Capital Structures around the world: Are small firms different?

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Abstract

This study uses firm level survey data to assess whether capital structure theory is portable to small firms. We analyse capital structure and term maturity choices of small firms in developing countries around the world, and provide evidence that these decisions are affected by the same variables as in large firms in developed countries. In our sample we have firms from 24 developing countries about 48 percent of which are small and 41% are medium sized. About 90% of firms in our sample are not listed or traded publicly. Leverage and debt maturities are lower for small firms despite their high asset tangibility and profitability ratios. We attribute this to the economic environment of the country. The main difference between small and large firms derives from the impact of the economic environment. Small firms operating in high income and high growth rate countries tend to have higher leverage in their capital structures. Small firms operating in economies with lower inflation and lower interest rates tend to have longer debt maturities. Small firms tend to use more debt in countries where there is a greater tax gain from leverage. We do not find a significant association between economic conditions and leverage and debt maturity decisions of large firms.

JEL Classification: G3, G32, F30

Keywords: Leverage, debt maturity, small firms, large firms

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1. Introduction

We examine the determinants of capital structure and debt maturity for small firms in developing countries. Previous research studying financing patterns around the world, mainly focused on large listed firms in both developed and developing countries (Titman and Wessels, 1988; Rajan and Zingales, 1995; Demirguc-Kunt and Maksimovic, 1996, 1999; Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001; Antoniou, Guney and Paudyal, 2006, 2008). These studies show that capital structure theories developed in the US are portable to other developed countries and to a small group of developing countries. Due to data limitations, empirical results in the existing literature are based on the analysis of listed companies and thus the largest and perhaps the most unrepresentative firms across the countries. In this paper we investigate if financing patterns of small firms differ from those of the large firms that have been the focus of previous literature. We also assess if the relation between capital structure and term maturity choices and firm size varies across different levels of development of the economic environment.

Better understanding of the capital structure and term maturity choices of small firms and how they change with economic development has important implications. The first implication is in terms of capital structure theories. Without testing them outside the large listed firms that have access to stock markets it is hard to determine whether these empirical regularities can be generalised to all firms. We show that capital structure theories are portable to small firms. The second implication is for policy makers in local governments. It is believed that in developing countries small firms do not have access to external finance due to market imperfections and a country's legal and financial institutions. In recent years focus has shifted from main indicators of a stable and growing economy such as growth rates, inflation and interest rates to institutional development. In response, significant resources are channelled into establishing market oriented systems with stock exchanges and corporate bond markets. Empirical results show that institutional development helps external financing (Demirguc-Kunt and Maksimovic, 1996, 1999; Antoniou, Guney and Paudyal, 2006, 2008). Due to data limitations these results are based on the largest and listed firms. For example the average asset size of listed firms in Fan, Titman and Twite (2006) is $381.6 million. However,

most firms in developing countries are small and not listed in any stock exchange. For example the average asset size of firms in our sample is $15.7 million and the average size of small firms in our sample is $5.2 million. In developing countries Small and Medium Enterprises "..constitute the dominant form of business organisation, accounting for over 95% and up to 99% of enterprises depending on the country[2]Yet, these firms use external financing. We focus on small companies most of which are not listed. We show that the main indicators of a stable economy such as income, growth, low inflation and low interest rates affect external financing and improve term maturities in small firms but not in large firms.

Large firms are not representative of firms in developing countries. SMEs characterize the corporate sector in developing countries much more accurately. Ayyagari et al. (2005) provide information on the importance of SMEs in the economies of a broad spectrum of countries. They provide statistics on the contribution of the SME sector to total employment in manufacturing and to GDP across countries. SMEs constitute 67% on average of the formal employment in the manufacturing sector. They contribute up to almost 50% on average to formal GDP of the developing countries. Including informal enterprises the estimates increase up to 95% of employment and 70% of GDP (Keskin et al., 2008) SMEs play an important role in sustained global and regional economic recovery. They are important in promoting economic growth, employment and poverty alleviation in a country.

Beck, Demiguc-Kunt and Maksimovic (2008) have examined the financing patterns of investments of small firms. However, their data do not allow a rigorous testing of capital structure theories because financial information is limited. They do not have information on the amount of debt or total assets or the maturity structure of debt. They only know capital expenditures and the proportion of investments financed from a particular source over one year. Our data enables us to test for capital structure theories. We address the issue using a firm level data source, the most recent World Bank Enterprise Survey, a major cross sectional firm survey conducted by the World Bank, that provides information on debt levels and debt maturities. We investigate the determinants of capital structure of small firms from 24 developing countries covering all regions of

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[2] See OECD 2006 page 1.

the world, Africa, East Asia and Pacific, Latin America and Caribbean, Middle East and North Africa and South Asia.

We show that capital structure theories hold in small firms in developing countries although they have lower leverage and debt maturities compared to large firms. We also show that small firms employ higher levels of leverage as the economy grows faster and income increases. They increase debt maturities as the economy becomes more stable with reduced inflation and interest rates. Small firms also use more debt when there is a greater tax gain from leverage. We do not find a significant association between economic conditions and leverage and debt maturity decisions of large firms. Fiscal and monetary policy decisions do not influence their capital structure and term maturity decisions as much as they do in the case of small firms. Therefore governments in developing countries and international organisations should not ignore economic stability while focusing on institutional development.

The remainder of paper is organized as follows. Section 2 presents the financing patterns around the world, followed by a brief summary of capital structure theories and their predictions. Section 3 focuses on the data and methodology. Section 4 discusses the empirical results, while section 5 concludes the paper.

2. Review of Previous Literature

In this section we first review the literature on financing patterns around the world then briefly present capital structure theories followed by a summary of predictions on how the theories relate to observable variables and finally discuss the role of economic policy on capital structure and debt maturity decisions of firms.

2.1 Literature on financing patterns around the world

During the past decade a number of studies have focused on cross country comparisons of financing patterns. Rajan and Zingales (1995) and Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) explore capital structure decisions in seven developed countries and 10 large developing countries respectively and show that capital structure theories are portable from the US to the rest of the world. Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) note large fixed effects across countries,

indicating that country effects are at work. Demirguc-Kunt and Maksimovic (1999) and Fan, Titman, Twite (2006) both show in different large samples in excess of 30 countries that financing patterns are different amongst countries mainly due to institutional differences such as the development of banks and stock exchanges. All of these studies use data bases of large listed firms. Even their small firms are much larger than the average small firm in developing countries. We study small firms in developing countries. To our knowledge this is the first paper that investigates if capital structure theories are portable to small firms in developing countries.

These studies also define external finance narrowly, mainly relying on equity finance due to development of stock exchanges and long term debt as a substitute for long term financing. Their focus on institutional development including the legal systems where property rights of investors are protected rely mainly on these types of external finance. In most developing countries the major obstacle to external finance for small firms is the availability of it. When institutional development is weak other forms of informal financing, such as short term debt via supplier credits or long term debt via development banks or trade credits are the available forms of external financing (Beck, Demiguc-Kunt and Maksimovic 2008). Thus for less developed countries the income and growth levels and stability of the economy become important for providing external finance for small firms. Looking at the growth and stability of the economic conditions is especially important in studying financing choices and term maturities of small firms in less developed countries as we do in this paper.

We use firm level survey data to investigate the capital structures and term maturities focusing on the differences between small and large firms. We use the most recent version of the World Bank Enterprise Survey with information on more than 10,000 firms from 24 countries. An important strength of the survey is its coverage of small and medium sized firms most of which are not listed. 48% of our observations are from small firms, 41% are from medium firms, and the remaining 11% are large firms. 51% of private companies are small firms, 39% medium and 10% of them are large firms. It presents an important complement to earlier cross country studies which focus on large and listed firms. To our knowledge Beck, Demiguc-Kunt and Maksimovic (2008) is the only other paper that uses survey level data for small firms from World Business

Enterprise Survey. They have about 3000 firms in their sample and about 80% of their firms are either small or medium sized. However, the data set they use does not provide information on financing patterns or firm level determinants of capital structures such as firm profitability. Their data set does not contain information on the amount of debt or total assets. Instead they use capital expenditures and proportions of investments financed by different sources to proxy firm financing. Our data set enables us to test for capital structure theories as we have short term and long term debt as well as equity and asset levels and other firm level controls such as profitability, and asset tangibility.

2.2 Capital structure theories

The origin for all three major theories of capital structure is the work of Modigliani and Miller (1958). The Agency Theory Framework (ATF), the Static Trade Off Theory (STO) and the Pecking-Order Hypothesis (POH) explain the firm choice between debt and equity. Agency theory focuses on the costs which are created due to conflicts of interest between shareholders, managers and debt holders (Jensen et al., 1976). For small firms, agency conflicts between shareholders and lenders may be particularly severe (Ang, 1992). Small firms are likely to have more concentrated ownership and generally, the shareholders often run the firm which decrease the conflict of interest between shareholders and managers and with equity financing few agency problems will exist. Moreover, Pettit and Singer (1985) discuss that since the quality of small firms' financial statements vary, small firms usually have higher levels of asymmetric information. Even though investors may prefer audited financial statements, small firms may want to avoid these costs. Compared to large firms, they have different problems, such as shorter expected life, presence of estate tax, intergenerational transfer problems and prevalence of implicit contracts (see Ang, 1992). As a result, small firms have higher probability of insolvency than large firms hence they are seen as more risky than large firms. We thus expect small firms to have less debt in their capital structures than large firms. Similarly we would expect term maturities to be higher for large firms and lower for small firms. We test the agency theory by using three different definitions of size and our results are robust.

Trade-off theory (Scott, 1977) argues that a firm's optimal debt ratio is determined by a trade-off between the bankruptcy cost and tax advantage of borrowing. Higher profitability decreases the expected costs of distress and lets firms increase their tax benefits by raising leverage. Firms would prefer debt over equity until the point where the probability of financial distress starts to be important. The type of assets that a firm has determines the cost of financial distress. For instance, if a firm invests largely in land, equipment and other tangible assets, it will have smaller costs of financial distress than a firm relies on intangible assets. So for debt financing, both small and large firms must provide some kind of guarantees materialized in collateral. But small firms are seen as risky because they have higher probability of insolvency than large firms (see Berryman, 1982). So the higher the tangible assets, the more willing should lenders be to supply loans and leverage should be higher (Scott, 1977; Harris and Raviv, 1990). Most empirical studies have found positive relationship between asset tangibility and leverage (Titman and Wessels, 1988; Rajan and Zingales, 1995). So, we would expect positive relation between leverage and asset tangibility for small[3] firms as well as large firms. According to the maturity matching principle, the length of loans should be matched to the length of life of assets used as collateral (Myers, 1977); therefore, long term assets should be financed with long term debt (Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001)[4]. We would expect debt maturities to increase with asset tangibility.

Pecking Order Theory, (Myers and Majluf, 1984), states that capital structure is driven by firm's desire to finance new investments, first internally, then with low-risk debt, and finally if all fails, with equity. Therefore, firms prefer internal financing to external financing. This theory is applicable for large firms as well as small firms. Since small firms are opaque and have important adverse selection problems that are explained by credit rationing; they bear high information costs (Psillaki, 1995). Also, since the quality of small firms' financial statements varies, small firms usually have higher levels of asymmetric information (Pettit and Singer, 1985). Even though investors may prefer

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[3] see Michealas et al. (1999) and Sogorb-Mira (2005) for positive effect of tangible assets on the leverage for SMEs.

[4] Van der Wijst and Thurik (1993), Hall et al., (2004) and Sogorb-Mira (2005) have found a positive relation between asset tangibility and long term debt and an inverse relation between asset tangibility and short term debt.

audited financial statements, small firms may want to avoid these costs. Therefore, when issuing new capital, those costs are very high, but for internal funds, costs can be considered as none. For debt, the costs are in an intermediate position between equity and internal funds. As a result, firms prefer first internal financing (retained earnings), then debt and they choose equity as a last resort. We expect negative relation between profitability and leverage for all firms. Since the managers of the small firms are also the owner of the company, they do not prefer to lose the control over their firms (Holmes and Kent, 1991; Hamilton and Fox, 1998), so they do not want to accept new shareholders; that's why, they prefer internal financing to external resources to finance firm activity. So we would expect negative relation between leverage and debt maturity and profitability particularly for small firms.

2.3 Predictions

We list below the firm level variables derived from the above theories that we use in our study[5]:

Asset tangibility: Trade-off and agency theories suggest a positive relation between tangibility and leverage since large amount of collateral decrease the bankruptcy costs and the risk of lender suffering the agency cost of debt. Therefore, firms with a high ratio of fixed assets should have greater borrowing capacity. We expect a positive relation between asset tangibility and leverage for all firms. On the other hand, according to the maturity matching principle, long term assets should be financed with long term debt (Booth, Aivazian,Demirguc-Kunt and Maksimovic, 2001). Therefore, for long term debt, we expect a positive relation, while for short term debt we expect negative relation.

Profitability: Trade-off theory proposes a positive relation between profitability and leverage while pecking order theory predicts a negative relation. Since most empirical literature findings are in accordance with the pecking order theory, we expect to find a negative relation between profitability and leverage and debt maturities for all firms.

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[5] The firm level variables included in this study are limited by the availability of data.

Size: According to both STO and POH size has a positive effect on leverage. STO proposes that firm size could be an inverse proxy for the probability of the bankruptcy costs. Larger firms are likely to be more diversified and fail less often. They can lower costs (relative to firm value) in the occasion of bankruptcy. POH also expects this positive relation. Since large firms are diverse and have less volatile earnings, asymmetric information problem can be mitigated. Therefore, we expect dummy for small firms to be negatively related with leverage and debt maturity; while, the dummy for large to be positively related to leverage and debt maturity. We repeat our estimations with alternative definitions of size including sales and total assets.

2.4 Capital structure and maturity decisions and economic policy

The financing decision of a firm is not only depended on the firms' conditions but also on the economic environment in which the firm operates. This is especially true for small firms in developing countries where economic stability is important in determining the availability of external financing to small firms. The country in which a firm is located (Fan, Titman and Twite., 2006) explains capital structure and debt maturity choices. We argue that the growth and stability of the economic environment is especially important for small firms in developing countries. As developing countries become richer they provide more funding opportunities to firms and external financing becomes available to small firms. External financing in developing countries is scarce compared to developed countries due to unstable macro policies. Therefore, government's decisions on the fiscal and monetary policies have a direct impact on the economic environment of the country in terms of providing external financing and stability and thus on the capital structure and debt maturity decisions of firms.

On the whole, the economic development of a country affects the capital structure and debt maturity structure decisions of firms (Rajan and Zingales, 1995; Booth, Aivazian,Demirguc-Kunt and Maksimovic, 2001; Demirguc-Kunt and Maksimovic, 1996, 1999, Bartholdy and Mateus, 2008). One common measure of the development level of is per capita income. It is a broad indicator which describes the differences in wealth in each country as well as differences in wealth in a single country over time. Similarly, growth rate of the economy is a measure of the growth opportunities available to firms in

the economy. On an individual firm level, the growth rate is a proxy for the investment opportunity set faced by firms (Smith and Watts, 1992) and its effect on the optimal financing of projects (Myers, 1977). Therefore, we expect economic growth to be positively related with leverage and debt maturities for all types of firms. On the other hand, high growth in developing countries may encourage firms to list and issue equity (Glen and Pinto, 1994). Also finance theory proposes that for growth options, firms should not prefer debt financing but should prefer equity financing (Demirguc-Kunt and Maksimovic, 1996). Thus, we would expect income levels and growth rates in the economy to be more important for leverage and debt maturity choices of small firms who are not usually listed and have limited access to external financing. Large firms that have better access to financial markets and institutions are not affected as much from government policy on income and growth.

In developing countries, governments use monetary policy to stabilize the economy by controlling interest rates and the supply of money. Thus, monetary policy decisions influence the inflation and interest rates. Interest rates are determined by the monetary policies which have a direct impact on the cost of borrowing; therefore, on the capital and debt maturity decisions of firms. Increases in cost of capital boost the cost of borrowing; therefore, firms decrease their external financing. Increases in inflation cause higher uncertainty in the economy. Inflation is higher especially in developing countries; therefore, it may be one of the reasons for the scarcity of debt financing, specifically long term debt. Countries with high inflation are associated with high uncertainty (Demirguc-Kunt and Maksimovic, 1996). Since debt contracts are generally nominal contracts, the rate of inflation may influence the riskiness of debt financing. Lenders are more likely to avoid providing debt under high inflation which reduces the availability of debt financing. As interest rate increases, firms are less willing to finance new investments due to increase in the cost of borrowing (Bartholdy and Mateus, 2008). Besides the firms' decision to the changes in interest rate, the creditors have also preferences. Increases in debt financing also boost the risk of firm. Based on the risk of the firm, creditors adjust the interest rates by increasing or by refusing to lend to the firms which are highly leveraged (Glen and Pinto, 1994). Thus, we expect both low inflation rates and low interest rates to increase leverage and debt maturity for both small and large firms.

According to the trade-off theory, firms prefer debt financing because debt is tax deductible. The changes in the corporate tax rates have a direct impact on the capital structure and debt maturity decisions of firms due to tax shields (Modigliani and Miller, 1963; Miller, 1977). Thus, it is expected that increases in tax rate boosts the external financing of firms. But for small firms, since they are less likely to have high profits, the tax advantage may not be the reason to choose debt financing for the tax shields advantage (Pettit and Singer 1985). We expect tax to have a positive relation with leverage for large firms, rather than for small firms.

3. Data and Methodology

3.1. Data

Our main dataset is a firm-level survey data for 10,839 firms from World Bank Enterprise Survey 2002 conducted for 24 developing countries from 5 regions. Appendix 1 gives the list of firm observation by country. World Bank Enterprise Survey is a major cross-sectional survey conducted for developed and developing countries in various years. It is a firm level survey data which provides a sample of an economy's private sector. The survey is performed by private contractors on behalf of World Bank. In the survey business owners and top managers are surveyed. Sometimes for the questions related to sales and labour section of the survey, company accounts and human resource managers respond the questions. The sectors included in the survey are from key manufacturing and service sectors from each region of the world. In each country, companies in the cities or regions of major economic activity are interviewed. Formal (registered) firms with 5 or more employees are aimed for interview. The interviewed firms in the sample are selected based on the list of eligible firms which is obtained from the country's statistical office.

We use 2002 version of the survey that provides information about the balance sheet and income statement items such as fixed assets, current assets, total liabilities including short-term and long-term debt and equity-share capital, sales and expenses up to three years. This provides us information on the amount of debt and assets which enables us to estimate our firm level variables as used in the previous literature (see e,g,

Rajan and Zingales, 1995; Booth, Aivazian,Demirguc-Kunt and Maksimovic, 2001). The data for macroeconomic variables are collected from World Development Indicators (April 2008).

We have 27,738 observations of which 48(41) percent of them is small(medium) firms and 11 percent are large companies. Firms are defined as small if they have less than 50 employees. Medium firms employ 51 to 500 employees; large firms are defined as those with more than 500 employees. Only 9.5 percent of the firms in the sample are publicly listed while 90.5 percent are private companies. 51(39) percent of private companies are small (medium) firms while 10 percent of them are large firms.

Distinguishing feature of the database is its coverage for small and medium enterprises, which has not been used before for the examination of the determinants of capital structure. For instance, Rajan and Zingales (1995) use Global Vantage database which contains accounting data for the largest listed companies in the G-7 countries and Booth et al (2001) use International Financial Corporation (IFC) database which includes abbreviated balance sheets and income statements for the largest companies in 10 developing countries. As we see from our sample, large companies are not a common feature of developing countries. For instance, the average size of the firm in our sample is lower compared to the size of the firms in the study of Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001). We calculate the average sizes of firms in India and Pakistan in the same way as in Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) for comparison[6]. The average size of the firms in India and Pakistan is in the sample of Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) is 98 million and 27 million US dollars, respectively, while in our sample they are 10 million and 1 million US dollars. We see that the firms in our sample are smaller. On the other hand, Beck, Demiguc-Kunt and Maksimovic (2008) focus on the small firms and use World Business Environment Survey (WBES) 1999, which had limited firm level financial information. They investigate flows of external finance as a proportion of investment expenditures. They use the total amount of internal and external resources used in a particular year rather than the ratio of external financing to total assets. In contrast, our rich data base allows us to

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[6]These two countries are included in both studies.

investigate whether their capital structure decisions are effected by the same theoretical determinants of capital structures used in developed countries.

3.2 Descriptive Statistics

Table 1 presents descriptive statistics. We first look at the dependent variables. We follow Rajan and Zingales (1995), Demirguc-Kunt and Maksimovic (1996) and Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) and define leverage as total liabilities divided by total assets. The mean(median) leverage is 39.09(37.71) percent. Leverage is low in our sample compared to developed countries. For example in the US (UK), the mean leverage is around 58 (54) percent (see Rajan and Zingales, 1995). Firms in developed countries are highly leveraged compared to firms in emerging markets. The reason for this might be the limited availability of funds in developing countries to finance companies. The available funds are generally allocated to large (listed) firms. The leverage for small firms is 30.65 percent, compared to large(medium) firm, which is, 50.48(45.97) percent. Since small firms are more sensitive to the fluctuations in the economic environment of the country as we show in section 4.2 and they do not have the access to the international financial markets as large firms, they have lower leverage. Similarly, private firms have less leverage than listed firms. The leverage of private companies is 36.70 percent, compared to the leverage of listed firms, which is 46.29 percent. Lenders may prefer to fund listed companies because the quality of information provided by them is more reliable than that of private firms. Still leverage of listed firms in our sample is lower than those in developed countries (see US(UK)). This may be due to the lack of well developed stock markets and limited availability of equity funds in the developing countries.

Long term debt is defined as the ratio of long term liabilities to total assets while short term debt is defined as the ratio of short term liabilities to total assets (Demirguc-Kunt and Maksimovic, 1999). Average (median) long term debt ratio is 14.01(2.56) percent and average(median) short term debt ratio is 24.94(18.25) percent in our sample. The average long term debt in the US(UK) is 37(28) percent (Rajan and Zingales, 1995). Firms in developed countries have more long term debt than firms in developing countries. The range for long term debt of large listed firms in developing countries is

between 9.7-49.4 percent (Booth, Aivazian,Demirguc-Kunt and Maksimovic, 2001). The reason for the low long term debt in our sample might be the information asymmetry since most of the firms in the sample are SMEs. Average long term debt for small(medium) firms is 9.60(17.16) percent and increases to 21.41 percent for large firms. Short term debt is 20.76(28.68) and 29.18 percent for small(medium) and large firm.. Short term debt is high for small firms probably because they have limited access to long term debt financing. On the other hand, private firms have 14.05 percent long term debt and 22.47 percent short term debt. Listed companies have finance 21.19 percent of their assets with long term debt while they finance 24.98 percent of assets with short term debt. Hence, in developing countries public companies have higher long term debt than private firms probably due to better information disclosure.

Tangibility is defined as the total assets minus current assets (fixed assets) divided by total assets. On average (median) 45.21 (44.07) percent of the firms' assets are fixed assets which can be used as collateral. So firms with high asset tangibility should have greater borrowing capacity. The mean of asset tangibility for small(medium) and large companies is 48.17(42.80) and 41.43 percent, respectively. Private companies have 46.71 percent tangible assets, while listed firms have 43.37 percent. The mean of asset tangibility for listed companies in the US(UK) is 39.5(35.6) percent (see Antoniou, 2008).

Profitability is calculated as earnings before tax[7] divided by total assets. The mean(median) of profitability in the sample is 34.06(19.69) percent. The mean of profitability for small(medium) and large firms is 30.58(35.36) and 44.60 percent. Average profitability ratio for private firms is 35.72 percent, while that of listed firms is 33.41 percent. Profitability in the US(UK) is 16(11.6) percent (see Antoniou, 2008). The firms in developing countries have higher profitability than firms in the US(UK). Since external funding options are limited in developing countries, firms prefer to keep their profits in the company as an internal funding source.

As a proxy for size, we use size dummy variable for small and large firms based on the firms' number of employees. Firm is classified as small if it has less than 50 employees; medium size if it has between 51 and 500 employees and large if more than

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[7] Earnings is calculated as total sales minus the sum of direct raw material costs, consumption of energy, manpower costs, interest charges and financial fees, other costs.

500 employees (see Beck, Demiguc-Kunt and Maksimovic, 2008). According to this classification, 48.10(41.01) percent of the firms in our sample are small(medium) firms while only 10.89 percent of them are large firms. Within listed firms, 26 percent of them are small while 28 percent of them are large. Most of the firms among the private firms are small, while most of the listed firms are medium size firms.

Looking now at the macroeconomic indicators: GDP per capita shows the income level of countries (Beck, Demiguc-Kunt and Maksimovic, 2008) and average(median) GDP per capita for our sample is $1,698($996). The richest country in the sample is Oman with $8,962 and while the poorest country is Ethiopia with $121. In the same period, the GDP per capita in the US(UK) is $34,852($25,359). As can be seen from the figures, there is a great wealth difference between even for the richest country in the sample and developed countries. Growth is the GDP growth rate of the country and it is 3.26(3.07) percent on average(median) for our sample, while the growth rate is 1.75(2.40) percent in the US(UK). The countries in our sample grow faster compared to developed markets. The fastest growing country is Cambodia with 8.04 percent growth rate, while the slowest growing country is Indonesia with 0.15 percent growth rate.

Inflation shows the inflation rate of a country and we measure it by using GDP deflator which is the ratio of GDP in local currency to GDP in constant local currency. Average(median) inflation rate in our sample is 6.95(6.20) percent; whereas, the rate is 2.13(2.41) in the US(UK). The highest inflation is 30.82 percent for Honduras and the lowest is -7.04 percent for Ecuador. As inflation rate, interest rates are also higher for the countries in our sample as one would expect. Interest is the lending interest rate of a country. The average(median) interest rate is 21.27(13.69) percent, on the other hand, for the US(UK) the interest rate are 6.21(4.75) percent during our research period. The highest interest rate in our sample is 62.88 percent for Brazil while the lowest interest rate is 6.18 percent for Chile. The higher inflation and interest rates cause borrowing to be costly in developing countries and might be one of the reasons for lower leverage ratios in general. Tax is each country's highest marginal corporate tax rate (see Bartholdy and Mateus, 2008). The average(median) corporate income tax rate is 29.64(30) percent in the sample while the tax rate is 35(30) percent in the US(UK). The maximum corporate tax

rate is 45 percent for Guyana, whereas the minimum rate is 12 percent for Oman in our sample.

3.3 Methodology

The basic empirical model is a cross-sectional regression of the three different measures of the firm's debt ratio against the firm's the tangibility of assets, the profitability, the size and the macroeconomic variables. We have 10,839 companies over two or three year time periods. Since the time period for each firm is different, we have an unbalanced panel. We apply the panel data analysis because this only gives us the opportunity to analyze our firm level across country and time.

The functional form of our models is as follows:

$$D_{i,t} / V_{i,t} = \alpha + \sum \beta_j F_{i,j,t} + \sum \delta_k X_{k,t} + \varepsilon_{i,t}$$

$D_{i,t}/V_{i,t}$ presents the leverage or debt maturity for the ith firm at time t. $F_{i,j,t}$ shows the firm level variables, such as asset tangibility, profitability and size; while $X_{k,t}$ represents the kth economic environment variable, such as GDP per capita, growth, inflation, interest and tax, at time t.

The simplest model is to pool the data in which case there is one fixed intercept for all the firms and period. This method implies that estimated cross section is identical and it is better under the hypothesis that the data set is a priori homogenous. For instance if we have a sample of only high income countries (Asteriou and Hall, 2007). The fixed effect model is more general than the pooled model, in the sense that the fixed effects enables us to analyse the differences from one country/firm and/or period to another. The model permits for different intercepts for each country/firm and/or period, which enables to capture the effects of omitted explanatory variables. We use period fixed effects rather than firm-specific fixed effects. We use the Hausman specification test[8] to decide on the

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[8] Hausman test is a specification test which is based on the correlations between the regressors and the unobserved or individual effect. This test is important to test the assumption of whether unobserved and observed explanatory variables are correlated. Fixed effect estimator is consistent even when the estimators are correlated with the individual effect. If they are correlated, fixed effect is consistent, but random effect is not. Therefore, we actually test in the null hypothesis that random effects are consistent and efficient, versus alternative hypothesis that random effects are inconsistent (as the fixed effects will be always consistent).

use of period fixed effects. Our decision is also based on the work by Lemmon, Roberts and Zender (2008) that concludes that "the majority of variation in leverage in panel of firms is time invariant" suggesting that variation in capital structures is primarily determined by factors that remain stable for long periods of time. We capture those by determinants of capital structure that vary in the cross section of firms and economy level variables that distinguish between the country in which the firms operate. Therefore we can identify the effect of each capital structure theory and economic policy variable on capital structures and term maturities. [9] We estimate the model using OLS estimators with period fixed effects

We estimate the equations above for leverage and debt maturities, long term debt and short term debt. Then we run separate estimations with different size measures for small, medium and large companies. We do the estimations firstly just for the firm level determinants, then adding macroeconomic variables one by one and in the last model we include all of the variables. The reason for that is the high correlation among some macroeconomic variables (see appendix 2) We test the robustness of our results for different definitions of size by using two additional measurements for size: logarithm of sales and logarithm of assets and then for different geographical regions.

4. Empirical results

In this section we present the results for determinants of capital structure and debt maturity for firms in developing countries. We first report results for all the firms in the 24 countries. We confirm that capital structure theories are portable to developing countries and we show that economic environment of a country has significant impact on the leverage and debt maturity decisions of firms. We find that large firms have higher leverage than small firms. To examine whether the capital structure theories are portable to small firms, we split the sample based on the size of the firms as small, medium and large. We discuss the results for determinants of capital structure for small and large

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[9] In alternative estimations following Booth et al. (2001) we include country fixed effects. When we include both macroeconomic variables and country dummies, the macroeconomic variables become insignificant. The country dummies take the impact of the macroeconomic variables as Lemmon, Roberts and Zender (2008) predicted. Therefore, we omit the country dummies since the macroeconomic variables can show the nature of differentiation among countries.

firms. We show that capital structure theories are portable to small firms and the main difference between small and large firms derives from the economic environment of the country. For the robustness of our results we use different definitions of size and we confirm that our results are robust to different definitions of size. We also look at the robustness of our results for different geographical regions. Finally, we analyze whether determinants of capital structure for private and listed firms are different. We find that capital structure theories are portable to private firms economic conditions have significant impact on their leverage and debt maturity decisions. This is not surprising since most private firms are small.

4.1 Determinants of capital structure and debt maturity

Table 2 Column 1 presents results for leverage, while Column 2 and 3 present the results for debt maturities for the overall sample. Looking first at results for leverage we observe that the coefficient for tangibility is negative, indicating that as collateral increases, firms borrow less. According to trade-off and pecking order theory, as tangibility increases, collateral increases and firms should be able to obtain more debt (see Rajan and Zingales, 1995; Titman and Wessels, 1988). Our findings contradict the theory at first sight. Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) have also found this inverse relationship and explain it with maturity matching principle. We observe the same. We will discuss this later when we present the results for term maturities. The coefficient for profitability is negative, indicating that as profitability increases, leverage decreases. This provides support for the pecking order theory (Myers and Majluf, 1984). Firms use retained earnings first and then move to external sources of financing. This negative relation also supports the existence of asymmetric information. In accordance with Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001), this result proposes that external financing is costly and as a result firms avoid it. The size dummy for small firms has a negative coefficient and the dummy for large firms has a positive coefficient. Leverage is higher for large firms and lower for small firms. As firms' size increases, they become more diversified and have more stable cash flows. They are less often bankrupt compared to small firms (Pettit and Singer, 1985) so that they can afford

higher levels of leverage. Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) also supports this positive relation between leverage and firm size.

We show that economic environment is important in firms' capital structure and term maturity choices in developing countries. The coefficient estimate for GDP per capita is positive indicating that as countries become richer, more funds become available and firms can borrow more. GDP growth has also a positive coefficient. In countries with relatively higher rate of economic growth, firms are eager to take higher levels of debt to finance new investment (see Bartholdy and Mateus, 2008). The coefficient for inflation is negative implying that firms borrow less as inflation increases. Higher inflation introduces higher uncertainty in the environment and increases cost of borrowing (Fan et al., 2006). Therefore, firms are able to borrow against real but not inflationary growth prospects (Booth, Aivazian, Demirguc-Kunt and Maksimovic, 2001). The impact of interest on leverage is positive suggesting that firms continue to borrow despite the increases in the cost of interest. This might be due to the fact that in most developing countries interest rates increase when ceilings are abolished as a result of financial liberalisation and fund become available (Bekaert , Campbell, and Lundblad, 2003). The coefficient for tax is positive for leverage. As tax increases, firms borrow more. In accordance with the trade-off theory, firms prefer to be financed by debt because interest payments are tax deductible. By using Miller tax term, Booth, Aivazian,Demirguc-Kunt and Maksimovic (2001) find the same positive impact on the leverage. Therefore, firms can benefit higher tax shields to continue funding by more debt.

Table 2 Column 2 presents the results for long term debt. The coefficient for asset tangibility is positive for long term debt. A firm with more tangible assets use more long term debt in accordance with trade-off theory and maturity matching principle (Booth, Aivazian,Demirguc-Kunt and Maksimovic, 2001). On the other hand, we found an inverse relation between leverage and asset tangibility. The reason for this is that firms in developing countries finance their long term assets with long term debt. That's why we find tangibility is positively related with long term debt while negatively related with leverage. Profitability has a negative coefficient. As profitability increases, long term debt decreases. Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) find the same inverse relation. Firms prefer to be financed internally if they have enough internal

sources (Myers and Majluf, 1984). The coefficient for small is negative, while the coefficient for large is positive. As firm gets larger, they use more long term debt financing in accordance with Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001). We do present robustness tests to examine the effect of size on the external financing decisions of firms by using different proxies for size, which we will present m in section 4.3.

The coefficient for GDP per capita is positive for long term debt. As income of the country increases, firms can borrow more long term debt. The coefficient for GDP growth is positive, implying that as countries grows faster, long term debt increases. The impact of inflation on long term debt is positive. As inflation increases, firms use more long term debt financing. They could be using long term debt as a hedge against inflation. As opposed to our finding, Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) find an inverse relation between inflation and long term debt. However, this inverse relation does not hold when they use market values[10]. Interest has a negative coefficient, indicating that as interest rate increases, firms avoid financing themselves with long term debt due to the higher cost of interest expense. The coefficient for tax is negative, indicating that firms in countries with higher tax rates use less long term debt. This result is difficult to interpret. Higher tax rates provide incentives to firms borrow more due to tax shield. But at the same time the high borrowing increases the risk of bankruptcy and financial distress costs. Bankruptcy costs are very important for small firms since they have higher business risk, which means that they have higher probability of failure. Also, the higher probability of failure decreases the value of the firm. Therefore, increases in the probability of failure and decreases in the value of the firms may cause firms in developing countries not to follow the trade-off theory for long term debt financing. We examine this relation for short term debt as well. On the other hand, Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001) find a positive relation between tax and long term debt. But since the firms included in that study are large listed companies, the probability of failure is very low. But our results show that tax has a positive impact on

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[10] We could not use market values since we do not have the data for that. Most of the firms in the sample are private companies; therefore, they do not have market values.

short term debt. Therefore, firms benefit tax shields via short term debt rather than long term debt. This is a unique feature for developing countries.

Table 2 Column 3 shows the results for estimations using short term debt as the dependent variable. Results reported here complement the results for estimations for long term debt. The coefficient for tangibility is negative for short term debt, suggesting that as tangibility increases, firms are financed less by short term debt. We also found this negative relation between tangibility and leverage. We explained this with the maturity matching principle. So firms in developing countries finance their long term assets with long term debt. Thus, as asset tangibility boosts, they reduce short term debt and move towards long term debt. The coefficient for profitability is negative for short term debt, indicating that firms use less short term debt financing as profitability increases. In accordance with our results for leverage and long term debt, firms follow the pecking order even for short term debt. They prefer internal to external financing. The coefficient for small firms is negative for short term debt while it is positive for large firms. As size increases, leverage increases in general and large firms borrow more short term debt as well as long term debt. As GDP per capita and growth rates in the economy increases, firms boost leverage in general, not only long term debt but also short term debt. Similarly as inflation increases and interest rates decline, firms increase debt maturities by borrowing less short term debt and more long term debt.

4.2. Are determinants of capital structures and debt maturities different for Small Firms?

In this section, we analyze whether the determinants of capital structure and debt maturity are portable to small firms. Table 3 presents the results for the Small, Medium and Large firms. Firm level determinants of capital structure are the same for small and large firms. So no matter what size the firms are they follow the maturity matching and pecking order theories for their leverage decisions. The difference between them derives from the impact of the macroeconomic variables of a country. The richness of the country and economic growth boost the debt financing of small firms, while uncertainty in the economy represented by high inflation and high interest rates discourages their borrowing. Unlike small firms, large firms are not affected by GDP per capita, growth and inflation

but only by the interest rate and tax. Large firms continue to borrow in spite of the increases in interest rates. The results show that the effects that we have seen for the overall sample mainly show the capital structure decisions of small firms.

Table 4 presents the results for long term debt financing decisions of small, medium and large firms. For long term debt financing, we also confirm that both small and large firms follow the trade-off and pecking order theories in accordance with overall results. The difference between the small and large firms derives from the macroeconomic environment of the country. The richer the country the more long term debt small firms have. Also the growth of the economy helps small firms borrow more. On the other hand, the high inflation does not discourage long term borrowing of small firms as opposed to what we expected. But we found the same positive relation for overall sample and we explained this as they use long term debt as hedge against inflation. As interest and tax increases, small firms use less long term funding. We do not expect that tax has any effect on the long term debt financing decisions of small firms but we found a negative relation in accordance with our overall findings. Small firms also consider the tax in their long term debt financing decisions.

Table 5 reports the regression results for short term debt of small, medium and large firms. The results for short term debt integrate with the leverage and long term debt. The coefficient for tangibility is negative, indicating that small and large firms borrow less as collateral increases. We found the same inverse relation for the leverage and we explained it with the maturity matching principle. Firms prefer to finance their long term assets with long term debt. That's why we find negative relation. We could not find any significant relation between profitability and short term debt for both small and large firms. The richness of the country and economic growth boost the short term debt financing of small firms; whereas, increases in growth makes large firms to prefer long term debt rather than short term debt. Increases in inflation decrease the short term debt financing of small firms while small firms increase their long term debt. They could be using long term debt as hedge against inflation. We could not find any significant relation between short term debt and inflation for large firms. Both small and large firms continue to borrow short term in spite of the increases in interest rate. Small firms use tax shield advantage for short term debt while we could not find any significant relation for large

firms. We show that capital structure theories are portable to small firms in developing countries. We knew from previous research that capital structure theories are portable to large firms and our results confirm this. The determinants of capital structures and term maturities are different in terms of the impact of the economic environment of the country. Small firms are more sensitive to the changes in the economic environment of the country than large firms. The richness of the country, economic growth and lower inflation rates help small firms increase leverage while we do not observe any significant impact on large firms. Similarly higher income levels, high growth rates and lower interest rates increases the debt maturity of small firms. Small firms increase long term debt during high inflation and increase short term debt during high interest rate periods. Large firms have better access to the capital markets so they can shape their capital structure decisions based on firm level needs as represented by capital structure theories. However small firms are more exposed to the shocks or changes in the local economy and governments' monetary and fiscal policies that determine the level of financing available via development banks or suppliers'.

4.3. Robustness tests for size

We test the robustness of our results by using different definitions of size. First, we use the logarithm of sales (Table 6 panel A) and then the logarithm of assets to proxy size(Table 6 panel B), Our results are robust to different definitions of size. Leverage is higher for large firms when we use sales or assets of the company to measure size. Larger firms usually have more stable cash flows and lower bankruptcy risk (Pettit and Singer, 1985). Also they have access to the international capital markets; therefore, being a large firm increases the leverage. We confirm that firms in the sample follow the maturity matching principle and pecking order theory. The macroeconomic determinants also stay the same. The richness of the country and economic growth boost both the leverage and debt maturity while uncertainties in the economy discourage their borrowing. Higher interest makes firms continue to borrow short term, but they avoid borrowing long term. Only the coefficient of tax becomes negative for leverage when we use the logarithm of sales to proxy size. Regardless of the size definitions we use, based on the number of

employees, sales and total assets of the company we show that both leverage and term maturities are higher for larger firms.

4.4 Are determinants of capital structure different in geographical regions?

In the previous section, we show that capital structure theories are portable to small firms in developing countries and they are affected by the economic climate of the country. But since our firms are from the different countries from different regions, we also check the robustness of our results by looking at whether belonging for a certain region causes to have different determinants of capital structure and term maturity. To answer for that, we divide the sample into five geographical regions[11] and estimate the model for each region.

Among the different regions, we confirm the importance of the firm level variables and their impact is similar to the results reported in Table 2 [12]. There are some differences concerning the impact of macroeconomic variables. High economic growth makes firms in Latin America and Caribbean region to shift from debt financing to equity financing, while they shift form equity to debt financing as inflation increases. The higher the interest rate, the less debt firms have in Latin America and Caribbean and South Asian regions. Increases in tax rate make firms borrow less in Latin America and Caribbean regions due to the high probability of bankruptcy.

Debt maturity decisions of firms among regions are consistent with the general results we report in Table 2. There are some exceptions. In the Middle East and North African region large firms use less short term financing than small firms. Firms in Latin America and Caribbean region shift from long term debt financing to equity financing as economy grows. In South Asian region, firms use less long term debt financing as inflation increases due to the economic uncertainty. Firms in African region continue to borrow long term debt financing in spite of the increases in interest. The increases in growth and tax rate cause firms in Latin America and Caribbean region to borrow less short term debt while increases in inflation make firms borrow more short term debt. Hence, the impact of macroeconomic variables on the leverage and debt maturity

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[11] The regions are Africa, East Asia and Pacific, Latin America and Caribbean, Middle East and North Africa, and South Asia.

[12] Results can be made available by the authors.

decisions of firms in Latin America and Caribbean region is contrary compared to firms in other regions and overall sample.

5. Conclusion

This paper examines the determinants of capital structure decisions of small firms in developing countries. Previous research is mainly focused on the large listed firms of US and other developed countries and a small number developing countries. In contrast to the earlier studies, our main focus is on the small firms in developing countries, which are more representative of the corporate sector in those countries. We use survey data from World Bank Enterprise Survey 2002 covering a broad sample of countries around the world, which provides detailed firm financial information which enables us to test for the capital structure theories as it has been done for developed countries.

Our results can be summarised as follows. Firstly, our results for developing countries indicate that corporate financing decisions do not significantly differ from those found for developed countries in the literature. The only exception is the asset tangibility. In accordance with Booth, Aivazian, Demirguc-Kunt and Maksimovic (2001), firms in developing countries follow the maturity matching principle. But overall, firms in developing countries follow the capital structure theories as firms in developed countries.

Secondly, size is an important factor in the level of leverage a firm holds and its term maturity. As firms become larger, they increase both leverage and debt maturities in their capital structures. Larger companies are usually more diversified and their risk of failure is reduced. As a result they can have higher leverage and extend their debt maturities. Small firms have lower leverage and debt maturities. Due to the information asymmetries and high inflation in the developing countries, small firms usually face higher interest rate costs. Also, they are financially more risky compared to large firms. As a result of that, debt financing becomes expensive for small companies. That's why they prefer internal financing as a first choice.

Finally, our results show that small firms are more sensitive to the changes in the economic environment of the country than large firms. The richness of the country, economic growth and uncertainties in the economy have significant affect on the leverage decisions of small firms whereas these macroeconomic variables become insignificant for

large firms. Large firms prefer longer term maturity with the increases in economic growth; moreover, they continue to be financed by short term debt despite the increases in interest rate.

As a result, firm level determinants of capital structure and debt maturities are the same for all firms regardless of their size. Firms follow the maturity matching principle and pecking order on their debt financing decisions. The main difference derives from the impact of macroeconomic environment of a country. All macroeconomic variables have significant impact on the leverage and debt maturity decisions of small firms while most of the macroeconomic determinants do not have significant effect on the financing decisions of large firms. We attribute this to large firms' easy access to both the domestic and international financial markets.

On the whole, our results confirm that capital structure theory is portable to developing countries. Our paper has shown that governments' decisions on fiscal and monetary policies have influenced the debt financing of small firms more than large companies. Thus, to be able to increase the external financing of small firms, governments should take into consideration the needs of small firms when they formulate their monetary and fiscal policies.

References

Acs, Z. & Isberg, C. (1996). Capital structure, asset specificity, and firm size: a transaction cost analysis, in E. Helmstadter & M. Perlman (Eds.), Behavioural norms, technological progress and economic dynamics, University of Michigan Press, 285-298.

Ang, J. (1991). Small business uniqueness and the theory of financial management, *Journal of Small Business Finance* 1, 1-13

Ang, J. (1992). On the theory of financing for privately held firms, *Journal of Small Business Finance 1*, 185-203

Antoniou, A., Guney, Y. & Paudyal, K. (2006). The determinants of debt maturity structure: evidence from France, Germany and the UK, *European Financial Management* 12(2), 161-194

Antoniou, A., Guney, Y. & Paudyal, K. (2008). The determinants of capital structure: capital market-oriented versus bank-oriented institutions, *Journal of Financial and Quantitative Analysis* 43(1), 59-92

Asteriou, D. & Hall, S. (2007). *Applied econometrics: a modern approach using Eviews and Microfit*, Basingstoke, Palgrave Macmillan.

Ayyagari, M., Beck, T. & Demirguc-Kunt, A. (2005). Small and medium enterprises across the globe: a new database, *World Bank Policy Research Working Paper* 3127

Baltagi, B. (2008). *Econometric analysis of panel data*, John Wiley & Sons, 4th ed.

Bartholdy, J. & Mateus, C. (2005). Debt and taxes: evidence from bank-financed small and medium-sized firms, *SSRN* 672104

Bartholdy, J. & Mateus, C. (2008). Taxes and corporate debt policy: evidence for unlisted firms of sixteen European countries, SSRN

Beck, T., Demiguc-Kunt, A. & Maksimovic, V. (2008). Financing patterns around the world: Are small firms different?, *Journal of Financial Economics* 89, 467-487

Bekaert, G., Campbell, H. & Lundblad, C. (2003). Equity market liberalization in emerging markets, *Journal of Financial Research* 26, 275-299.

Berryman, J. (1982). Small business failure and bankruptcy: a survey of the literature, *European Small Business Journal* 1, 47-59.

Booth, L, Aivazian, V., Demirguc-Kunt, A. & Maksimovic, V. (2001). Capital structures in developing countries, *the Journal of Finance* 56, 87-130.

Cosh, A. & Hughes, A. (1994). Size, financial structure and profitability, in Hughes, A and Storey, D. J. (eds), **Finance and the Small Firm,** London: Routledge, 18-63

Daskalakis, N. & Psillaki, M. (2008). Do country or firm factors explain capital structure? Evidence from SMEs in France and Greece, *Applied Financial Economics* 18, 87-97

Daskalakis, N. & Psillaki, M. (2008). Are the determinants of capital structure country or firm specific?, *Small Business Economics*

Demirguc-Kunt, A. & Maksimovic, V. (1996). Stock market development and financing choices of firms, *World Bank Economic Review*, 341-371.

Demirguc-Kunt, A. , and Maksimovic, V. (1999). Institutions, financial markets and firm debt maturity, *Journal of Financial Economics* 54, 295-336.

Fan, J., Titman, S. and Twite, G. (2006). An international comparison of capital structure and debt maturity choices, *AFA 2005 Philadelphia Meetings.*

Gaud, P., Hoesli, M. & Bender, A. (2007). Debt-equity choice in Europe, *International Review of Financial Analysis* 16, 201-222.

Gianetti, M. (2003). Do better institutions mitigate agency problems? Evidence from corporate finance choices, *Journal of Financial and Quantitative Analysis* 38, 185-212.

Glen, J. & Pinto, B. (1994). Debt and equity? How firms in developing countries choose, Discussion paper 22, International Finance Corporation.

Hall, G., Hutchinson, P. & Michaelas, N. (2004). Determinants of the capital structures of European SMEs, *Journal of Business Finance and Accounting* 31, 711-728.

Hamilton, R., & Fox, M. (1998). The financing preferences of small firm owners, *International Journal of Entrepreneurial Behaviour and Research* 4(3), 239-248.

Harris, M. & Raviv, A. (1990). Capital structure and the informational role of debt, *Journal of Finance* 45, 321-349.

Holmes, S. & Kent, P. (1991). An empirical analysis of the financial structure of small and large Australian manufacturing enterprises, *Journal of Small Business Finance* 1, 141-154.

Jensen, M. (1986). The agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76, 323-329.

Jensen, M. & Meckling, W. (1976). Theory of the firm: Managerial behaviour, agency costs and ownership structure, *Journal of Financial Economics* 3, 305-360.

Keskin, H., Kiris, H., Kiris, Y., Senturk, C. & Turkoz, P. (2008). Can SMEs in developing countries resist crisis? An analysis on Turkish and Albanian case, *ICBS*

Kumar, K., Rajan, R. & Zingales, L. (2001). What determines firms size?, *University of Chicago, CRSP Working Paper* No. 496.

Lemmon, M., Roberts, M. & Zender, J. (2008). Back to the beginning: Persistence and the cross-section of corporate capital structure, *Journal of Finance* 63(4), 1575-1608.

Levy, B. (1993). Obstacles to developing indigenous small and medium enterprise: an empirical assessment, *the World Bank Economic Review* 7(1), 65-68.

Michaelas, N., Chittenden, F. and Poutziouris, P. (1999). Financial policy and capital structure choice in UK SMEs: Empirical evidence from company panel data, *Small Business Economics* 12, 113-130.

Miller, M. (1977). Debt and taxes, *Journal of Finance* 32, 261-275.

Modigliani, F. & Miller, M. (1958). The cost of capital, corporation finance and the theory of investment, *the American Economic Review*.

Myers, S. (1977). Determinants of corporate borrowing, *Journal of Financial Economics* 5, 147-175.

Myers, S. & Majluf, N. (1984). Corporate financing and investment decisions when firms have information that investors do not have, *Journal of Financial Economics*, 187-221.

OECD (2006). Financing SMEs and Entrepreneurs, *Policy Brief*, November 2006.

Pettit, R. & Singer, R. (1985). Small business finance: a research agenda, *Financial Management*, 47-60.

Psillaki, M. (1995). Credit rationing and small and medium sized firms: a tentative of linkage, *Revue Internationale PME* 8, 67-90.

Rajan, R. & Zingales, L.(1995). What do we know about capital structure? Some evidence from international data, *the Journal of Finance* 1, 1421-1460.

Scott, J. (1977). Bankruptcy, secured debt and optimal capital structure, *Journal of Finance* 32, 1-19.

Smith, C. & Watts, R. (1992). The investment opportunity set and corporate financing, dividend and compensation policies, *Journal of Financial Economics* 32, 263-292.

Sogorb-Mira, F. (2005). How SME Uniqueness affects capital structure: Evidence from a 1994-1998 Spanish data panel, *Small Business Economics* 25, 447-457

Titman, S. & Wessels, R. (1988). The determinants of capital structure choice, *the Journal of Finance*.

Van der Wijst, N. & Thurik, R. (1993). Determinants of small firm dent ratios: an analysis of retail panel data, *Small Business Economics* 5, 55-65.

Table 1

Descriptive Statistics

The tables show descriptive statistics for firm specific variables and macro variables. Panel A presents descriptive statistics for all firms included in the sample. Panel B presents the comparative descriptive statistics for all firms, private, listed, small, medium and large. Listed are the firms which are publicly held. Private are the firms which are privately owned. Small is small firms which has less than 50 employees. Medium is medium size firms which employs 50 to 500 people. Large is large firms which have more than 500 employees. The firm specific variables are as follows: Leverage is the ratio of total liabilities to total asset. Ltdebt is the ratio of long term liabilities to total assets. Stdebt is the ratio of short term liabilities to total assets. Tangibility is measured as net fixed assets to total assets. Profitability is calculated as the earnings before tax divided by total assets. Small and Large are included as dummy variables to proxy for size. If the firm employs less than 50 employees, small takes the value of 1, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. GDP/Cap is GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is the lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. ALL is abbreviation for the whole sample.

Panel A: Descriptive Statistics for all firms

	Mean	Median	Maximum	Minimum	Std. Dev.	Observations
Leverage	0.3909	0.3771	1.0000	0.0000	0.2973	27738
Ltdebt	0.1401	0.0256	0.9973	0.0000	0.1987	27209
Stdebt	0.2494	0.1825	0.9995	0.0000	0.2477	27209
Tangibility	0.4521	0.4407	1.0000	0.0000	0.2723	27065
Profitability	0.3406	0.1969	6.8096	-4.0425	0.704	27038
Small	0.4810	0.0000	1.0000	0.0000	0.4996	27738
Large	0.1089	0.0000	1.0000	0.0000	0.3116	27738
GDP/Cap	1698	996	8962	121	1570	27738
Growth	0.0326	0.0307	0.0804	0.0015	0.0155	27738
Inflation	0.0695	0.0620	0.3082	-0.0704	0.0631	27738
Interest	0.2127	0.1369	0.6288	0.0618	0.1707	27738
Tax	0.2964	0.3000	0.4500	0.1200	0.0921	27738

Panel B: Comparative means for different types and size of firms

	All	Small	Medium	Large	Private	Listed
Leverage	0.3909	0.3065	0.4597	0.5048	0.3670	0.4629
Ltdebt	0.1401	0.0960	0.1716	0.2141	0.1405	0.2119
Stdebt	0.2494	0.2076	0.2868	0.2918	0.2247	0.2498
Tangibility	0.4521	0.4817	0.4280	0.4143	0.4671	0.4337
Profitability	0.3406	0.3058	0.3536	0.4460	0.3572	0.3341
Small	0.4810	NA	NA	NA	0.5073	0.2594
Large	0.1089	NA	NA	NA	0.0960	0.2753
GDP/Cap	1698	1781	1720.8	1249.4	1743.8	1453.7
Growth	0.0326	0.0309	0.0339	0.0356	0.0324	0.0310
Inflation	0.0695	0.0711	0.0678	0.0687	0.0739	0.0773
Interest	0.2127	0.2201	0.2148	0.1719	0.2230	0.1763
Tax	0.2964	0.2895	0.2983	0.3196	0.2913	0.3015
No. of Obs	27738	13343	11373	3022	23594	2135

Table 2

Leverage and Debt Maturity: Overall sample

The table shows regressions of leverage, long term debt and short term debt on firm specific and macroeconomic variables. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. Column 1 shows the regression for leverage, Column 2 presents the results for long term debt and Column 3 is for short term debt. Firm specific factors are as follows: Tangibility is measured as net fixed assets to total assets. Profitability is the earnings before tax to total assets. Small takes the value 1 if the firm employs less than 50 employees, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. Macroeconomic variables are as follows: GDP/Cap is the natural logarithm of GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is based on the annual lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. The reported R^2 is the adjusted R^2. Standard errors are in parentheses. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

	Leverage	**Ltdebt**	**Stdebt**
Constant	0.1584***	0.0913***	-0.0535
	(0.045)	(0.031)	(0.039)
Tangibility	-0.2031***	0.0427***	-0.2492***
	(0.010)	(0.007)	(0.008)
Profitability	-0.0261***	-0.0129***	-0.0127***
	(0.004)	(0.003)	(0.003)
Small	-0.1352***	-0.0714***	-0.0645***
	(0.006)	(0.004)	(0.005)
Large	0.0597***	0.0443***	0.0193**
	(0.009)	(0.007)	(0.008)
GDP/Cap	0.0361***	0.0072**	0.0398***
	(0.004)	(0.003)	(0.004)
Growth	2.6768***	2.4226***	0.4829**
	(0.234)	(0.160)	(0.192)
Inflation	-0.1567***	0.0796***	-0.2065***
	(0.033)	(0.021)	(0.030)
Interest	0.1164***	-0.1012***	0.2397***
	(0.020)	(0.014)	(0.017)
Tax	0.1413***	-0.1626***	0.4011***
	(0.045)	(0.029)	(0.038)
Observations	26415	25931	25931
R^2	0.1484	0.0885	0.1528

Table 3
Leverage for small, medium and large firms

The table shows regressions of leverage on firm specific and macroeconomic variables. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. Columns 1 show the regression for leverage of small firms, Columns 2 presents the results for medium firms and Columns 3 is for large firms. Firm specific factors are as follows: Tangibility is measured as net fixed assets to total assets. Profitability is the earnings before tax to total assets. Small takes the value 1 if the firm employs less than 50 employees, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. Macroeconomic variables are as follows: GDP/Cap is the natural logarithm of GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is based on the annual lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. The reported R^2 is the adjusted R^2. Standard errors are in parentheses. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

Leverage	Small	Medium	Large
Constant	-0.1759***	0.5184***	0.3843**
	(-0.061)	(-0.078)	(-0.169)
Tangibility	-0.2190***	-0.2071***	-0.1047***
	(-0.013)	(-0.017)	(-0.033)
Profitability	-0.0124***	-0.0478***	-0.0273**
	(-0.005)	(-0.006)	(-0.012)
GDP/Cap	0.0683***	-0.0096	-0.002
	(-0.006)	(-0.007)	(-0.016)
Growth	2.1861***	3.7980***	0.2465
	(-0.373)	(-0.36)	(-0.671)
Inflation	-0.2137***	-0.2063***	0.1491
	(-0.047)	(-0.055)	(-0.121)
Interest	0.0419	0.1625***	0.2493***
	(-0.03)	(-0.031)	(-0.071)
Tax	0.1856***	-0.1046	0.4333**
	(-0.058)	(-0.084)	(-0.209)
Observations	12625	10925	2865
R^2	0.1166	0.0818	0.0206

Table 4

Long term debt for small, medium and large firms

The table shows regressions of long term debt on firm specific and macroeconomic variables. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. Columns 1 show the regression for long term debt of small firms, Columns 2 presents the results medium firms and Columns 3 is for large firms. Firm specific factors are as follows: Tangibility is measured as net fixed assets to total assets. Profitability is the earnings before tax to total assets. Small takes the value 1 if the firm employs less than 50 employees, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. Macroeconomic variables are as follows: GDP/Cap is the natural logarithm of GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is based on the annual lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. The reported R² is the adjusted R². Standard errors are in parentheses. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

Ltdebt	Small	Medium	Large
Constant	-0.0644*	0.4153***	0.2354*
	(-0.038)	(-0.064)	(-0.135)
Tangibility	0.0192**	0.0597***	0.0924***
	(-0.008)	(-0.013)	(-0.028)
Profitability	-0.0063**	-0.0237***	-0.0187**
	(-0.003)	(-0.005)	(-0.008)
GDP/Cap	0.0256***	-0.0304***	-0.0168
	(-0.004)	(-0.006)	(-0.013)
Growth	1.3215***	3.3478***	1.4370***
	(-0.249)	(-0.237)	(-0.512)
Inflation	0.0896***	0.0509	0.044
	(-0.027)	(-0.04)	(-0.104)
Interest	-0.1585***	-0.1077***	0.0457
	(-0.019)	(-0.022)	(-0.053)
Tax	-0.1320***	-0.4623***	0.0192
	(-0.034)	(-0.064)	(-0.155)
Observations	12329	10766	2836
R²	0.0311	0.0902	0.0423

Table 5

Short term debt for small, medium and large firms

The table shows regressions of short term debt on firm specific and macroeconomic variables. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. Columns 1 show the regression for short term debt of small firms, Columns 2 presents the results medium firms and Columns 3 is for large firms. Firm specific factors are as follows: Tangibility is measured as net fixed assets to total assets. Profitability is the earnings before tax to total assets. Small takes the value 1 if the firm employs less than 50 employees, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. Macroeconomic variables are as follows: GDP/Cap is the natural logarithm of GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is based on the annual lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. The reported R^2 is the adjusted R^2. Standard errors are in parentheses. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

Stdebt	Small	Medium	Large
Constant	-0.3190***	0.1096	0.2581*
	(-0.049)	(-0.074)	(-0.145)
Tangibility	-0.2456***	-0.2684***	-0.1988***
	(-0.011)	(-0.015)	(-0.029)
Profitability	-0.0052	-0.0243***	-0.0097
	(-0.004)	(-0.005)	(-0.01)
GDP/Cap	0.0619***	0.0198***	0.0051
	(-0.005)	(-0.007)	(-0.013)
Growth	1.2973***	0.5237*	-1.1957**
	(-0.283)	(-0.309)	(-0.601)
Inflation	-0.2535***	-0.2675***	0.0826
	(-0.043)	(-0.051)	(-0.099)
Interest	0.2319***	0.2761***	0.1863***
	(-0.025)	(-0.027)	(-0.057)
Tax	0.4752***	0.3520***	0.3013*
	(-0.05)	(-0.077)	(-0.169)
Observations	12329	10766	2836
R^2	0.1675	0.1225	0.0490

Table 6

Leverage and Debt Maturities with different size proxies

The table shows regressions of leverage, long term debt and short term debt on firm specific and macroeconomic variables by using different size proxy. Panel A presents the regression with the logarithm of sales and Panel B includes logarithm of assets. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. Column 1 shows the regression for leverage, Column 2 presents the results for long term debt and Column 3 is for short term debt. Firm specific factors are as follows: Tangibility is measured as net fixed assets to total assets. Profitability is the earnings before tax to total assets. Size is measured as the logarithm of total sales. Macroeconomic variables are as follows: GDP/Cap is the natural logarithm of GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is based on the annual lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. The reported R^2 is the adjusted R^2. Standard errors are in parentheses. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

Panel A: Leverage and Debt Maturity with size proxy: sale

	Leverage	Ltdebt	Stdebt
Constant	-0.1255***	-0.0239	-0.1955***
	(0.046)	(0.032)	(0.038)
Tangibility	-0.2032***	0.0388***	-0.2456***
	(0.010)	(0.007)	(0.008)
Profitability	-0.0281***	-0.0128***	-0.0149***
	(0.004)	(0.003)	(0.003)
Size *Sale*	0.0243***	0.0100***	0.0143***
	(0.001)	(0.001)	(0.001)
GDP/Cap	0.0317***	0.0045	0.0356***
	(0.005)	(0.003)	(0.004)
Growth	4.0565***	3.0590***	1.2040***
	(0.238)	(0.162)	(0.189)
Inflation	-0.0594*	0.1208***	-0.1533***
	(0.034)	(0.022)	(0.030)
Interest	-0.0094	-0.1567***	0.1637***
	(0.022)	(0.015)	(0.018)
Tax	-0.1181**	-0.2734***	0.2285***
	(0.048)	(0.032)	(0.040)
Observations	26388	25910	25910
R^2	0.1248	0.0597	0.1536

Panel B: Leverage and Debt Maturity with size proxy: asset

	Leverage	Ltdebt	Stdebt
Constant	-0.1320***	-0.0401	-0.1818***
	(0.046)	(0.032)	(0.038)
Tangibility	-0.2126***	0.0365***	-0.2531***
	(0.010)	(0.007)	(0.008)
Profitability	-0.0131***	-0.0059**	-0.0068**
	(0.004)	(0.003)	(0.003)
Size *Asset*	0.0208***	0.0106***	0.0100***
	(0.001)	(0.001)	(0.001)
GDP/Cap	0.0361***	0.0056*	0.0387***
	(0.004)	(0.003)	(0.004)
Growth	3.9991***	3.0989***	1.0986***
	(0.241)	(0.162)	(0.191)
Inflation	-0.0672**	0.1238***	-0.1659***
	(0.034)	(0.022)	(0.030)
Interest	0.0228	-0.1528***	0.1934***
	(0.022)	(0.014)	(0.018)
Tax	-0.0587	-0.2767***	0.2929***
	(0.048)	(0.032)	(0.041)
Observations	26415	25931	25931
R^2	0.1146	0.0618	0.1436

Appendix 1

Firm observation by country

The table presents the composition of the firm observations for each country in the sample. Small reports firms which have less than 50 employees. Medium employs 50 to 500. Large firms have more than 500 employees. Private are privately held companies while listed are publicly held firms.

	Total	Small	Medium	Large	Private	Listed
Bangladesh	780	246	426	108	730	50
Brazil	4,232	2,244	1,795	193	4,056	176
Cambodia	181	164	11	6	181	0
Chile	1,793	1,000	663	130	1,641	152
Ecuador	756	437	301	18	348	408
El Salvador	676	418	222	36	676	0
Ethiopia	1,091	831	195	65	1,091	0
Guatemala	751	495	218	38	751	0
Guyana	273	229	42	2	245	28
Honduras	717	497	173	47	717	0
India	3,868	767	2,206	895	3,396	472
Indonesia	1,442	431	568	443	1,286	156
Malawi	233	98	111	24	217	16
Morocco	2,006	901	1,002	103	NA	NA
Nicaragua	757	618	121	18	757	0
Oman	143	100	43	0	143	0
Pakistan	2,764	2,094	625	45	2,674	90
Peru	193	127	59	7	172	21
Philippines	1,864	502	1,009	353	1,461	403
South Africa	1,370	373	820	177	1,320	50
Sri Lanka	938	280	396	262	856	79
Syria	160	157	3	0	160	0
Tanzania	355	211	131	13	344	11
Zambia	395	123	233	39	372	23
Total	27,738	13,343	11,373	3,022	23,594	2,135

Appendix 2

Correlations Matrix of Variables

This table presents the Pearson correlations of firm-specific and macro variables. Leverage is the ratio of total liabilities to total asset. Ltdebt is the ratio of long term liabilities to total assets. Stdebt is short term liabilities to total assets. Tangibility is measured as net fixed assets to total assets. Profitability is calculated as the earnings before tax divided by total assets. Small and Large are included as dummy variables to proxy for size. If the firm employs less than 50 employees, small takes the value of 1, otherwise 0. Large takes the value of 1 if the firm has more than 500 employees, otherwise 0. GDP/Cap is the GDP per capita in U.S. dollars. Growth is the annual growth rate of GDP. Inflation is measured based on GDP deflator. Interest is the lending rate. Tax is the highest tax rate shown on the schedule of tax rates applied to the taxable income of corporations. *** indicates level of significance at 1%, ** level of significance at %5, and * level of significance at 10%.

Correlation	Leverage	Ltdebt	Stdebt	Tangibility	Profitability	Small	Large	GDP/Cap	Growth	Inflation	Interest	Tax
Leverage	1.0000											
Ltdebt	0.5651***	1.0000										
Stdebt	0.7486***	-0.1205***	1.0000									
Tangibility	-0.2315***	0.0244***	-0.3029***	1.0000								
Profitability	-0.0521***	-0.0406***	-0.0304***	-0.0141**	1.0000							
Small	-0.2734***	-0.2127***	-0.1617***	0.1037***	-0.0476***	1.0000						
Large	0.1339***	0.1309***	0.0601***	-0.0487***	0.0522***	-0.3367***	1.0000					
GDP/Cap	0.0878***	-0.0660***	0.1672***	-0.1225***	-0.0028	0.0221***	-0.0840***	1.0000				
Growth	0.0711***	0.1755***	-0.0521***	-0.0190***	-0.0118*	-0.1068***	0.0669***	-0.5160***	1.0000			
Inflation	-0.0736***	-0.0557***	-0.0467***	0.0468***	0.0299***	0.0246***	-0.0044	0.0376***	-0.3670***	1.0000		
Interest	0.0009	-0.1102***	0.0920***	0.0162***	0.0619***	0.0418***	-0.0834***	0.4161***	-0.4489***	0.2385***	1.0000	
Tax	-0.0245***	0.0702***	-0.0850***	0.0471***	-0.0133**	-0.0719***	0.0883***	-0.7187***	0.4618***	0.0061	-0.6104***	1.0000