are statistically significant ($p<0.01$ for all *t*-tests) and shows why each size category must be tested individually as well as collectively. If leverage ratios are significantly different between size categories then the capital structure determinants may affect each group differently and the effect of culture may not be consistent across size categories.

5.3 Multivariate Analysis Results

This subsection presents the results of the multivariate analysis, describing the results of the regression models in relation to the hypotheses proposed in Section 3.5. The test results using the techniques and the model described in Sections 4.8 and 4.9 on the full sample and the three subsamples are found in Table 5.9.

Referring to the full sample, Table 5.9 shows that Embeddedness is negatively related to leverage with a coefficient of -0.264 ($p<0.01$). Hierarchy is also negatively related to leverage (coefficient -0.213, $p<0.01$). Mastery is not found to have significant relationship with leverage. Based on these findings there is no evidence in support of $H1_1$, that Mastery is positively related to leverage so on this occasion the null hypothesis cannot be rejected. However, sufficient evidence is found in support of $H2_1$, that Embeddedness is negatively related to debt levels and $H3_1$, that Hierarchy is negatively related to debt levels. In these cases there is sufficient evidence to reject the null hypotheses.

[40] Levene's test and *t*-tests are performed to determine whether there are statistically significant differences in leverage ratios between the size categories in each country and the results of these tests are shown in Appendix 9. New Zealand is not included in these tests as the number of observations of micro and small firms is very low and would not provide a good basis for comparison. This appendix shows that within each country the results differ and are partially influenced by the number of observations in each sample. The results for China, Japan, the UK and Korea all show significant differences between the three size categories. The tests on Malaysia, Taiwan and the Philippines often have insignificant results but these countries are those with the fewest observations. Intuition would suggest that the insignificant test results found in these countries are caused by the lower number of observations rather than similar leverage ratios.

Table 5.9 Dependent variable: Total Debt to Total Assets (LEV).

	Full Sample	**Micro Firms**	**Small Firms**	**Medium Firms**
EMB	**-0.264*** **	**-0.304*** **	**-0.337*** **	**-0.251*** **
	(-7.78)	(-5.57)	(-6.89)	(-6.30)
HIER	**-0.213*** **	**-0.175** **	**-0.163*** **	**-0.235*** **
	(-4.43)	(-2.52)	(-2.64)	(-3.81)
MAST	0.081	0.089	0.073	**0.334** **
	(0.72)	(0.55)	(0.49)	(2.05)
SIZE	-0.009	-0.025	0.015	0.015
	(-1.16)	(-1.62)	0.82	-0.85
PROF	**-0.131*** **	**-0.249*** **	-0.039	-0.038
	(-3.24)	(-4.38)	(-0.74)	(-0.73)
TANG	**0.221*** **	**0.234*** **	**0.173*** **	**0.199*** **
	(5.33)	(3.94)	(3.15)	(3.92)
GROW	0.006	0.010	0.001	-0.001
	(0.62)	(0.61)	(0.01)	(-0.02)
LIQ	**-0.003*** **	**-0.004*** **	-0.001	-0.002
	(-2.98)	(-3.47)	(-0.47)	(-0.87)
RISK	**0.053*** **	**0.089*** **	0.030	0.034
	(3.67)	(3.79)	(1.39)	(1.51)
IND	0.035	0.058	-0.060	0.147
	(0.43)	(0.58)	(-0.59)	(1.50)
LEGTRA	0.024	**0.066** **	0.047	**0.062** **
	(0.89)	(1.96)	(1.50)	(2.18)
BDMK	**0.138*** **	**0.165*** **	**0.149*** **	**0.165*** **
	(5.13)	(4.52)	(4.53)	(5.53)
STPRO	**-0.045*** **	-0.033	**-0.068*** **	**-0.085*** **
	(-2.84)	(-1.58)	(-3.56)	(-4.00)
CONS	**1.591*** **	**1.682*** **	**1.515*** **	0.360
	(3.93)	(3.53)	(2.91)	(0.60)
Adj. R Sq.	0.474	0.425	0.561	0.569
Wald Chi Sq.	**312.85*** **	**200.86*** **	**123.65*** **	**155.75*** **
Highest VIF	4.78	4.50	4.86	4.25
Mean VIF	2.18	2.10	2.03	2.00
No. of Obs.	864,929	429,761	273,271	156,222

Z-statistics are reported in parentheses. Variable definitions are provided in Tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

The control variables used in the multivariate analysis are divided into two categories: firm level and institution level. There are three institution level variables included in the model: legal tradition, standardised enforcement and protection of finance providers and bond market development. Again, referring to the full sample, legal tradition is an

insignificant determinant of capital structure. However, the bond market development and standardised enforcement and protection of finance providers are both significant at the one per cent level (coefficients of 0.138 and -0.045 respectively). The coefficient for bond markets is positive which is expected based on prior literature (De Jong et al., 2008; Faulkender and Petersen, 2006). If bond markets are well developed, then the cost of debt is more competitive. This is expected within the bond market itself. However, to be competitive when providing debt finance, banks may also reduce their cost of debt. Banks are the primary source of external finance for SMEs so if their debt is priced more competitively, then SMEs will be able to afford to have more debt in their capital structures.

The variable used to capture standardised enforcement and protection of finance providers is negatively related to leverage (with a coefficient of -0.045, $p < 0.01$). As protection of finance providers and the enforcement of that protection increases, SMEs' debt levels decrease. This suggests that SMEs are more cautious when their finance providers have more power to take action against them in the event of non-payment of interest. The competing theory that this relationship should be positive because lenders may be more willing to lend if they feel better protected is not found to be true in this instance.

Table 5.9 also shows the coefficients and the significance levels for the firm level variables: size, profitability, tangibility, growth, liquidity, risk and industry. Profitability is negatively related to leverage (coefficient -0.131, $p<0.01$) which is in accordance with the pecking order theory and prior literature (e.g., Sogorb-Mira, 2005; Degryse et al. 2012). Tangibility is found to be positively related to leverage (coefficient 0.221, $p<0.01$) which is also expected based on the findings of prior literature (e.g., Daskalakis and Psillaki, 2008; Degryse et al., 2012) but this finding is more in agreement with the trade-off theory suggesting that SMEs may apply both theories simultaneously.

Liquidity is found to be negatively related to leverage (coefficient -0.003, $p<0.01$) which suggests the application of the pecking order theory. Although there is limited empirical evidence which tests liquidity as a capital structure determinant this result is expected based on the findings of Deesomsak et al. (2004) and De Jong et al. (2008). If

firms have more internal cash, which is what high liquidity suggests, firms will use this internal cash before seeking external finance in the form of debt.

Risk is found to be positively related to leverage (coefficient 0.053, $p<0.01$). Some studies which test this SME capital structure determinant find a positive relationship (e.g., Michaelas et al., 1998; Nguyen and Ramachandran, 2006), although this is not conclusive (Psillaki and Daskalakis, 2009 find a negative relationship and Cassar and Holmes, 2003 find risk is insignificant). A positive relationship suggests that SMEs follow the pecking order theory and issue debt once internal finance has expired and do not apply the trade-off theory because if they did, a negative relationship between leverage and risk would be found.

Table 5.9 also shows that size, growth, and industry are insignificant determinants of the capital structure of SMEs. This is inconsistent with several prior studies (e.g. Cassar and Holmes, 2003; Hall et al., 2000) and unexpected. These findings prompted further investigation. De Jong et al. (2008) and Deesomsak et al. (2004) both find that the relationship between each capital structure determinant and leverage varies between countries. Appendices 5, 6, 7 and 8 show the results of random effects models with the firm level factors as independent variables and the leverage ratio (*LEV*) as the dependent variable for each individual country. Appendix 5 relates to the full sample and the subsequent appendices are for micro, small and medium firms. These appendices confirm that the relationships between these variables are not consistent across countries and the methods used to generate the results presented in Table 5.9 do not account for this variation which is why size, growth and industry[41] are all found to be insignificant.[42]

[41] Appendix 5 shows that size is a significant determinant of capital structure ($p<0.01$) in all countries except New Zealand ($p<0.05$) and Malaysia (insignificant) but this relationship is positive in China, Korea, New Zealand, Philippines and Taiwan and negative in Japan, Thailand and the UK. Growth is found to be a significant determinant of SME capital structure in six countries ($p<0.01$). Half of these countries have a positive relationship between growth and debt (Korea, Thailand and the UK) and the other half have a negative relationship (China, Japan and Taiwan). The relationship between leverage and industry is also mixed. Some countries report a positive relationship (China, Japan and the UK), Korea reports a negative relationship and in the remaining countries report an insignificant relationship.

[42] The findings presented below, in Section 5.5.4 show that capital structure determinants can affect long and short term debt differently. As some determinants are more likely to be associated with short term debt and others long term debt, combining both types of debt in the leverage ratio used as the dependent variable may also be partially responsible for the finding that some firm level control variables are insignificant.

Table 5.9 also shows the Wald statistic[43] for the model. The higher this value is the greater the prediction power of the model. A Wald statistic of 312.85 which has a p-value of less than 0.01 indicates that the model has a high level of prediction power. The corresponding adjusted R^2 value for the model (0.474) also suggests that this is the case. This figure indicates that the model explains almost half of the variation in capital structure despite there still being a significant element of the capital structure of SMEs unexplained by these determinants.

This table also shows the mean and highest VIF figures.[44] Prior literature suggests that for a model to be stable and reliable the highest VIF figure for any independent variable should be no more than five (Van Caneghem and Van Campenhout, 2012) although Ding et al. (2005) suggests this figure should be no greater than 10. The highest VIF figure for any variable in the regressions presented in Table 5.9 is 4.78 and the mean VIF is 2.18 when the full sample is tested. This confirms that the use of the stratified re-sampling method has solved the multicollinearity issues caused by the uneven number of observations from each country (see relevant discussion in Section 4.7).[45]

The results for the subsamples are also shown in Table 5.9. The results show that the cultural dimensions have a similar effect even across the separate subsamples. In all three subsamples, Embeddedness is negatively related to leverage (the coefficients are -0.304, -0.337 and -0.251 for micro, small and medium firms respectively, $p<0.01$). Hierarchy is also negatively related to leverage in the subsamples. One per cent significance level is attained for small and medium firms (coefficients being -0.163 and -0.235 respectively), while for micro firms, five per cent significance is attained

[43] The Wald Statistic in a linear model after transformation is essentially the F-statistic. It is used to test the hypothesis that one or more of the independent variables' regression coefficients are not equal to zero. It has an asymptotic chi-square distribution and the degrees of freedom equal to the number of independent variables in the regression model (Wooldridge, 2013). The Wald statistic is accompanied by a corresponding p-value which refers to the probability of attaining the given Wald statistic if in fact there is no relationship between the independent variables and the dependent variables.

[44] It is not possible to calculate the VIF figures for the bootstrap procedure using stratified sampling. Thus the VIF figures are calculated manually. This is done by, first, randomly selecting a sample like those used by in the bootstrap (e.g., for tests ran on the full sample, the observations from 50 randomly selected firms from each country were selected). Then, this small bootstrap sample was used to generate a regression model from which VIF figures were calculated and collected. This process was repeated 100 times for each model. Once all VIF figures were collected, the mean highest VIF figure was calculated, as was the mean average VIF figure and it is these values which are presented in Table 5.9.

[45] In order to further confirm this, Appendix ten is a correlation matrix showing the Pearson correlation coefficients for the bootstrap stratified samples. The figures in the correlation matrix are calculated in the same way as the VIF figures presented in Table 5.9 except that only ten repetitions are used to calculate the mean correlation coefficient.

(coefficient being -0.175). Mastery is insignificant in micro and small firms but is positively related to leverage ratios in medium firms at the five per cent level (coefficient being 0.334). This provides some evidence that H1 is supported by the results of the empirical analysis for these firms. However, these test results provide further strong evidence that H2 and H3 are supported by the results of the analysis and should be accepted.

The test results show that bond market development has a positive and significant relationship with capital structure in all three size categories ($p<0.01$). The variable which captures standardised enforcement and protection of finance providers is negatively related to leverage ($p<0.01$) but only in small and medium firms. This variable is insignificant in determining the capital structure of micro firms. On closer inspection of Table 5.9, it can be seen that the effect of this variable increases (both in terms of the coefficient and the z-statistic) as firm size increases. This suggests that SME managers of larger SMEs are more concerned about legal action if their firms enter into financial difficulties than the managers of smaller SMEs. The variable capturing legal systems is insignificant in small firms but indicates that micro and medium firms in countries with civil/common legal systems (Malaysia, New Zealand, Thailand and the UK) are more likely to have higher leverage ratios at a five per cent significance level.

Like the results for the full sample, size, growth and industry are also insignificant, for the three subsamples, despite the findings of prior literature. Tangibility is positively related to leverage in all three subsample at the one per cent significance level. Profitability is only significant and negative when tested in micro firms and is insignificant in small and medium firms. Similar results were found when considering risk and liquidity. These variables were only found to be significant in micro firms (risk has a positive coefficient and liquidity has a negative coefficient) but not in small or medium firms.

5.4 Discussion of Findings

Very little evidence in found to support H1 that Mastery should be positively related to leverage based on the value items *Capable, Ambitious, Daring* and *Choosing own Goals*. This hypothesis is developed based on the well-established connection between

risk and SME capital structure (Michaelas et al., 1998; Nguyen and Ramachandran, 2006) and cross-cultural differences in risk perceptions (Palmer, 1996; Bontempo et al., 1997; Renn and Rohrmann, 2000). However, as very little evidence is found in support of this hypothesis, this connection between SME capital structure and the Mastery dimension does not appear to be significant.

On reflection, this can probably be explained by the following. Mastery as well as containing the value items above, contains the value item *independent*. Independence can be a very important factor to an SME owner/manager (Shane et al., 1991). Vickery (1989) argues that managers may have a more cautious attitude towards their business operations in order to maintain their independence. As debt is accompanied by debt covenants which may result in input from external finance providers (Nini et al., 2009), SME managers with high Mastery values may prefer to avoid this and opt to have lower levels of debt as a result. If this is the case, it provides a conflicting argument regarding the effect of Mastery on capital structure and could explain why this dimension was found to be mostly an insignificant capital structure determinant.

When testing the subsamples, Mastery is found to be an insignificant determinant of capital structure in micro and small firms but significantly ($p<0.05$) positively related to leverage in medium sized firms. If a manager's need for independence plays a role in capital structure, this could explain this finding. Perhaps, the manager's need for independence balances out the effect of the more daring and ambitious traits found within the Mastery dimension indeed. However, a manager's need for independence may be more prominent in small firms and diminish as firm size increases. As firms increase in size, the need for independence diminishes whilst the increased risk tolerance remains. This could explain why evidence was found of a positive relationship between Mastery and leverage in medium firms but not small and micro firms.

Much more conclusive evidence is found in support of H2 which predicts a negative relationship between Embeddedness and leverage. This hypothesis, like H1, is based on the connection between risk and SME capital structure (Michaelas et al., 1998; Nguyen and Ramachandran, 2006) and cross-cultural differences in risk perceptions (Palmer, 1996; Bontempo et al., 1997; Renn and Rohrmann, 2000). It is expected that

Embeddedness, which includes the value items *Security, Preserving Public Image* and *Self-Discipline* would lead to a more cautious business approach by SME managers and will therefore, take on less debt.

The evidence found provides strong support for this hypothesis and confirms that Embeddedness captures an element of risk tolerance and risk is capital structure determinant. This finding suggests that managers in cultures with high Embeddedness values have low debt levels in their SMEs because they value the security and longevity of their firm. *Security* could be a particularly relevant value item as SMEs are often family firms where the firm is the sole source of income for the family. If this is the case, it is reasonable to find that this dimension lowers risk tolerance.

Additionally, the results found suggest that those cultures with high Embeddedness scores value close relationships. This is based on the value items *Preserving Public Image, Reciprocation of Favours* and *Respect Tradition.* SMEs are often dependent on a small number of relationships (Kinnie et al., 1999). SMEs in a country with a high Embeddedness score place even greater value in these relationships. The manager is likely to be concerned that if the firm takes on high debt levels and enters into a period of financial difficulties, these relationships may be jeopardized, causing irreparable damage to the firm.

Hierarchy is also found to be significantly negatively related to leverage. This provides evidence in support of H3. This shows that the value items in the Hierarchy dimension (*Wealth, Social Power* and *Authority)* capture the level of control individuals require in certain circumstances and that this level varies between cultures (Hofstede, 1980; Schwartz, 1994). Additionally, the level of control an SME manager requires can affect that SME's debt level (Nguyen and Ramachandran, 2006; Nini et al., 2009) because when SMEs take on debt they are obliged to comply with debt covenants (Berlin and Mester, 1992; Chava and Roberts, 2008). In the event of non-compliance debt providers can exert the control they receive through covenants and play an active role in corporate governance (Nini et al., 2009). Combining these ideas, this study, finds evidence that through managerial control, culture affects SME capital structure.

As SME managers are usually in close proximity to the daily operations of the firm (Torres and Julien, 2005) and the personal wealth of the manager is often tied to the

success of the firm (Ang, 1991), it is reasonable to conclude that managers prefer to remain close to the daily operations of the firm in order to protect their own personal wealth. To what extent this is true may well depend on the cultural values of the manager. These findings show that the effect of culture on the managerial level of control required could result in two possible extreme scenarios: one where the manager wants to maintain complete control and severely limits external influences and one where the manager is prepared to relinquish control in order to pursue business objectives which require more finance than the manager can provide, although any given culture could be anywhere on a scale between the two extremes.

The findings of the present study confirm that culture does affect the capital structure of SMEs. This supports the findings of Gleason et al. (2000) and Sekely and Collins (1988) who both report that there is a relationship between culture and the capital structure of listed firms. Beyond the fact that their findings do not refer to private firms or SMEs in particular, these two studies are limited in that they only establish a link between culture and capital structure. They do not investigate which cultural values/dimensions affect capital structure and in which direction.

The present study develops hypotheses in a similar way to Chui et al. (2002) who look at listed firms only. However, although Chui et al. (2002) use Schwartz's 1994 cultural dimensions they develop their hypotheses based on the wider dimensions Self-enhancement and Openness to Change rather than individual dimensions. They test Mastery and Hierarchy combined as one cultural influence and Conservatism.[46] Like the present study, they develop hypotheses based on how they predict the value items in each of these dimensions will manifest in manager behaviour regarding capital structure.

They find that Conservatism is negatively related to leverage for several reasons. They argue that countries with high Conservatism scores value harmonious working relationships, leading to a greater level of concern for stakeholders. The desire for security leads to greater protection of employee welfare and a greater emphasis on financial stability. These cultures also value public appearance which means that the cost of bankruptcy is higher for the manager.

[46] As discussed above, Conservatism is nearly identical to Embeddedness in Schwartz's 2008 dimensions.

All of these ideas contribute towards the hypothesis that Conservatism is negatively related to debt (Chui et al. 2002). Although some of the ideas are similar to those developed in this study, Chui et al. (2002) do not discuss risk which is the connection between culture and capital structure in the present study. The present study builds on the ideas developed by Chui et al. (2002) and uses issues specific to SMEs (e.g., the importance of relationships with stakeholders to SME survival and the increased possibility that the firm will be a family firm). The results of the present study reflect those found by Chui et al. (2002) when testing Conservatism/Embeddedness on listed firms and confirm that this dimension is associated with lower levels of debt even in SMEs.

The second dimension Chui et al. (2002) test is Mastery and Hierarchy combined or the so-called Self-Enhancement dimension. Like the H3 in the present study Chui et al. (2002) predict that firms in countries with high Self-Enhancement scores will have a greater internal focus of control leading to a greater avoidance of being bound by debt covenants and therefore lower debt. They also predict that these countries will place a greater emphasis on individual success and bankruptcy will be seen as a personal failure. This leads to the finding that the Self-Enhancement dimension is negatively related to debt.

This present study contributes to the study of culture and capital structure by splitting the Self-Enhancement dimension into Mastery and Hierarchy and testing them individually. Whilst Mastery is generally insignificant, Hierarchy is negatively related to leverage. This is interpreted as SME managers preferring to maintain full control and avoiding debt covenants which is similar to the ideas that Chui et al. (2002) use to develop their hypothesis. It is expected that although control may be an issue for the managers of listed firms, it will be a much more significant issue in SMEs because the manager is often a major shareholder (McConaughy et al., 2001) whose personal income is dependent on the firm.

One implication arising from the findings of this study is the following. It is shown that cultural values can affect debt levels positively or negatively within SMEs. SMEs are mostly dependent on debt financing during start up or periods of rapid expansion (Holmes et al., 2003). If in some countries, cultural values dictate that SMEs take on

low levels of debt, then this could limit the SMEs chances of succeeding during its start-up period and restrict their ability to capitalise on growth opportunities. The opposite will be true in countries which have cultural values which indicate that SMEs will have higher debt levels. During start-up and periods of potential rapid expansion, the SME managers will be more likely to borrow in order to ensure that their SME succeeds during start-up and to capitalise on growth opportunities available. This does, however, increase the firm's bankruptcy risk and if the firm is not as successful as it predicts can have serious ramifications for the longevity of its operations.

Finally, this study establishes that culture, after controlling for several other factors, plays an important role in determining the capital structure of SMEs. This adds, not only to prior literature which look at this relationship in listed firms (Sekely and Collins, 1988; Gleason et al., 2000; Chui et al., 2002) but to literature which has looked at culture as an important determinant of several managerial and regulatory decisions. The link between culture and debt levels in SMEs is one managerial decision among many in which culture plays a role. For example, tax compliance (Tsakumis et al., 2007), auditor choice (Hope et al., 2008), earnings management (Nabar and U-Thai, 2007) and financial reporting (Zarzewski, 1996; Ding et al., 2005) are all affected by the culture in which the firm operates. If a better understanding of the effect of cultural values on not only capital structure, but on all managerial decisions in all types of firms is developed, then managers may be better able to understand differences in firms across countries which could enable smoother cross-border mergers and acquisitions.

5.5 Robustness Tests and Further Analysis

This subsection describes the tests carried out in order to confirm that the methods used and the results found in the analysis provided above are robust. In the first set of robustness tests, the tobit model is applied to the data (Cassar and Holmes, 2003; Beck et al. 2008). In the second set, lagged asset values are used as the denominator when computing ratios used as independent variables (Degryse et al., 2012). Thirdly, Hofstede's cultural values are used as an alternative to Schwartz's cultural dimensions (Licht et al., 2007). Finally, further sensitivity tests are conducted looking at long term and short term debt ratios.

5.5.1 The Tobit Model

The tobit model is used as an alternative to the OLS model in the multivariate analysis above. The tobit model is designed to be used when the dependent variable has a limited range of values. In the present study, the dependent variable is a debt ratio which cannot be below zero. This model is particularly appropriate as the tobit model is also appropriate for corner solution responses. This means that a nontrivial proportion of the data has a value of zero for the dependent variable (Wooldridge, 2013). This is the case for the data used in the present study. Table 5.2 shows that the median leverage value for the full sample is zero. This shows that over half the data has zero as a dependent variable. This is largely due to the disproportionate number of observations in each country. China has the highest number of observations in the sample and the lowest debt ratios[47] which means that a significant proportion of the data has zero as the dependent variable.

Because the distribution of the dependent variable is uneven (there is a greater number of observations either equalling zero or close to zero), this indicates that the dependent variable is not normally distributed. This suggests that any inference from an OLS model may be limited as one of the underlying assumptions for OLS is that data must be normally distributed.[48] The use of an OLS model for this data is appropriate but OLS may predict negative fitted values leading to negative predictions for the dependent variable (Wooldridge, 2013). Thus the tobit model is applied in conjunction with the clustered, stratified resampling method used in the main analysis. The results are shown in Table 5.10.

The results in Table 5.10 are similar to the results in the main analysis (shown in Table 5.9). They show that Embeddedness and Hierarchy are significantly, negatively related to leverage. Like in Table 5.9, they also show that Mastery is positively related to leverage at the five per cent significance level. However, unlike the results in Table 5.9, the tobit model shows a negative relationship between Mastery and leverage for Micro firms at the five per cent level which is contrary to expectations.

[47] In Table 5.2 it can be seen that over 75% of the observations from China have no leverage and China makes up approximately 40% of the data.
[48] In the main analysis, the independent variables are winsorised hence accounting for a slightly non-normal distribution.

Table 5.10 Results of Multivariate Analysis using the Tobit Model

	Full Sample	Micro Firms	Small Firms	Medium Firms
EMB	**-0.605*** **	**-0.741*** **	**-0.583*** **	**-0.435*** **
	(-10.14)	(-9.38)	(-8.79)	(-6.49)
HIER	**-0.717*** **	**-0.848*** **	**-0.553*** **	**-0.565*** **
	(-8.26)	(-7.57)	(-6.40)	(-6.48)
MAST	0.106	**-0.489** **	0.061	**0.460** **
	(0.67)	(-2.17)	(0.32)	(2.33)
SIZE	-0.008	-0.021	0.038	**0.056***
	(-0.61)	(-0.90)	(1.19)	(1.83)
PROF	**-0.279*** **	**-0.324*** **	**-0.298** **	**-0.335*** **
	(-3.76)	(-3.85)	(-2.50)	(-3.02)
TANG	**0.329*** **	**0.323*** **	**0.327*** **	**0.290*** **
	(5.17)	(3.66)	(4.14)	(4.15)
GROW	0.019	0.020	0.012	0.006
	(1.17)	(0.79)	(0.52)	(0.35)
LIQ	**-0.008** **	**-0.008** **	-0.007	-0.012
	(-2.40)	(-2.29)	(-0.68)	(-1.08)
RISK	**0.132*** **	**0.181*** **	**0.119*** **	**0.090*** **
	(5.17)	(4.68)	(3.28)	(2.63)
IND	0.068	0.118	-0.038	0.158
	(0.58)	(0.76)	(-0.27)	(1.28)
LEGTRA	**0.123** **	-0.040	**0.196*** **	**0.162*** **
	(2.27)	(-0.57)	(3.87)	(3.45)
BDMK	**0.302*** **	**0.259*** **	**0.323*** **	**0.288*** **
	(8.18)	(4.88)	(7.76)	(7.66)
STPRO	**-0.191*** **	**-0.215*** **	**-0.204*** **	**-0.182*** **
	(-8.78)	(-7.38)	(-8.29)	(-7.10)
CONS	**4.437*** **	**8.064*** **	**3.496*** **	0.997
	(6.72)	(11.16)	(4.19)	(1.10)
Adj. R Sq.	0.677	0.565	0.864	0.841
Wald Chi Sq.	**439.75*** **	**518.46*** **	**313.02*** **	**253.11*** **
Highest VIF	4.78	4.50	4.86	4.25
Mean VIF	2.18	2.10	2.03	2.00
No. of Obs.	864,929	429,761	273,271	156,222

Z-statistics are reported in parentheses. Variable definitions are provided in tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

The z-statistics and the coefficients reported when using the tobit model for the cultural dimensions tend to be higher than the OLS model, indicating that if cornered responses are accounted for, the effect of culture may indeed be greater than the OLS model. The tobit model also reports significant results for a number of the control variables which

are insignificant when using the OLS model. This could indicate that some of the insignificant results found in Table 5.9 are not solely due to differing coefficients between countries and the relatively small samples used in the bootstrap. It may be partially due to not accounting for cornered responses in the main analysis. Despite this, using the tobit model has demonstrated that the results reported in Table 5.9 with regard to the hypotheses tested are robust to potential model misspecifications.

5.5.2 Lagged Asset Values

The second set of robustness tests uses the lagged value of total assets as a denominator when calculating the control variables for size, profitability and tangibility. This method is used in prior relevant studies (e.g. Cassar and Holmes, 2003; Brav, 2009; Psillaki and Daskalakis, 2009; Degryse et al., 2012) to ensure that there is no endogeneity problem in their empirical analysis. If endogeneity is present in one or more of the explanatory variables, then those variables are either correlated with the error term, either due to and omitted explanatory variable, measurement error or simultaneity (Wooldridge, 2013). Simultaneity occurs when at least one independent variable in a multiple regression model is determined jointly with the dependent variable (Wooldridge, 2013). More broadly speaking, a loop of causality may exist within the model. Using lagged variables can break this loop and if there are endogeneity issues within the model, then the model results when using lagged values will be different to the main analysis. If the results remain similar, then endogeneity is not an issue within the model. The results of this additional analysis are shown in Table 5.11 below.

The results in Table 5.11 are very similar to that shown in Table 5.9. They show that both Embeddedness and Hierarchy are both significantly negatively related to leverage. Some weak evidence that Mastery is positively related to leverage in medium firms is also shown.

The results for the remaining control variables are also very similar to those reported in Table 5.9 for both the lagged control variables and the variables which do not include lagged values. In fact, when one compares the two tables side by side, the z-statistics, significance levels and the reported coefficients are very similar in both tables so it can be concluded that the results presented in Table 5.9 are not affected by any serious endogeneity issues.

Table 5.11 Results of Multivariate Analysis using Lagged Asset Values

	Full Sample	Micro Firms	Small Firms	Medium Firms
EMB	**-0.324***** (-8.69)	**-0.348***** (-4.83)	**-0.355***** (-7.66)	**-0.272***** (-7.02)
HIER	**-0.177***** (-3.34)	**-0.150***** (-1.75)	**-0.153****** (-2.53)	**-0.219***** (-3.84)
MAST	0.031 (0.25)	-0.038 (-0.20)	-0.013 (-0.08)	**0.336****** (2.24)
SIZE	-0.006 (-0.65)	-0.016 (-0.76)	0.017 (0.94)	0.018 (1.05)
PROF	**-0.076****** (-2.32)	**-0.166***** (-2.65)	-0.023 (-0.52)	-0.016 (-0.42)
TANG	**0.146***** (3.93)	**0.175***** (2.74)	**0.104****** (2.45)	**0.101***** (2.67)
GROW	-0.022 (-1.41)	-0.021 (-0.66)	-0.013 (-0.66)	-0.014 (-0.76)
LIQ	**-0.003****** (-2.50)	**-0.004****** (-2.42)	-0.001 (-0.43)	-0.002 (-0.65)
RISK	**0.039***** (2.60)	**0.067****** (2.34)	0.023 (1.06)	0.025 (1.19)
IND	0.036 (0.42)	0.037 (0.27)	-0.068 (-0.66)	**0.170**** (1.82)
LEGTRA	0.027 (0.89)	0.042 (0.93)	0.009 (0.30)	**0.059****** (2.07)
BDMK	**0.144***** (4.74)	**0.159***** (3.18)	**0.136***** (4.14)	**0.169***** (5.77)
STPRO	**-0.054***** (-3.31)	**-0.042**** (-1.72)	**-0.068***** (-3.34)	**-0.087***** (-4.29)
CONS	**1.950***** (4.44)	**2.289***** (3.61)	**1.935***** 3.53	0.381 (0.67)
Adj. R Sq.	0.487	0.433	0.581	0.575
Wald Chi Sq.	**242.69*****	**123.60*****	**135.22*****	**143.20*****
Highest VIF	4.91	4.76	5.13	4.37
Mean VIF	2.29	2.26	2.20	2.13
No. of Obs.	715,838	344,733	234,952	129,902

Z-statistics are reported in parentheses. Variable definitions are provided in Tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

5.5.3 Hofstede's Cultural Values

Hofstede's cultural values as discussed in Section 3.1 (page 38) are used in a third set of robustness tests as an alternative method of quantifying culture. These cultural values are used in several prior studies which look at the relationship between culture and a

number of managerial or regulatory decisions (e.g., Gray, 1988; Tsakumis et al., 2007; Nabar and U-Thai, 2007; Hope et al., 2008; Chakrabarti et al., 2009). Hofstede's cultural values capture different aspects of culture when compared to Schwartz's cultural dimensions, although some similarities do exist. These robustness tests are carried out using Power Distance (as an alternative to Hierarchy), Individualism (as an opposite alternative to Embeddedness) and Masculinity (as an alternative to Mastery).[49] Table 5.12 shows the nation scores for Hofstede's cultural values.

Power Distance exhibits similar characteristics to Schwartz's Hierarchy dimension. It evaluates the distance between employers and subordinates and how subordinates view disagreements with their superiors so, in part, this value captures a hierarchical system where subordinates respect the power that those above them have. Also, Schwartz (1994) says that Power Distance is positively related to Conservatism (or in his 2008 dimensions, Embeddedness). Based on this, a negative relationship between Power Distance and leverage would be expected.

Individualism has similar characteristics to Schwartz's Autonomy dimensions. The Autonomy dimensions are opposite Embeddedness which has a negative relationship with leverage. A high Individualism value represents a culture where within a firm, employees normally work individually as opposed to working as a collective group where the firm takes responsibility for the actions of the collective. This cultural value is directly connected to the agency theory. Agency costs are expected to be higher in cultures with high individualism values because this value suggests that managers are more likely to satisfy their own objectives before thinking of shareholder wealth and the longevity and success of the firm. As debt can reduce agency costs (Jensen and Meckling, 1976) it would be reasonable to find a positive relationship between Individualism and leverage.

Mastery and Masculinity both represent similar aspects of culture. A high value in either Mastery or Masculinity represents a culture where people are ambitious, assertive and independent which results in an aggressive, competitive working environment.

[49] China is not included in Hofstede's original cultural values but Hofstede (2001) provides estimated figures for several countries including China so the values for China are estimations. The fourth of Hofstede's cultural values; Uncertainty Avoidance is excluded as it has a strong relationship with bond market development, causing multicollinearity issues. The fifth cultural value later added by Hofstede and Bond (1988) (Confucian Dynamism) does not have values for all of the countries in the sample.

Schwartz (1994) finds that these two measures of culture are positively correlated so it would be reasonable to expect them to have a similar effect on capital structure.

Table 5.12 Hofstede's Cultural Values

	PD	INDM	MASC
China	80	20	66
Japan	54	46	95
Korea	60	18	39
Malaysia	104	26	50
New Zealand	22	79	58
Philippines	94	32	64
Taiwan	58	17	45
Thailand	64	20	34
UK	35	89	66

Hofstede's cultural values: PD, Power Distance; INDM, Individualism; MASC, Masculinity

Table 5.13 Descriptive Statistics for Hofstede's Cultural Values

Sample (N)		PD	INDM	MASC
Full	Mean	63.21	38.15	72.08
(864,616)	1st Quartile	54	20	66
	Median	60	20	66
	3rd Quartile	80	46	95
	SD	16.39	24.13	17.65
Micro	Mean	59.55	41.84	73.71
(429,246)	1st Quartile	54	20	66
	Median	54	46	66
	3rd Quartile	80	46	95
	SD	15.54	24.50	19.55
Small	Mean	68.26	31.54	70.60
(273,057)	1st Quartile	54	20	66
	Median	80	20	66
	3rd Quartile	80	46	66
	SD	14.89	19.92	16.09
Medium	Mean	64.96	38.84	70.23
(156,438)	1st Quartile	54	20	66
	Median	80	20	66
	3rd Quartile	80	46	66
	SD	18.28	26.84	13.89

Table 5.13 provides descriptive statistics for the full sample and each of the three subsamples with reference to Hofstede's cultural values. Here it can be seen that, of the three cultural values, Individualism has the greatest standard deviation of 24.13 indicating greater within sample variation than the other two cultural values. The values for Masculinity may appear somewhat perplexing as 66 is the value for the first, second and third quartile in small and medium firms and the value for the first and second quartiles in micro firms and the full sample. This is because the value for Masculinity is 66 for both the UK and China[50] and these two countries combined make up over fifty per cent of the data.

Subsequently, the robustness tests are carried out by repeating the same method used in the main analysis and using the same control variables. The results are presented in Table 5.14 and reveal the following.

There is a negative and significant relationship between Power Distance and leverage. Additionally, there is a positive relationship between Individualism and leverage as expected. The results for the Masculinity value were mixed. This value is similar to Schwartz's Mastery dimension so based on the hypotheses developed in Section 3.5 a positive relationship between this value and leverage would be expected. However, very little evidence was found in support of H1 in the main analysis. Hence, if little significant evidence for this cultural value when conducting these robustness tests is found, it would not be surprising. Table 5.14 shows that indeed this is the case and very little evidence of a relationship between Masculinity and leverage is found. There is some weak evidence of a negative relationship between leverage and Masculinity, contrary to expectation but this is only at the ten per cent significance level in the full sample and the sample of medium firms.

Despite only finding weak evidence of a relationship between Masculinity and debt ratios, there is strong evidence showing a relationship between Power Distance and Individualism and leverage. Based on this, these robustness tests also find a relationship between culture and the capital structure of SMEs demonstrating that regardless of the measure of culture, culture is still related to leverage.

[50] Aside from the fact that Hofstede's cultural values are somewhat outdated, this was a contributing factor as to why Schwartz's cultural dimensions were chosen for the main analysis.

Table 5.14 Robustness test results using Hofstede's Cultural Values

	Full Sample	Micro Firms	Small Firms	Medium Firms
PD	**-0.002****	**-0.003*****	**-0.006*****	**-0.003*****
	(-2.20)	(-2.94)	(-6.88)	(-3.25)
INDM	**0.006*****	**0.004*****	**0.003****	**0.004*****
	(4.57)	(2.82)	(1.97)	(2.62)
MASC	**-0.003***	-0.002	-0.001	**-0.004***
	(-1.69)	(-1.20)	(-0.38)	(-1.93)
SIZE	-0.010	-0.025	0.016	0.015
	(-1.31)	(-1.46)	(0.83)	(0.85)
PROF	**-0.132*****	**-0.249*****	-0.039	-0.038
	(-3.32)	(-4.23)	(-0.73)	(-0.71)
TANG	**0.222*****	**0.234*****	**0.173*****	**0.198*****
	(5.42)	(4.04)	(3.22)	(4.01)
GROW	0.006	0.010	0.000	-0.000
	(0.64)	(0.59)	(0.00)	(-0.03)
LIQ	**-0.003*****	**-0.004*****	-0.001	-0.002
	(-2.92)	(-3.56)	(-0.51)	(-0.98)
RISK	**0.053*****	**0.089*****	0.030	0.034
	(3.74)	(4.07)	(1.39)	(1.62)
IND	0.037	0.059	-0.059	0.149
	(0.51)	(0.62)	(-0.61)	(1.56)
LEGTRA	**-0.144*****	**-0.098***	**-0.114****	**-0.139*****
	(-3.23)	(-1.76)	(-2.38)	(-2.81)
BDMK	**0.196*****	**0.199*****	**0.143*****	**0.196*****
	(7.85)	(5.63)	(4.41)	(5.90)
STPRO	**-0.042*****	-0.015	**-0.057*****	**-0.039*****
	(-4.07)	(-1.18)	(-5.02)	(-3.21)
CONS	**0.370*****	**0.521*****	0.387	0.203
	(3.29)	(2.75)	(1.55)	(0.76)
Adj. R Sq.	0.475	0.425	0.561	0.569
Wald Chi Sq.	**332.41*****	**206.29*****	**435.90*****	**190.12*****
Highest VIF	2.87	4.43	4.65	4.21
Mean VIF	1.62	2.13	1.96	2.00
No of Obs.	864,764	429,734	273,270	156,203

Z-statistics are reported in parentheses. Variable definitions are provided in Tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

5.5.4 Further Testing: The Relationship between Culture and Long and Short Term Debt

Prior literature indicates that short term and long term debt are affected by the capital structure determinants in different ways (Bevan and Danbolt, 2002; Hall et al., 2004). In order to add depth to the results provided in Table 4.9 and explore the relationship between short and long term debt and culture further testing is conducted. These tests use the debt ratios of short term debt over total assets and long term debt over total assets. These ratios are also used by Hall et al. (2004) who compare the effect of the capital structure determinants on long and short term debt.

Tables 5.15 and 5.16 show the results for these additional tests using the independent variables described earlier. However, the dependent variables for each table changes to the long and short term debt ratios.

These tables show that Embeddedness is negatively related to long and short term ratios and Mastery is generally insignificant except when testing short term debt in medium firms where a positive relationship is found. The most noticeable difference between these two tables is that Hierarchy is only a significant determinant of short term debt and is an insignificant determinant of long term debt in all tests. These tests also show that there is some weak evidence that Mastery is negatively related to long term debt levels in micro firms which is contrary to expectations.

The key issue highlighted by these tests is that culture affects long and short term debt levels differently which is not unlikely given that the other capital structure determinants also affect long and short term debt differently (Bevan and Danbolt, 2002; Hall et al., 2004). The question is then why the cultural dimensions affect these two types of debt in different ways.

Embeddedness is significantly negatively related to both short term and long term debt providing further evidence that H2 is supported. It also suggests that the reasoning behind H2 is meaningful as this hypothesis is based on the connection between Embeddedness and risk and cross cultural differences in acceptable risk levels. This could apply to both long and short term debt in the same way so finding similar results is not surprising.

Table 5.15 Dependent Variable: Short Term Debt to Total Assets

	Full Sample	Micro Firms	Small Firms	Medium Firms
EMB	**-0.145*** **	**-0.172*** **	**-0.124*** **	**-0.124*** **
	(-8.94)	(-6.56)	(-5.40)	(-5.69)
HIER	**-0.094*** **	**-0.090*** **	**-0.082*** **	**-0.149*** **
	(-4.25)	(-3.18)	(-3.03)	(-5.07)
MAST	0.058	-0.035	0.067	**0.235*** **
	(1.01)	(-0.50)	(0.92)	(2.80)
SIZE	-0.002	-0.009	0.003	0.004
	(-0.42)	(-1.28)	(0.41)	(0.52)
PROF	-0.014	-0.033	-0.004	-0.006
	(-0.76)	(-1.23)	(-0.17)	(-0.21)
TANG	0.006	0.009	0.006	-0.003
	(0.34)	(0.37)	(0.26)	(-0.12)
GROW	0.000	0.001	-0.001	-0.000
	(0.03)	(0.09)	(-0.17)	(-0.04)
LIQ	**-0.003*** **	**-0.003*** **	-0.002	-0.002
	(-6.74)	(-7.58)	(-1.50)	(-1.53)
RISK	-0.001	-0.003	0.001	0.001
	(-0.07)	(-0.30)	(0.07)	(0.08)
IND	-0.011	0.001	-0.014	-0.023
	(-0.29)	(0.03)	(-0.33)	(-0.47)
LEGTRA	0.004	**-0.031** **	0.001	0.017
	(0.28)	(-2.01)	(0.08)	(1.23)
BDMK	0.006	-0.017	0.007	**0.024***
	(0.52)	(-1.03)	(0.51)	(1.72)
STPRO	**-0.026*** **	**-0.020** **	**-0.026*** **	**-0.045*** **
	(-3.10)	(-2.05)	(-2.56)	(-3.68)
CONS	**0.777*** **	**1.347*** **	**0.543** **	0.120
	(4.04)	(6.23)	(2.22)	(0.40)
Adj. R Sq.	0.232	0.200	0.282	0.299
Wald Chi Sq.	**225.20*** **	**298.20*** **	**64.46*** **	**91.67*** **
Highest VIF	4.78	4.50	4.86	4.25
Mean VIF	2.18	2.10	2.03	2.00
No of Obs.	857,500	427,964	272,103	155,471

Z-statistics are reported in parentheses. Variable definitions are provided in Tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

Table 5.16 Dependent Variable: Long Term Debt to Total Assets

	Full Sample	Micro Firms	Small Firms	Medium Firms
EMB	**-0.151*** **	**-0.162*** **	**-0.154*** **	**-0.095*** **
	(-5.71)	(-3.57)	(-5.30)	(-3.30)
HIER	-0.040	-0.026	-0.011	0.008
	(-1.05)	(-0.48)	(-0.23)	(0.18)
MAST	-0.067	**-0.208***	-0.089	-0.099
	(-0.77)	(-1.71)	(-0.77)	(-0.97)
SIZE	0.004	0.018	0.008	0.006
	(0.73)	(1.61)	(0.70)	(0.61)
PROF	**-0.058** **	**-0.093** **	-0.021	-0.019
	(-2.44)	(-2.56)	(-0.63)	(-0.63)
TANG	**0.173*** **	**0.180*** **	**0.132*** **	**0.165*** **
	(5.62)	(3.98)	(3.25)	(4.79)
GROW	0.003	0.005	0.000	-0.000
	(0.40)	(0.43)	(-0.01)	(-0.04)
LIQ	-0.000	-0.000	0.000	-0.000
	(-0.14)	(-0.18)	(0.10)	(-0.12)
RISK	**0.034*** **	**0.060*** **	0.017	0.014
	(4.42)	(4.23)	(1.48)	(1.29)
IND	-0.002	0.039	-0.053	0.077
	(-0.04)	(0.49)	(-0.73)	(1.19)
LEGTRA	0.022	-0.003	**0.033***	**0.041** **
	(1.20)	(-0.12)	(1.65)	(2.09)
BDMK	**0.129*** **	**0.111*** **	**0.130*** **	**0.119*** **
	(6.00)	(3.67)	(5.13)	(5.47)
STPRO	-0.018	-0.010	-0.022	-0.009
	(-1.54)	(-0.70)	(-1.51)	(-0.62)
CONS	**0.906*** **	**1.289*** **	**0.888** **	0.585
	(3.07)	(3.52)	(2.34)	(1.57)
Adj. R Sq.	0.379	0.321	0.473	0.474
Wald Chi Sq.	**162.21*** **	**131.52*** **	**71.06*** **	**79.90*** **
Highest VIF	4.78	4.50	4.86	4.25
Mean VIF	2.18	2.10	2.03	2.00
No of Obs.	862,084	430,561	270,607	154,542

Z-statistics are reported in parentheses. Variable definitions are provided in tables 4.8 and 4.9 on pages 72 and 75. * p<0.10, ** p<0.05, *** p<0.01.

Hierarchy's relationship with leverage appears to be less straightforward. Its relationship with short term debt is as expected by H3. This suggests that this dimension increases the level of control required by managers which indicates lower levels of debt in SMEs. However, the insignificant relationship between Hierarchy and

long term debt levels is not expected. This may be because the firm's long term debt levels could be under a certain level of control from the lender. Long term debt is more difficult to obtain and requires greater screening of the borrower (Cassar and Holmes, 2003) so levels of long term debt may be partially determined by the finance provider because the lenders screening process may prevent SMEs from borrowing as much long term debt as they would like. This may restrict the managerial choice regarding long term debt and the influence of culture in this instance.

In contrast, short term debt is easier to obtain without extensive screening by the lender. This means that the decision behind short term debt levels in firms is more in the hands of the manager and less the lender, particularly as short term debt could be in the form of short term loans or overdrafts which could be from multiple lenders.

The decision to take on long term debt requires a greater commitment from the SME. It is often taken in larger amounts and considered a greater financial commitment than short term debt so would require greater managerial deliberation than short term debt. This could indicate that managers are more likely to enter into a long managerial thought process. The managers of SMEs often lack managerial knowledge or experience regarding issues such as capital structure so may see this as an appropriate time to obtain professional advice (Ang, 1991). This could lead to the manager acting outside their normal behaviour, which reflects their cultural values. In contrast, short term debt does not require the same financial commitment as long term debt and may be viewed as a lesser commitment. This could indicate that, the decision to take on short term debt is more likely to be influenced by the manager's cultural background than a long period of managerial forethought.

There are also some notable differences in the control variables between long and short term debt. Firstly, tangibility, bond market development and, to a certain extent, profitability are all significantly related to long term debt but not to short term debt. Additionally, the enforcement of legal systems and liquidity are related to short term debt but not with long term debt.

A positive relationship between long term debt and bond market development is expected as bonds are generally long term debt. There is some weak evidence that there

is a positive relationship between bond market development and short term debt in medium firms but generally this variable is insignificant as a determinant of short term debt. No relationship is expected as bond markets are not generally a source a short term debt, particularly for SMEs.

Tangibility is also significantly positively related to long term debt but not to short term debt. This finding is supported by Lemmon et al. (2008) who suggest that firms borrow long term debt and use fixed assets as collateral to reduce the cost of this debt. This is particularly true of SMEs as they suffer from higher levels of asymmetric information (Van Caneghem and Van Campenhout, 2012).

For the full sample and micro firms, profitability is found to be negatively related to long term debt at the five per cent significance level but this is not the case for short term debt. Cassar and Holmes (2003) say that long term debt has greater screening requirements than short term debt. This could indicate that when SMEs try to obtain long term debt, they are required to provide much more detailed information regarding the firm's financial position and predicted future cash flows. Profitability would likely be an aspect of the firm which a lender of long term debt would consider. However, the screening process for short term debt is not expected to be as invasive and a provider may not feel obliged to collect as much financial information on the firm, so these short term debt providers may be more likely to lend to a less profitable firm. The same could also be said for risk. Risk is found to be a determinant of long term debt for the full sample and micro firms, but not for small and medium firms. Again risk is likely to be considered by providers of long term debt as part of their screening requirements, but the same might not apply where short term debt is considered.

Liquidity is negatively related to short term debt at the one per cent significance level for the full sample and micro firms. This finding is also expected. Firms with high levels of short term debt tend to be less liquid. The use of short term debt suggests that the firm does not have immediate access to cash for any particular need and as short term debt tends to be more expensive, it may be that SMEs with liquidity problems tend to borrow in the form of short term loans in order to meet their immediate obligations whilst waiting on cash inflows. This being the case no relationship between liquidity and long term debt would be expected, which is what Table 5.16 shows.

Finally, the variable which captures the strength and efficiency of a country's legal system is negatively related to short term debt at the one per cent level in all tests, except micro firms where only a five per cent significance level is attained. This variable is insignificant in all tests with the long term debt ratio as the dependent variable. This would also seem reasonable. If a country has a strong efficient legal system then firms that default on their financial obligations are more likely to be taken to court or pressed into bankruptcy by their creditors. This suggests that firms in countries where this is the case avoid short term debt because they are more likely to face legal action in the event of non-payment of interest.

5.6 Summary and Conclusions

This chapter begins by presenting descriptive statistics for the variables used in the analysis. These tables show leverage ratios vary between countries and size categories. This observation is supported by the results of the univariate tests presented in Section 5.2. The results of the univariate tests show there are significant differences in capital structure between countries and between micro, small and medium firms within SMEs.

The descriptive statistics also show that a significant proportion of the SMEs in the sample have zero for the dependent variable. The tobit model is used as a robustness test to ensure that the large number of observations without debt does not adversely affect the results of the empirical analysis.

The results of the multivariate analysis show that Embeddedness and Hierarchy are both significantly negatively related to debt levels in SMEs which provides support for two of the three hypotheses developed in Chapter 3. These results are robust to model misspecification, endogeneity issues, and the measure of culture as indicated by the robustness tests presented in Section 5.5

The negative relationship found between Embeddedness and debt levels indicates that national culture influences the capital structure of SMEs through the manager's view and perception of firm risk which varies across cultures and can affect debt levels within SMEs. These results suggest that the acceptable level of risk varies across cultures and within cultures which are risk adverse, SMEs will have lower debt levels. The negative relationship found between Hierarchy and debt levels indicates that

national culture influences the capital structure of SMEs through the manager's need for full control over his firm. These results suggest that the level of control required varies between cultures and an element of control is given away when taking on debt, thus suggesting that culture where managers prefer to maintain full control will have lower debt levels. Very little evidence was found to support the hypothesis that there is a relationship between Mastery and debt levels. This could be explained when one considers that this dimension exhibits characteristics which suggest that the manager may have a relatively high risk tolerance and may also be very independent and thus, prefer not to rely on external sources of finance and to avoid being constrained by debt covenants.

The evidence presented in this chapter suggests that national culture does influence the capital structure of SMEs. These results contribute to prior literature by finding a determinant of the capital structure of SMEs which has not yet been examined. This capital structure determinant differs from those traditionally tested as it is not a measure of any financial characteristics or performance of the firm. This capital structure determinant, although not limited to, is directly related to managerial behaviour and personal preferences, and could contribute towards explaining why two identical firms from institutions with similar financial and legal characteristics have different capital structures.

National culture affects all the firms in one country in the same way so any implications arising from this study are on a country level. Being aware of the relationship between cultural values and capital structure contributes to our understanding of why SMEs in some countries have higher debt levels than those in others. The findings of this study could provide vital information for practitioners whom operate in cross-border mergers and acquisitions. As SMEs play such an important role in any given economy, these findings may also have wider implications for countries as a whole because the effect of culture will be consistent throughout all SMEs in any given cultural area.

Chapter 6 Conclusions

6.1 Summary of the Research Project

The present study investigates the relationship between the capital structure of SMEs and national culture. It uses Schwartz's 2008 cultural dimensions to quantify culture in order to enable empirical analysis. The hypotheses use the Embeddedness, Hierarchy and Mastery dimensions and connect them to the capital structure of SMEs through risk and control issues which both vary between cultures and influence capital structure. These hypotheses are tested using a sample of nine countries from 2006-2010. The countries in the sample span three continents and consist of China, Japan, Korea, Malaysia, New Zealand, Philippines, Taiwan, Thailand and the UK and the total number of observations is almost 900,000.

The data has very low numbers of observations from some countries and very high numbers from other countries which causes false multicollinearity issues. As a result, the empirical analysis uses a stratified re-sampling method. The results found confirm that the capital structure of SMEs is influenced by national culture. More specifically, high scores for Schwartz's Embeddedness and Hierarchy are both significantly negatively related to leverage.

The finding that Embeddedness is negatively related to leverage shows that cross-cultural variations in the level of risk which is acceptable to SME manager/owners can result in different levels of debt in different countries. If the level of risk accepted by the manager is low then these results indicate that the SME will have lower levels of debt in order to try and prevent the firm from entering financial difficulties and to try and ensure that it continues to trade and provide and income for the manager/owner.

Similarly, the finding that Hierarchy is negatively related to leverage suggests that variations in the level of control required by a manager can also result in differing levels of debt between countries. In countries where managers require a high level of control, they will have less debt in their SME's capital structure in order to prevent giving control away to debt providers. In countries with a low Hierarchy score,

managers do not have the same control requirements and are more willing to issue debt as the level of control that is given to debt providers is acceptable to the manager.

6.2 Contribution

The findings of the present study confirm that national culture does influence the capital structure of SMEs through the manager's approach to risk and control issues within the firm. This finding is important because prior literature, when considering the capital structure determinants of SMEs (e.g., Cassar and Holmes, 2003; Sogorb-Mira, 2005; Daskalakis and Psillaki, 2008; Van Caneghem and Van Campenhout, 2012), examines the effect of capital structure determinants which tend to be numerical in nature (e.g., firms size) and therefore easily observed or measured. National culture influences the way managers behave which is detached from all numerical measurements of the firm and its performance or institutional observations regarding available finance or legal issues.

The effect of national culture could explain differences in capital structure which more commonly tested capital structure determinants do not. This was tested in listed firms by Chui et al. (2002) but the differences between SMEs and listed firms mean that the effect of national culture may not be the same across both types of firms. The results of this study show that behavioural factors connected to the decision making of the managers of SMEs, as a result of their cultural background, can also contribute towards the capital structure decision.

Schwartz's 2008 cultural dimensions are used to quantify culture in this study. These dimensions are the most recently developed method of quantifying culture and although they are used by Siegel et al. (2011) in a different context, their use in prior literature is minimal. This study develops three hypotheses which link risk and control in the context of SMEs to both capital structure and cultural dimensions and uses individual cultural dimensions to test each hypothesis.

6.3 Implications

Developing understanding of SME behaviour towards debt is very important to practitioners from a cross-border mergers and acquisitions perspective. The effect of

national culture on capital structure could explain previously unexplained differences in the capital structure of SMEs from different countries. Maloney et al. (1993) investigate the effect of capital structure on project selection including mergers and acquisitions. If acquiring firms are more aware of what can cause differences in capital structure then this could aid managers in determining whether any given SME is an appropriate target.

Additionally, the effect of national culture on SME capital structure should be consistent across all SMEs in the same country. SMEs make up 99% of firms across the world and play a very important role in any economy (Sogorb-Mira, 2005; Van Caneghem and Van Campenhout, 2012). Additionally, Korjczyk and Levy (2003) find a connection between the capital structure of larger firms and macroeconomic conditions. Thus, it would not be unreasonable to suggest that this connection may also exist for SMEs. It may be that the effect of culture on the way that SMEs behave towards debt could have wider implications for macroeconomic performance as a whole.

Countries where cultural values indicate that SME managers use less debt may find that when growth opportunities present themselves, managers are less able or willing to take advantage of growth opportunities because growth projects often require large amounts of finance, which SMEs usually have to borrow to obtain (Michaelas et al., 1999). This could result in them experiencing lower levels of growth. However, these SMEs could also be less likely to face bankruptcy because they have lower levels of debt. If all of the firms within the same country are more likely to have low growth rates but also more likely to have low numbers of firms going bankrupt, then this could suggest that a country's economy, as a whole could be more stable and have reduced fluctuations between periods of expansion and contraction.

In contrast, in those countries with cultural values which are associated with higher debt levels, SME managers are more likely to feel comfortable borrowing in order to take full advantage of any growth opportunities available to them. As a result, they may be more likely to enter into financial difficulties, should one of their growth projects fail, and face bankruptcy. The large role that SMEs play in any economy combined with potentially higher growth rates combined with potential higher numbers of firms entering into financial difficulties suggests that when managers of SMEs behave this way towards debt, it could play a role in more extreme fluctuations between periods of

expansion and contraction in the economy of these countries.

This suggests that the effect of culture on the capital structure of SMEs, collectively, could play a role in determining the economic cycles within a country. Although further testing is required, if this is the case, this could result in much wider implications for financial markets and international investment. Often, countries which have more turbulent economic cycles are more likely to be seen as high risk investment opportunities and visa-versa to outsiders, suggesting that the effect of cultural values on the capital structure of SMEs may affect, not only their own economy but could attract or deter international investment from other countries.

6.4 Limitations of the Study

The most prominent limitation of the study is the use of cultural dimensions to quantify culture. Schwartz (2008:4) views "culture as a latent, hypothetical variable that we can measure only through its manifestations". This statement advocates that measuring culture is subjective and although one can record actions, measuring and recording the thought processes behind these actions is impossible. Both Hofstede and Schwartz attempt to quantify culture by measuring the importance of certain values. They independently conduct surveys which focus on one particular subsample of people. Hofstede uses respondents from one multi-national company and Schwartz surveys university students and school teachers. The use of one particular group of respondents could be beneficial to the study because it acts as a control for differing responses due to an individual's personal circumstances but it could also be argued that using different groups of respondents could produce different results.

This criticism particularly applies to Hofstede's dimensions as the company he surveyed was a high technology firm whose employees are generally skilled professionals (Hofstede, 1980). This firm may only represent a small proportion of the general population and this particular sample has an interest in modern technology which could represent a bias. Schwartz's approach appears to have a more encompassing group of respondents. These respondents are expected to have a much more diverse range of backgrounds enabling the survey to capture the general population's values.

Sivakumar and Nakata (2001) criticize Hofstede's work for reducing culture to an overly simplistic conceptualisation with only five separate dimensions. This criticism could also apply to Schwartz's dimensions despite the findings of Ng et al. (2007) and Schwartz (2008) who both suggest that Schwartz's dimensions capture more cultural aspects than Hofstede's cultural values.

Furthermore, the notion that country can act as a proxy for a culture is widely criticised. Schwartz (2006:153) himself discusses using countries as a cultural unit and states "Countries are rarely homogenous societies with a unified culture". Baskerville (2003) and Wildavsky (1989) also maintain that there can be many cultures within one nation and using country as a proxy cannot fully capture culture. Reflecting on this, Schwartz (1994) provides four different values for each dimension for China: China as a whole, Shanghai, Hebei, and Hangzhou. He also provides different values for rural and urban Estonia and different areas of Israel. This demonstrates that Schwartz himself acknowledges this limitation.

Using dimensions which are based on survey data has the drawback of only dealing with a limited number of areas within society. Respondents can only answer the questions asked, so any areas relevant to national culture omitted from the survey cannot be included in the dimensions. Hofstede's dimensions only consider four areas. There could be a number of equally fundamental issues which have been omitted because the survey was limited to these specific areas (Hofstede, 1980). As Schwartz's dimensions cover more areas of societal decision making the effect of this limitation is reduced but there could be further aspects of culture which are not yet captured. Schwartz (2005) found evidence that suggests Schwartz's value survey doesn't overlook any major motivationally distinct values but more may be discovered at a later date.

Even if Hofstede's dimensions were completely accurate, his survey data was collected between 1967 and 1973 (Hofstede, 1980). Since then there has been major cultural changes across the world so for any measure of culture to remain applicable they must be at least tested periodically to ensure their validity. Despite this, Schwartz (2008) finds that the available literature indicates that changes in cultural value orientations are very slow, even in the presence of major institutional changes.

The present study uses Schwartz's 2008 cultural dimensions in the main analysis but also uses Hofstede's cultural values in one of the robustness tests. The results were consistent suggesting the risk arising from this limitation is reduced to the minimum extend possible.

The data used is also subject to limitations which in turn, limits the ability of the study to investigate the relationship between culture and capital structure. The data has large numbers of observations from some countries and few from others. This means that there is an increased possibility that the data from the countries with few observations may not accurately represent the population of SMEs from that country. The method of empirical analysis (i.e., using bootstrapping with stratified sampling) minimises the effect of this limitation of the data.

There is also a significant proportion of the observations which have no debt. This could have an adverse effect on the empirical results. However, when the results of robustness tests using the tobit model are compared with the results of the main multivariate analysis no significant differences in the conclusions of the study arise.

A further limitation of the present study is that the empirical analysis assumes that the coefficients of the firm specific control variables are the same across countries. Appendices 5, 6, 7 and 8 show that this is not the case and this assumption leads to several of the control variables appearing insignificant in the main analysis when they do play an important role when it comes to a country level analysis.

Chui et al. (2002) acknowledges that accounting data collected from different countries is prepared using different accounting rules and although databases try to correct for this, they are not always completely successful. Chui et al. (2002) used a sample of listed firms but the present study uses SMEs. It is more likely that there are greater differences across countries between SME financial reports than listed firms so this limitation is likely to be more prominent in the present study. The effect of this limitation is minimized by Bureau Van Dijk which has developed a uniform format, which is a realistic representation of company accounts globally. Although this does not eradicate the effect of these differences, this renders them comparable and reduces the effect of financial reporting differences, even in SMEs.

6.5 Suggestions for Future Research

Future research in this area could include several avenues. To further improve the present study, the indirect effect of culture on SME capital structure could also be considered. De Jong et al. (2008) looks at both the direct and the indirect effects of institutional level capital structure determinants so a similar type of empirical investigation could be conducted using the cultural dimensions.

The present study also looks at culture as a determinant of short and long term debt use within SMEs separately in Section 5.5.4. Future research could explore this further, considering a more diverse range of sources of finance such as trade credit or leases.

A further study into the capital structure of SMEs could investigate the relationship between institutional capital structure determinants and the capital structure of SMEs. Very little research has been done in this area. The majority of cross country studies do not look at institutional variables, they only consider each country separately. Thus, further investigation into creditor rights, shareholder rights, corruption, judicial efficiency, bond market development, stock market development, macroeconomic conditions and tax systems could be conducted. It would also be interesting to see if private and public bond and stock markets have different or any effects on the capital structure of SMEs.

One way in which the capital structure of SMEs could be affected, which is not accounted for in this study, is by the willingness of banks to provide finance. Because banks are usually the sole source of external finance to SMEs, the amount of debt in a SMEs capital structure is limited to what banks will provide them with. This prompts the question: how much of an SME's decision to take on debt is at the discretion of the manager and how much is dependent on the maximum amount of debt that banks will provide? And, is the banks' decision affected by national culture?

The present study examines the link between culture and SME capital structure. As discussed in Section 3.3, several prior studies have examined a range of managerial decisions in connection with culture. However, these studies focus on listed firms only. Due to the differences between the features of SMEs and listed firms the issues that connect some managerial decisions to culture could be different between the two types

of firms. This justifies the need for further investigation. Additionally, there are some managerial decisions for which national culture has not been tested as one of their determinants. For example, it would be interesting one to examine the potential relationship between cash holdings within firms (listed, private or non-listed SMEs). More specific to private firms, one could examine the effect of culture on the decision of a firm to become listed on a stock exchange.

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Appendix 1 Gray's Hypotheses

Hypothesis 1: Professionalism; high Individualism and low Uncertainty Avoidance and Power distance. If a country has the cultural values that result in a high professionalism ranking then you would expect the country to allow for a certain amount of professional judgement and rely less on statutory control.

Hypothesis 2: Uniformity; high Uncertainty Avoidance and Power Distance and low Individualism. Countries with these values would be expected to value more uniform accounting practices between firms as opposed to allowing a certain amount of flexibility where firms can choose reporting policies depending on their individual circumstances.

Hypothesis 3: Conservatism; high Uncertainty Avoidance and Power Distance and low Individualism and Masculinity. This would represent a culture that takes a more cautious approach to accounting practices as opposed to a more optimistic, riskier approach.

Hypothesis 4: Secrecy; high Uncertainty Avoidance and Power Distance and low Individualism and Masculinity. Secrecy as opposed to transparency in a country would prefer the confidentiality and the restriction of disclosure to those which are closely involved with its management as opposed to an open and more public approach.

Appendix 2 Spearman Correlation Coefficients for the Independent Variables

	EMB	HIER	MAST	SIZE	RISK	PROF	TANG	GROW	LIQ	IND	LEGTRA	STPRO	BDMK
EMB	1.000												
HIER	0.965	1.000											
MAST	0.829	0.945	1.000										
SIZE	0.176	0.218	0.253	1.000									
RISK	-0.355	-0.355	-0.323	-0.113	1.000								
PROF	0.145	0.166	0.170	-0.021	-0.067	1.000							
TANG	0.040	0.041	0.036	0.111	0.025	0.008	1.000						
GROW	0.088	0.099	0.106	0.168	0.017	0.114	-0.077	1.000					
LIQ	-0.051	-0.067	-0.075	-0.045	-0.011	0.063	-0.346	0.024	1.000				
IND	-0.693	-0.740	-0.719	-0.307	0.251	-0.237	-0.033	-0.075	0.110	1.000			
LEGTRA	-0.509	-0.601	-0.686	-0.116	0.235	0.082	0.023	-0.111	-0.097	0.243	1.000		
STPRO	-0.884	-0.841	-0.715	-0.128	0.286	-0.137	-0.021	-0.102	-0.007	0.568	0.510	1.000	
BDMK	-0.472	-0.477	-0.417	-0.115	0.095	-0.291	-0.065	0.044	0.204	0.582	-0.252	0.317	1.000

Variables are as described in Tables 4.8 and 4.9 on pages 72 and 75.

Appendix 3 Tables Showing the Distribution of Excluded Observations by Country

Full Sample	No of Obs.	Per cent
China	233	0.70
Japan	21,829	65.99
Korea	1,090	3.30
Malaysia	1	0.00
New Zealand	1	0.00
Philippines	52	0.16
Taiwan	10	0.03
Thailand	1,587	4.80
UK	8,276	25.02
Total	33,079	100

Micro	No of Obs.	Per cent
China	36	0.17
Japan	14,936	70.08
Korea	488	2.29
Malaysia	0	0.00
Philippines	3	0.01
Taiwan	5	0.02
Thailand	1,306	6.13
UK	4,540	21.30
Total	21,314	100

Small	No of Obs.	Per cent
China	332	3.10
Japan	5,918	55.20
Korea	992	9.25
Malaysia	0	0.00
Philippines	20	0.19
Taiwan	15	0.14
Thailand	161	1.50
UK	3,283	30.62
Total	10,721	100

Medium	No of Obs.	Per cent
China	407	6.10
Japan	2,213	33.15
Korea	653	9.78
Malaysia	0	0.00
New Zealand	14	0.21
Philippines	117	1.75
Taiwan	24	0.36
Thailand	43	0.64
UK	3,205	48.01
Total	6,676	100

Appendix 4 Spearman Correlation Coefficients between the leverage ratio (LEV) and the Independent Variables

	LEV			
	Full	**Micro**	**Small**	**Medium**
EMB	-0.699	-0.596	-0.801	-0.746
HIER	-0.723	-0.620	-0.817	-0.769
MAST	-0.6738	-0.526	-0.807	-0.747
SIZE	-0.180	-0.221	0.117	0.182
PROF	-0.268	-0.222	-0.315	0.282
TANG	0.073	0.135	-0.134	0.069
GROW	-0.058	-0.007	-0.041	-0.136
LIQ	0.041	-0.129	0.084	-0.028
IND	0.631	0.562	0.677	0.615
RISK	0.460	0.446	0.432	0.526
LEGTRA	0.240	0.133	0.283	0.420
BDMK	0.547	0.530	0.615	0.365
STENF	0.525	0.483	0.494	0.568

All reported values are significant at the one per cent level. All variables are as described in Tables 4.8 and 4.9 on pages 72 and 75.

Appendix 5 Firm Level Capital Structure Determinants by Country

	China	Japan	Korea	Malaysia	New Zealand	Philippines	Taiwan	Thailand	UK
SIZE	**0.003*** **	**-0.048*** **	**0.050*** **	-0.006	**0.080** **	**0.015*** **	**0.020*** **	**-0.020*** **	**-0.054*** **
	(29.86)	(-93.23)	(51.76)	(-0.81)	(2.48)	(3.50)	(2.26)	(-8.16)	(-65.27)
PROF	**-0.005*** **	**-0.146*** **	**-0.231*** **	-0.063	-0.081	**-0.065*** **	**-0.148*** **	**-0.108*** **	**-0.282*** **
	(-19.34)	(-77.43)	(-48.13)	(-1.37)	(-0.80)	(-3.13)	(-3.14)	(-10.85)	(-100.13)
RISK	**0.002*** **	**0.866*** **	**-0.007*** **	0.020	0.012	**0.973*** **	**0.750*** **	**0.277*** **	**-0.025*** **
	(34.93)	(611.50)	(-6.75)	(1.19)	(0.59)	(44.28)	(5.74)	(74.00)	(-23.71)
TANG	**-0.001*** **	**0.088*** **	**0.301*** **	**0.218*** **	-0.064	**-0.036** **	0.030	**0.076*** **	**0.251*** **
	(-3.44)	(34.78)	(79.99)	(5.19)	(-0.64)	(-2.15)	(0.59)	(7.82)	(59.60)
GROWTH	**-0.000*** **	**-0.003*** **	**0.005*** **	0.001	**-0.035***	-0.001	**-0.029*** **	**0.009*** **	**0.009*** **
	(-3.30)	(-5.33)	(7.80)	(0.04)	(-1.68)	(-0.11)	(-3.12)	(3.54)	(8.57)
LIQ	**-0.000*** **	**-0.005*** **	**0.001*** **	-0.001	**0.009***	**-0.003*** **	**-0.007*** **	**-0.001*** **	**-0.003*** **
	(-7.29)	(-75.57)	(5.85)	(-0.34)	(1.86)	(-5.72)	(-3.28)	(-3.51)	(-13.14)
IND	**0.180*** **	**0.040*** **	**-0.287*** **	0.114	0.302	-0.042	0.017	0.028	**0.043*** **
	(63.63)	(5.98)	(-37.27)	(1.59)	(1.08)	(-1.60)	(0.17)	(1.24)	(3.85)
CONS	**-0.031*** **	**0.817*** **	**-0.397*** **	0.086	**-1.144** **	**-0.115***	-0.084	**0.340*** **	**1.058*** **
	(-25.94)	(105.04)	(-30.22)	(0.78)	(-2.28)	(-1.79)	(-0.63)	(12.00)	(88.56)
R Squared	0.027	0.675	0.229	0.188	0.035	0.474	0.172	0.324	0.122
No. of Obs.	371,102	295,386	74,843	193	119	2,497	519	20,142	133,207

Z-statistics are reported in parentheses. Outlying values of more than two standard deviations from the mean are excluded prior to testing. Variables are as described in Table 4.8 on page 72. * p<0.10, ** p<0.05, *** p<0.01

Appendix 6 Firm Level Capital Structure Determinants by Country for Micro Firms

	China	Japan	Korea	Malaysia	Philippines	Taiwan	Thailand	UK
SIZE	0.000	**-0.080*** **	**0.063*** **	-0.017	0.005	**0.042** **	**-0.026*** **	**-0.083*** **
	(0.40)	(-83.92)	(35.59)	(-0.66)	(0.80)	(2.04)	(-8.56)	(-48.91)
PROF	**0.001*** **	**-0.146*** **	**-0.213*** **	-0.105	-0.018	-0.007	**-0.111*** **	**-0.273*** **
	(-11.18)	(-60.14)	(-34.14)	(-0.68)	(-1.35)	(-0.09)	(-10.42)	(-81.57)
RISK	**0.000*** **	**0.856*** **	**-0.015*** **	0.063	**1.004*** **	0.379	**0.275*** **	**-0.039*** **
	(11.63)	(435.03)	(-10.17)	(1.26)	(298.28)	(0.85)	(69.30)	(-25.95)
TANG	0.000	**0.106*** **	**0.276*** **	**0.173*** **	-0.005	-0.086	**0.077*** **	**0.286*** **
	(-0.61)	(29.65)	(52.66)	(2.03)	(-0.35)	(-0.80)	(7.29)	(48.56)
GROWTH	**0.000*** **	0.000	**0.006*** **	-0.019	0.001	**-0.055***	**0.012*** **	**0.015*** **
	(7.72)	(0.07)	(5.69)	(-0.33)	(0.55)	(-1.87)	(3.84)	(10.87)
LIQ	**0.000*** **	**-0.006*** **	**0.001*** **	-0.000	0.001	**-0.005***	**-0.001*** **	**-0.003*** **
	(-2.70)	(-59.76)	(5.58)	(-0.20)	(0.87)	(-1.63)	(-3.79)	(-7.96)
IND	**0.004*** **	**0.093*** **	**-0.408*** **	**0.258***	0.121	-0.201	0.029	**0.039** **
	(22.40)	(8.30)	(-40.19)	(1.63)	(1.01)	(-0.98)	(1.21)	(2.30)
CONS	0.002	**1.178*** **	**-0.512*** **	0.200	-0.044	-0.291	**0.407*** **	**1.382*** **
	(0.59)	(90.77)	(-22.50)	(0.60)	(-0.51)	(-1.05)	(11.89)	(66.99)
R Squared	0.009	0.591	0.204	0.191	0.651	0.146	0.322	0.133
No. of Obs.	128,938	183,174	40,766	71	71	117	17,911	76,113

Z-statistics are reported in parentheses. Outlying values of more than two standard deviations from the mean are excluded prior to testing. Variables are as described in Table 4.8 on page 72. New Zealand is excluded from this table as there are insufficient observations. * p<0.10, ** p<0.05, *** p<0.01

Appendix 7 Firm Level Capital Structure Determinants by Country for Small Firms

	China	Japan	Korea	Philippines	Taiwan	Thailand	UK
SIZE	**0.002*** **	**0.003*** **	**0.056*** **	0.009	0.017	-0.003	**-0.034*** **
	(10.98)	(2.83)	(24.24)	(0.81)	(0.78)	(-0.45)	(-7.59)
PROF	**-0.004*** **	**-0.178*** **	**-0.236*** **	0.002	-0.063	**-0.115*** **	**-0.385*** **
	(-10.79)	(-43.74)	(-24.96)	(0.06)	(-0.92)	(-3.64)	(-39.96)
RISK	**0.002*** **	**0.906*** **	0.002	**1.018*** **	**1.212*** **	**0.401*** **	**-0.010*** **
	(20.12)	(371.00)	(1.12)	(15.93)	(6.10)	(29.40)	(-4.25)
TANG	**-0.001*** **	**0.027*** **	**0.341*** **	-0.037	**-0.126***	**0.120*** **	**0.184*** **
	(-3.08)	(8.52)	(55.54)	(-1.23)	(-1.76)	(5.21)	(18.04)
GROWTH	0.000	-0.0001068	**0.003*** **	-0.006	**-0.022** **	-0.007	**0.011*** **
	(0.23)	(-0.14)	(2.60)	(-0.38)	(-2.06)	(-1.28)	(4.17)
LIQ	**0.000*** **	**-0.006*** **	**0.001*** **	**-0.003** **	**-0.021** **	0.001	**-0.003*** **
	(-4.88)	(-47.62)	(2.98)	(-2.18)	(-2.28)	(1.64)	(-5.43)
IND	**0.136*** **	**0.034*** **	**-0.220*** **	0.009	0.125	0.031	**0.109*** **
	(37.87)	(5.57)	(-19.38)	(0.20)	(0.88)	(0.68)	(4.58)
CONS	**-0.021*** **	**0.094*** **	**-0.532*** **	-0.063	-0.014	0.099	**0.786*** **
	(-9.27)	(6.41)	(-16.41)	(-0.38)	(-0.04)	(0.93)	(12.40)
R Squared	0.020	0.746	0.269	0.386	0.235	0.496	0.112
No. of Obs.	158,362	74,559	25,154	406	171	1,769	23,502

Z-statistics are reported in parentheses. Outlying values of more than two standard deviations from the mean are excluded prior to testing. Variables are as described in Table 4.8 on page 72. New Zealand and Malaysia are excluded from this table as there are insufficient observations. * p<0.10, ** p<0.05, *** p<0.01.

Appendix 8 Firm Level Capital Structure Determinants by Country for Medium Firms

	China	Japan	Korea	Malaysia	New Zealand	Philippines	Taiwan	Thailand	UK
SIZE	**0.005*** **	**0.016*** **	**0.046*** **	-0.022	-0.014	0.006	0.026	0.013	**0.022*** **
	(12.19)	(9.24)	(9.60)	(-1.02)	(-0.17)	(0.98)	(0.95)	(0.88)	(5.65)
PROF	**-0.009*** **	**-0.219*** **	**-0.315*** **	-0.080	-0.113	**-0.097*** **	**-0.218*** **	0.071	**-0.404*** **
	(-11.34)	(-27.60)	(-21.46)	(-1.06)	(-0.81)	(-3.84)	(-3.42)	(1.13)	(-44.16)
RISK	**0.006*** **	**0.831*** **	**0.050*** **	-0.008	0.021	**0.903*** **	**0.626*** **	**0.309*** **	**-0.005*** **
	(25.53)	(199.33)	(12.22)	(-0.37)	(0.82)	(31.36)	(3.80)	(11.82)	(-2.71)
TANG	-0.001	0.004	**0.281*** **	**0.229*** **	-0.060	-0.019	-0.047	**0.116*** **	0.199
	(-0.90)	(0.81)	(26.88)	(3.75)	(-0.49)	(-0.96)	(-0.58)	(2.69)	(26.97)
GROWTH	**-0.001*** **	**0.006*** **	-0.001	0.002	0.029	0.002	-0.005	0.003	0.001
	(-3.77)	(5.57)	(-0.50)	(0.06)	(0.76)	(0.25)	(-0.42)	(0.25)	(0.74)
LIQ	**-0.000*** **	**-0.006*** **	**-0.003*** **	-0.002	**0.031*** **	**-0.003*** **	**-0.054*** **	0.001	**-0.003*** **
	(-5.14)	(-32.75)	(-6.99)	(-0.18)	(3.97)	(-4.94)	(-4.37)	(1.11)	(-8.31)
IND	**0.252*** **	**0.065*** **	0.030	0.109	0.092	**-0.060***	-0.206	0.099	**0.097*** **
	(42.74)	(8.05)	(1.44)	(1.04)	(0.26)	(-1.93)	(-1.33)	(1.20)	(6.07)
CONS	**-0.059*** **	**-0.074*** **	**-0.431*** **	0.345	0.304	0.030	-0.051	-0.152	-0.074
	(-10.37)	(-2.74)	(-5.86)	(1.04)	(0.24)	(0.33)	(-0.12)	(-0.67)	(-1.25)
R Squared	0.046	0.702	0.267	0.235	0.074	0.374	0.226	0.313	0.125
No. of Obs.	83,772	33,754	8,932	72	76	2,016	231	462	33,592

Z-statistics are reported in parentheses. Outlying values of more than two standard deviations from the mean are excluded prior to testing. Variables are as described in Table 4.8 on page 72. * p<0.10, ** p<0.05, *** p<0.01.

Appendix 9 Results of Levene's Test and T-tests when testing for Differences in Leverage Ratios across Size Categories in each country

China		
	Micro	Small
Small	404.19*** (10.30***)	
Medium	6,252.84*** (35.41***)	4,492.29*** (29.52***)

Japan		
	Micro	Small
Small	12,467.48*** (105.34***)	
Medium	6,772.55*** (81.55***)	12.09*** (6.01***)

Korea		
	Micro	Small
Small	23.22*** (16.51***)	
Medium	272.20*** (34.81***)	421.55*** (23.98***)

Malaysia		
	Micro	Small
Small	3.50* *(1.57)*	
Medium	1.38 *(0.92)*	1.22 *(0.91)*

Philippines		
	Micro	Small
Small	1.64 *(0.93)*	
Medium	5.72** (1.85*)	0.33 *(1.66*)*

Taiwan		
	Micro	Small
Small	0.00 *(1.85*)*	
Medium	0.12 *(3.77***)*	0.20 *(2.48**)*

Thailand		
	Micro	Small
Small	132.17*** (5.17***)	
Medium	28.82*** (0.99)	0.87 *(1.83*)*

UK		
	Micro	Small
Small	267.40*** (23.59***)	
Medium	2,035.54*** (42.26***)	490.08*** (9.28***)

Levene's robust test statistic and t-statistic (in parentheses) when testing for differences in leverage ratios between size categories. T-test results shown in italics are performed based on the assumption that the two samples compared may have equal variances. No tests are performed on New Zealand as the number of observations in micro and small firms is too low. * p<0.10, ** p<0.05, *** p<0.01.

Appendix 10 Correlation Matrix Showing Pearson's Correlation Coefficients for the Variables in the Bootstrap Samples

	EMB	HIER	MAST	SIZE	PROF	TANG	GROW	LIQ	IND	LEGTRA	RISK	BDMK	STPRO
EMB	1.000												
HIER	0.326	1.000											
MAST	-0.345	0.525	1.000										
SIZE	-0.024	-0.152	0.007	1.000									
PROF	-0.097	0.011	0.118	-0.086	1.000								
TANG	-0.115	0.084	0.092	0.016	-0.036	1.000							
GROW	-0.028	0.090	0.136	0.031	0.090	-0.059	1.000						
LIQ	0.101	0.123	-0.054	-0.136	0.004	-0.105	-0.037	1.000					
IND	-0.232	-0.292	-0.321	-0.195	-0.047	0.002	-0.035	0.075	1.000				
LEGTRA	-0.187	-0.403	-0.315	-0.124	0.049	0.040	-0.069	0.049	0.176	1.000			
RISK	-0.222	-0.031	0.124	-0.128	0.048	0.032	0.014	-0.021	0.016	0.169	1.000		
BDMK	-0.059	-0.005	0.077	-0.199	-0.121	0.000	0.029	0.016	0.270	-0.400	-0.019	1.000	
STPRO	-0.658	-0.327	0.332	0.058	0.113	0.046	0.007	-0.182	0.076	0.296	0.174	0.138	1.000

Pearson correlation coefficients for the variables used in the regression models. Variables are defined in Tables 4.8 and 4.9 on pages 72 and 75. These values are calculated manually based on the mean correlation coefficient from 10 randomly selected bootstrap samples