Determinants of Capital Structure in Developing Countries

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Abstract

This study examines the determinants of capital structure decisions of firms, specifically for small and private firms in developing countries. We use survey data from World Bank Enterprise survey which is not used before. We examine the differences in the determinants of capital structure decisions of private and listed firms and small and large firms. In accordance with the capital structure theory, the importance of firm level determinants of capital structure, tangibility, profitability and size are confirmed. Results are robust to the different definitions of size. Large and listed companies can have easy access to finance in developing countries, thus they have higher leverage and higher debt maturities. For small and private firms, access to finance is depended on the conditions of economic environment. Leverage and debt maturities are sensitive to macroeconomic factors.

JEL Classification: G32, F30

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

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The purpose of this paper is to investigate capital structure decision of firms in developing countries. We use firm level survey data for 25 countries in different stages of financial development from different regions. Our main focus is on small and private firms. Most theoretical and empirical studies in capital structure have focused on large listed companies for both developed and developing countries (see e.g, Rajan and Zingales, 1995; Booth et al., 2001; Demirguc-Kunt and Maksimovic, 1998, 1999). Since large listed firms can easily have access to both national and international financial markets, it could be misleading to accept and generalize the results of these studies for all types of firms, especially for small firms who might not have the same access to financial markets.

Small firms are important because they are the engines of economic development. They boost competition and entrepreneurship. They provide economy-wide efficiency, innovation and aggregate productivity growth. Countries, which encourage entrepreneurship and SMEs, have higher economic growth (Schmitz, 1989; Acs, 1992). Small firms enter the industry as agents of change and they introduce innovation (Acs, 1984; Acs and Audrestsch, 1988). SMEs are more productive and labour intensive. So the expansion of SMEs enhances employment more than large firms[2]. There are a number of studies which examine the capital structure decisions of small and medium size enterprises[3]. They are either examining a small sample of countries or the capital structure decisions of SMEs have been studied for a single country[4] and on cross country[5].

We investigate both private and public firms. We compare small firms to large companies. The countries we include are the developing countries from different regions at different level of financial development. We can differentiate between the firm-specific or country-specific factors' impact. We use the World Bank Enterprise survey. We investigate the determinants of capital structure of firms for 25 developing countries covering all regions, Africa, East Asia and Pacific, Latin America and Caribbean, Middle East and North Africa and South Asia. We have unbalanced panel data which include 27,826 firm year observations up to three years. We examine the firm level determinants of financial leverage including asset tangibility, profitability, size and controlling for country level factors, such as GDP per capita, growth rate of GDP,

[2] The workforce employed in SMEs in our sample varies between 27.60-86.50 percent (Ayyagari et al.,2005).
[3] Ang, 1991; Holmes and Kent, 1991; Cosh and Hughes, 1994; Acs and Isberg, 1996; Daskalakis and Psillaki, 2008; Bartholdy and Mateus, 2008
[4] see Van der Wijst and Thurik 1993; Sogorb-Mira 2005; Bartholdy and Mateus 2005 for a single country studies.
[5] See Hall et al., 2004; Daskalakis and Psillaki, 2008; Bartholdy and Mateus, 2008 for cross country studies

inflation, interest and tax. We are looking for answers to the following questions: Is there a size effect on the leverage decisions of firms? Are the determinants of capital structure different for small, medium and large firms? Are the determinants same for the listed firms and private companies?

Trade-off theory (Scott, 1977) claims 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 let 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 (Berryman, 1982). On the other hand, tax advantage of borrowing can be applied to large firms which are more likely able to generate high profits. But for small firms, since they are less likely to have high profits, the tax advantage may not be the option to choose debt financing for the tax shields advantage (Pettit and Singer 1985). Therefore, we expect collateral (asset tangibility) to be positively related to leverage for both small and large companies; whereas, tax has a positive relation with leverage for large firms, while no relation with small firms.

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, the 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, 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. 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 both small and large firms.

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. Therefore, no or few agency problem will be exist. As a result of that the lower the agency problem, the less debt the small firms have in their capital structure.

In the light of these theories, we use the following variables to explain the reasons for firms to choose debt over equity finance considering different sizes of firms and listed and private companies. Asset tangibility is used as a proxy for agency costs or collateral. Since tangible assets are used as collateral, the large amount of them decreases the risk of lender suffering the agency costs of debt, like risk shifting. Therefore, firms with a high ratio of fixed assets should have greater borrowing capacity. 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 studies have found positive relationship, such as Titman and Wessels (1988), Rajan and Zingales (1995) and Ozkan (2002). Therefore, we would expect the asset tangibility to be positively related with leverage. Since small firms are not as informationally transparent as large firms, collateral is vital for them to borrow. So we would expect positive relation between leverage and asset tangibility for both small[6] 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 et al., 2001). 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. Therefore, we expect asset tangibility to be positively related to long term debt, while negatively related to short term debt.

Profitability is another variable which affects leverage of the firms. According to the trade-off theory, higher profitability lowers the expected costs of distress; therefore, firms increase their leverage to take advantage from tax benefits. Also, agency theory supports this positive relation because of the free cash flow theory of Jensen (1986). Therefore, leverage and profitability are

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

positively related. On the other hand, according to Pecking Order theory, Myers and Majluf (1984) discussed that firms prefer to finance with internal funds rather than debt if internal equity is sufficient due to the asymmetric information. Hence, profitability is expected to have negative relation with leverage. Most studies using large listed companies have found this negative relationship, including Titman and Wessels (1988), Rajan and Zingales (1995), Booth et al. (2001). The studies about SMEs also confirm the pecking order relationship (Van der Wijst and Thurik, 1993; Sogorb-Mira, 2005). 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 expect profitability to be inversely related to leverage and debt maturities for small and large firms.

Firm size could be an inverse proxy for the probability of the bankruptcy costs according to trade-off theory. 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. Therefore, size has a positive effect on leverage. Pecking order theory also expects this positive relation. Since large firms are diverse and have less volatile earnings, asymmetric information problem can be mitigated. Hence, size is expected to have positive impact on leverage. So we expect small firms and private firms to have lower, large and listed firms have higher debt.

We control for five macroeconomic variables: GDP per capita, growth rate of GDP, inflation rate, interest rate and tax rate (see e.g., Demirguc-Kunt and Maksimovic, 1996, 1999; Bartholdy and Mateus, 2008). GDP per capita is a broad indicator which describes the differences in wealth in each country. As countries are getting richer, more financing become available; as a result, we expect GDP per capita to be positively related with leverage and debt maturities for all types of firms.

The 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.

Inflation shows the government's management of the economy as well as it provides evidence on the stability of the local currency. 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 so that the lenders are more likely to avoid providing debt. So we expect inflation to be negatively related with leverage and debt maturities for all types of firms.

As interest rate increases, firms are less willing to finance new investments due to increase in the cost of borrowing (Bartholdy and Mateus, 2008). Therefore, we expect interest rate to be inversely related with leverage and debt maturities for all types of firms.

Tax variable is taken as a country's highest marginal corporate tax rate (Bartholdy and Mateus, 2008). According to the trade-off theory, firms prefer debt financing because debt is tax deductible. This tax benefit of debt makes firms borrow more in accordance with the increases in tax rate. So tax rate is positively related with the leverage and debt maturity for large firms, while no relation for small firms.

The remainder of paper is organized as follows. Section 2 discusses the data and methodology. Section 3 discusses the empirical findings for the sample. Section 4 concludes the paper.

2. Data and Methodology

Our main dataset is a firm-level survey data for 11,125 firms from World Bank Enterprise Survey conducted for 25 developing countries from 5 regions. The countries included in our sample are different from the previous studies. Most of the countries are low income and lower middle income countries from different regions. Since they are developing countries, their economic environment is different than developed countries.

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. The data for macroeconomic variables are collected from World Development Indicators (April 2008).

We have 27,826 observations of which 48.1 percent are small firms, 41 percent are medium size firms and 10.9 percent are large firms. 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. 27.5 percent of listed firms are large companies, 46.5 percent are medium and 26 percent are small firms. On the other hand, 50.7 percent of unlisted firms are small, 39.7 percent are medium and 9.6 percent are large companies.

Distinguishing feature of the database is its coverage for small and medium enterprises and private firms. It 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 and monthly stock prices for the largest listed companies, Booth et al (2001) use International Financial Corporation (IFC) database which includes abbreviated balance sheets and income statements for the largest companies. Beck et al. (2004) focus on the small firms by using World Business Environment Survey (WBES) 1999. But they investigate external finance as a proportion of investment. 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.

The functional form of our model is as follows;

$$Leverage_{it} = \alpha_t + \beta_1 Tangibility_{it} + \beta_2 Profitability_{it} + \beta_{3A} Small_i + \beta_{3B} Large_i + \beta_4 GDP/Cap_t + \beta_5 Growth_t + \beta_6 Inflation_t + \beta_7 Interest_t + \beta_8 Tax_t + \varepsilon_{it} \quad (1)$$

We estimate the equation (1) for leverage and debt maturities (long term debt and short term debt). We repeat each estimation with different definitions of size: small, medium and large; and we repeat each estimation for different legal status of the firms: publicly listed firms and private companies.

We define $Leverage_{it}$ as total liabilities divided by total assets for firm *i* at time *t* (see Rajan and Zingales, 1995; Demirguc-Kunt and Maksimovic, 1996; Booth et al., 2001). This ratio can be seen as a proxy for what is left for shareholders in case of liquidation. Debt maturities include long term debt and short term debt. Long term debt is defined as long term liabilities to total assets while short term debt is short term liabilities to total assets (Demirguc-Kunt and Maksimovic, 1999).

$Tangibility_{it}$ is defined as total assets minus current assets (fixed assets) divided by total assets for firm *i* at time *t* (see Rajan and Zingales, 1995; Booth et al. 2001). We expect positive relation

between asset tangibility and leverage ($\beta_1>0$) for all firms. For long term debt, we expect a positive relation, while for short term debt we expect negative relation. $Profitability_{it}$ is calculated as earnings before tax[7] divided by total assets for firm *i* at time *t*. We would expect to find a negative relation between profitability and leverage and debt maturities for all firms ($\beta_2 < 0$). $Small_i$ and $Large_i$ are used as dummy variables to proxy size of the firm. A 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 it has more than 500 employees. So size is a dummy variable for small, medium and large firms (see Beck et al., 2008). We expect small to be negatively related with leverage and debt maturity; while, large is positively related to leverage and debt maturity ($\beta_{3A} < 0$, $\beta_{3B} > 0$).

For country factors, we control for five macroeconomic variables: GDP per capita, growth rate of GDP, inflation rate, interest rate and tax rate (see e.g., Demirguc-Kunt and Maksimovic, 1996, 1999). GDP/Cap_t is GDP per capita of the country at time *t* and $Growth_t$ is the GDP growth rate of the country at time *t*. Both of the variables are expected to be positively related with leverage and debt maturity for all firms ($\beta_4>0$, $\beta_5>0$). $Inflation_t$ is the inflation rate of the country at time *t*. Inflation is measured based on the GDP deflator which is the ratio of GDP in local currency to GDP in constant local currency. We expect inflation to be negatively related with leverage and debt maturity for all firms ($\beta_6<0$). $Interest_t$ is the lending interest rate of the country at time *t*. Interest is expected to be inversely related with leverage and debt maturity for all firms ($\beta_7<0$). Tax_t is the country's highest marginal corporate tax rate at time *t*. Tax is expected to be positively related with leverage and debt maturity for large firms ($\beta_8>0$). For small firms, it is expected to have no effect.

We have an unbalanced panel data. We estimate the model using OLS estimators with fixed effects[8]. We estimate the following model:

$$y_{it} = \alpha_t + \beta X'_{ijt} + \beta Z'_{jt} + \varepsilon_{it} \qquad \text{i=1, 2, ...,N; j = 1, 2, …, 4; t=1, 2,.., T} \qquad (2)$$

where y_{it} represents the K-dimensional vector of one of the three debt ratios for the *i*th firm at time *t*. α_t is the individual intercept at time *t*. X'_{ijt} is a vector of the *j*th firm level explanatory variables for the *i*th firm at time *t* and Z'_{jt} is a vector of the *j*th macro level explanatory variables at time *t*. We have an unbalanced panel data.

[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.

[8] Fixed effects model is statistically preferred based on the result of the Hausman test.

2.1. Descriptive Statistics

Table 1 presents descriptive statistics. The mean of leverage is 39.10 percent while the median is 37.74 percent. Leverage is low in our sample. In the US, the mean of leverage is around 58 percent, while in the UK leverage is around 54 percent (Rajan and Zingales, 1995). Firms in developed countries are highly levered compared to firms in emerging markets. The reason for this might be the limited availability of funds in emerging markets to finance companies. The available funds are generally allocated to publicly listed companies or large firms. The leverage of listed firms is 44.23 percent, while the leverage of private companies is 36.81 percent. The leverage for small, medium and large firms is 30.65, 46 and 50.49 percent, respectively. Small firms have limited access to finance compared to medium and large size companies. On the other hand, listed firms borrow more than private firms. The reason for this high leverage among listed firms could be the lack of well developed stock markets. Also lenders may prefer to fund listed companies because the quality of information provided by them is more reliable than private firms. Therefore, in developing countries, it is difficult to access to finance for small and private companies.

Insert table 1 here

The average of leverage includes 14.01 percent of long term debt financing and 24.95 percent of short term debt financing. Listed companies have 20.04 percent long term debt while they have 24.31 percent of short term debt. On the other hand, unlisted firms have 14.11 percent long term debt and 22.54 percent short term debt. The long term debt for small, medium and large firms are 9.61, 17.18 and 21.39 percent; whereas, short term debt is 20.76, 28.69 and 29.21 percent, respectively. Large and listed firms have more long term debt than small and medium size enterprises. The short term debt is high for small firms because they do not have access to long term debt financing. On the other hand, in developing countries, public companies have higher long term debt than private firms due to the information asymmetries.

On average 45.21 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. Listed firms have 44.44 percent tangible assets, while private companies have 46.64 percent. The mean of asset tangibility for small, medium and large companies is 48.16, 42.80 and 41.44 percent, respectively. The mean of asset tangibility for listed companies in the UK is 35.6 percent while tangibility in the US is 39.5 percent (Antoniou, 2008). Stock markets in developing countries are not as efficient and

liquid as in developed countries; therefore, equity financing may not be available. Hence listed firms in developing countries rely on high asset tangibility for debt financing.

The mean of profitability in the sample is 33.96 percent. Listed firms have 30.87, while private firms have 35.89 percent. The mean of profitability for small, medium and large firms is 30.48, 35.25 and 44.60 percent, respectively. The profitability in the UK is 11.6 percent; whereas, it is 16 percent in the US (Antoniou, 2008). The firms in developing countries have higher profitability than firms in the UK and US. Since funding options are limited in developing countries, firms prefer to keep their profits in the company as an internal funding source.

We use size dummy variable for small and large firms which are based on the firms' number of employees. Firm is classified as small if it has less than 50 employees and large if more than 500 employees. So 48.12 percent of the firms in our sample are small firms while only 10.87 percent of them are large firms. The 41.1 percent is medium size firms. Within listed firms, 26 percent of them are small while 28 percent of them are large. On the other hand, within unlisted firms, 51 percent of them are small while 10 percent of them are large.

Average GDP per capita for our sample is $1,693.60. GDP per capita for the richest country in the sample is $8,961.50; whereas, it is $120.80 for the poorest country. In the same period, the GDP per capita in the UK is $25,359 while in the US, it is $34,852. 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. On the other hand, growth rate of GDP is 3.26 percent on average for our sample, while the growth rate is 2.40 percent in the UK and 1.75 percent in the US. The countries in our sample grow faster than developed markets. The fastest growing country has 8.04 percent growth rate, while the slowest growing country has 0.15 percent growth rate. Average inflation rate is 6.97 percent; whereas, the rate is 2.41 in the UK and 2.13 in the US. As inflation rate, interest rate is higher for the countries in the sample. The average interest rate is 21.27 percent, on the other hand, for the UK and US the interest rate are 4.75 and 6.21 percent respectively. The highest interest rate in our sample is 62.88 percent while the lowest interest rate is 6.18 percent. The higher inflation and interest causes borrowing to be costly in emerging markets. On the other hand, the average corporate income tax rate is 29.64 in the sample while the tax rate is 30 percent in the UK and 35 percent in the US. The maximum corporate tax rate is 45 percent, whereas the minimum rate is 12 percent for our sample.

2.2. Correlations:

Table 2 presents correlations between the dependent (Leverage) and independent variables. Asset tangibility is negatively correlated with leverage in contrast to what we expected. According to the theory, since fixed assets can be used as collateral, debt level should increase with higher fixed assets. We find this positive relation, when we look at the correlations between asset tangibility and long term debt. But asset tangibility is negatively correlated with short term debt.

Profitability is inversely related to leverage, long term debt and short term debt. In accordance with Pecking Order theory, profitable firms prefer to finance internally. Size is positively related with leverage and debt maturities. As firm gets larger, their debt increases. Large is positively, while small is negatively related with leverage and debt maturities.

Insert table 2 here

The correlation between leverage, debt maturities and macro variables are not so high. GDP per capita is positively related with leverage and short term debt, while it is negatively related with long term debt. Growth is positively correlated with leverage and long term debt, while it is inversely related with short term debt. Inflation is negatively correlated with leverage and debt maturities. Interest is not significantly correlated with leverage. However, it is positively related with short term leverage, while, it is negatively related with long term debt. Tax is positively correlated with leverage and short term debt; whereas, it is negatively related with long term leverage.

3. Empirical findings

Table 3 presents results of leverage and debt maturities for the overall sample. Each column has a number which symbolizes the model estimated. Column one reports the regression that leverage is used as an independent variable. Column two presents the results for the long term debt, while column three shows outcome for short term debt.

The top four variables in Table 3 are coefficient estimates of our firm specific variables. Based on the results, the coefficient estimate for tangibility is negative for leverage, 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 find more debt (Rajan and Zingales, 1995; Titman and Wessels, 2006) as opposed to what we find. But some studies have found this inverse relation and explain it with maturity matching principle (Booth et al., 2001). The coefficient estimate for profitability is negative, suggesting that as profitability increases,

leverage decreases. Firms follow pecking order (Myers and Majluf, 1984); they use retained earnings first and then move to debt and equity. The size dummy for small firms has a negative coefficient estimate and the dummy for large firms has a positive coefficient estimate, implying that 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 so that they can afford higher levels of leverage.

Insert table 3 here

Table 3 presents also the effect of macroeconomic variables on leverage. The coefficient estimate of GDP per capita is positive for leverage indicating that as countries become richer, more funds become available and firms can borrow more. GDP growth has a positive coefficient estimate. In countries with relatively higher rate of economic growth, firms are eager to take higher levels of debt to finance new investment. The coefficient estimate for inflation is negative implying that firms borrow less as inflation increases. The impact of interest on leverage is positive suggesting that firms continue to borrow despite the increases in the cost of interest. The coefficient estimate for tax is positive for leverage. As tax increases, firms borrow less because of the high bankruptcy and financial distress costs.

Table 3 Column 2 presents the coefficient estimates for the long term debt. The coefficient estimate for asset tangibility is positive for long term debt. A firm with more tangible assets use more long term debt in accordance with maturity matching principle. Profitability has positive coefficient estimate. As profitability increases, long term debt decreases. Firms prefer to be financed internally if they have enough internal sources. The coefficient estimate for small is negative, while the coefficient estimate for large is positive. As firm gets larger, they use more long term debt financing.

Macroeconomic coefficient estimates have also influenced the long term debt financing decisions. The coefficient estimate for GDP per capita is positive for long term debt. As wealth of the country increases, firms can borrow more long term debt. The coefficient estimate for GDP growth is positive, implying that as countries grow, long term debt increases. The impact of inflation on long term debt is positive. As inflation increases, firms use more long term debt financing. Interest has a negative coefficient estimate, indicating that as interest rate increases, firms avoid financing themselves with long term debt. The coefficient estimate for tax is negative. Firms use less long term debt financing, as tax increases.

Table 3 Column 3 shows the results for short term debt. The coefficient estimate for tangibility is negative for short term debt. As tangibility increases, firms are financed less by short term debt. Profitability has negative coefficient estimate implying that as profitability increases, short term debt decreases. The coefficient estimate for small is negative, while the coefficient estimate for large is positive. As size increases, firms can borrow more short term debt.

The impact of GDP per capita on short term leverage is positive. As GDP per capita increases, short term debt increases. The effect of growth is positive indicating that the growth of the economy causes short term debt to increase. The coefficient estimate for inflation is negative, implying that as inflation increases, firms borrow less short term debt. The coefficient estimate for interest is positive. Firms continue to finance themselves with short term debt although cost of interest rises. Tax has positive coefficient estimate suggesting that as tax increases, short term debt increases.

Hence, we confirm the importance of firm level factors in accordance with the capital structure theory. Based on the maturity matching principle, long term debt is financed by long term assets, while short term debt is negatively related with asset tangibility. Leverage is negatively related with asset tangibility because firms in our sample have more short term debt than long term debt. Firms prefer internal financing as profitability is negatively related with leverage and debt maturities. In accordance with increases in firms' size, debt level of firms increases. Macroeconomic conditions of countries have an impact on the capital structure decisions of firms. Leverage and debt maturities of firms increase with the rise in GDP per capita and growth of the country. Increases in inflation rate causes leverage and short term debt decrease while long term debt increases. Since in most developing countries, high inflation reduces the cost of borrowing; therefore, decreasing the value of debt, firms may prefer to be financed by long term debt. On the other hand, as interest rate increases, firms continue to be financed by short term debt, but they avoid long term debt financing. Increases in tax rate increase leverage and short term debt while decrease long term debt. Even debt is tax deductible because of the bankruptcy risk and financial distress, long term debt financing is not preferable.

3.1. Are results different for different size proxies?

For robustness of our results, we estimate the model by using different size measures. We re-estimate each equation by using logarithm of sales and logarithm of total assets as a size proxy. Table 4 Panel A presents the results for leverage and debt maturities using total sales as a proxy

for size and Panel B shows the estimations for leverage and debt maturities using total assets as a size proxy.

Panel A Column 1 shows the results of leverage regression. The coefficient estimate for asset tangibility is negative for leverage. As asset tangibility increases, leverage decreases. Profitability has a negative coefficient estimate. As profitability increases, leverage decreases. The coefficient estimate for size is positive, indicating that large firms borrow more.

Insert table 4 panel A here

Most of the macroeconomic variables are significant. The coefficient estimate of GDP per capita is positive. The richer the country, the more debt firms can have. The coefficient estimate for growth is positive, suggesting that as the economy grows, the more debt firms can get. The coefficient estimate for inflation is negative, indicating that increases in inflation causes firms to borrow less. Interest has no impact on leverage. Tax has negative coefficient estimate, suggesting that as increases in tax causes lower leverage.

Panel A Column 2 presents the outcome of long term debt. The coefficient estimate for tangibility is positive, indicating that more the collateral, the more long term funds firms have. The coefficient estimate for profitability is negative. More available internal sources induce long term debt to decrease. The impact of size is positive indicating that size increases, firm borrow more long term debt.

GDP per capita has no effect on long term debt. The coefficient estimate for growth is positive, implying that as economy grows, long term debt increases. The coefficient estimate for inflation is positive, suggesting that as inflation increases, firms continue to be financed by long term debt. The coefficient estimate for interest is negative. Increases in cost of capital makes firms borrow less long term debt. The impact of tax is negative. As tax increases, long term debt decreases.

Panel A Column 3 reports the results for short term debt. The coefficient estimate for tangibility is negative, indicating that as tangibility increases, short term debt decreases. The coefficient estimate for profitability is negative, implying that more profitable firms have lower short term debt. The coefficient estimate for size is positive. As larger the firm, the more short term debt they have.

The impact of macroeconomic variables is statistically significant. The coefficient estimate for GDP per capita is positive, indicating that as countries become richer, firms borrow more short term debt. The coefficient estimate for growth is positive. As economy grows, short term debt increases. The effect of inflation is negative, suggesting that increases in inflation cause short term debt to decline. The coefficient estimate for interest is positive. Firms continue to be financed by short term debt in spite of the increases in interest. The coefficient estimate for tax is positive. As tax increases, short term debt increases.

Table 4 Panel B presents the re-estimation of the equation by using logarithm of total assets as a proxy for size. Column 1 shows the results for leverage. In accordance with previous results, firm level variables have the same impact on leverage. The coefficient estimate for asset tangibility and profitability are negative. As asset tangibility and profitability increase, leverage decreases. The impact of size is positive indicating that large firms have higher leverage.

Insert table 4 panel B here

Most of the macroeconomic variables are statistically significant. The coefficient estimates for GDP per capita and growth are positive, suggesting that as GDP per capita and growth increase, leverage increases. The coefficient estimate for inflation is negative. The higher the inflation, the less debt firms have. Interest and tax have no effect on leverage.

Panel B Column 2 shows the result for long term debt. The coefficient estimate for asset tangibility is positive, implying that firms with more collateral have more long term debt. The coefficient estimate for profitability is negative. More profitable firms have lower long term debt. The coefficient estimate for size is positive, suggesting that larger firms have more long term debt.

The impact of macroeconomic variables on long term debt is statistically significant. The coefficient estimate for GDP per capita, growth and inflation are positive. As GDP per capita, growth and inflation increase, long term debt increases. The coefficient estimate for interest and tax are negative. As interest and tax increases, firms borrow less long term debt.

Panel B Column 3 reports the results for short term debt. The coefficient estimate for asset tangibility and profitability are negative, indicating that as asset tangibility and profitability increase, firms borrow less short term debt. The coefficient estimate for size is positive implying that larger firms have more short term debt.

The impact of macroeconomic variables is statistically significant. The coefficient estimate for GDP per capita and growth are positive, indicating that as GDP per capita and growth increase, short term debt increases. The coefficient estimate for inflation is negative. As inflation increases, short term debt decreases. The coefficient estimate for interest and tax are positive, implying that as interest and tax increase, firms borrow more short term debt.

Most of the macroeconomic variables do not change when we use different size measures. But in some regression, GDP per capita, interest rate and tax rate become insignificant as opposed to what we found previously. As GDP per capita increases, leverage and short term debt increases. Long term debt increases as well if we use total assets as a size proxy whereas GDP per capita does not have any effect when we use total sales. The impact of growth and inflation are the same as what we find in the previous section. As economy grows, firms borrow more. On the other hand, as inflation increases, leverage and short term debt decrease, but long term debt increase. The effect of interest and tax are the same for long term and short term debt. But interest and tax do not have significant effect on leverage.

Hence, we confirm that our results are robust for different size proxies. Larger firms have higher leverage and debt maturities. The firms in our sample follow the maturity matching principle so that they finance their long term assets with long term debt. As profitability increases, leverage, long term debt and short term debt decrease. Firms follow the pecking order when they finance their new investments.

3.2. Are capital structure and debt maturities different for Small, Medium and Large Firms?

Our second question is to analyze whether the determinants of capital structure are different for different firm sizes. We divide the sample into three different firm sizes based on small, medium and large. Table 5 present the results for the Small, Medium and Large firms.

Table 5 Column 1 shows the results for leverage of small firms. The coefficient estimates for tangibility is negative. As asset tangibility increases, small firms borrow less. The coefficient estimate for profitability is negative, indicating that more profitable small firms borrow less. The macroeconomic factors have also affect on leverage decisions of small firms. The impact of GDP per capita is positive, suggesting that as countries become richer, more funds become available and small firms borrow more. The coefficient estimate for growth is positive. As economy grows, leverage increases. Inflation has negative coefficient estimate implying that as inflation increases,

leverage decreases. Interest has no effect on leverage decisions of small firms. The coefficient estimate for tax is positive, implying that as tax increases, small firms borrow more.

Insert table 5

Table 5 Column 2 presents the results for long term debt. The coefficient estimate for asset tangibility is positive, suggesting that small firms borrow more long term debt as their tangible assets increase. The coefficient estimate for profitability is negative. As profitability increases, small firms prefer to use internal sources. Macroeconomic variables have significant impact on the long term debt of small firms. The coefficient estimate for GDP per capita, growth and inflation are positive. As GDP per capita, growth and inflation increase, long term debt increases. The coefficient estimate for interest and tax are negative, indicating that increases in interest and tax cause long term debt to decrease.

Table 5 Column 3 presents the outcome for short term debt of small firms. The coefficient estimate for tangibility is negative, suggesting that small firms with more collateral borrow less short term debt. The coefficient estimate for profitability is negative, indicating that the more profitable small firms borrow less short term debt. The impact of macroeconomic variables is statistically significant. The coefficient estimates for GDP per capita and growth are positive, indicating that as GDP per capita and growth increase, small firms borrow more short term debt. Inflation has negative coefficient estimate. As inflation increases, short term debt decreases. The coefficient estimate for interest is positive, suggesting that small firms continue to borrow short term debt even if the increases in the cost of borrowing. The coefficient estimate for tax is positive. As tax increases, small firms borrow more short term debt.

Table 5 Column 4 shows the results for leverage of medium firms. As small firms, firm level variables have an inverse impact on leverage of medium firms. The coefficient estimate for tangibility is negative, indicating that medium firms with more collateral borrow less. The coefficient estimate for profitability is negative, implying that medium firms with more profits prefer internal sources to debt financing. GDP per capita and tax have no impact on the leverage decisions of medium size firms. The coefficient estimate for growth is positive, indicating that as economy grows, medium firms borrow more. The coefficient estimate for inflation is negative. As inflation increases, leverage decreases. The coefficient estimate for interest is positive, suggesting that medium firms continue to borrow even if the increases in interest.

Table 5 Column 5 presents the results for long term debt of medium size firms. The coefficient estimate for tangibility is positive implying that as asset tangibility increases, firms borrow more long term debt. The coefficient estimate for profitability is negative, indicating that profitable medium firms have lower long term debt. Most of the macroeconomic variables are statistically significant. The coefficient estimate for GDP per capita is negative, indicating that as GDP per capita increases, long term debt decreases. The coefficient estimate for growth is positive. As economy grows, medium firms borrow more long term debt. Inflation does not have an impact on the long term debt decisions of medium firms. The coefficient estimate for interest is negative, suggesting that increases in interest rate induce medium firms to borrow less long term debt. The coefficient estimate for tax is negative. As tax increases, medium firms borrow more long term debt.

Table 5 Column 6 shows the estimations for short term debt of medium size firms. Firm level variables are inversely related to the short term debt. The coefficient estimate for tangibility is negative, indicating that medium firms with more collateral borrow less short term debt. The coefficient estimate for profitability is negative. As profitability increases, short term debt decreases. The impact of macroeconomic variables is statistically significant. The coefficient estimates for GDP per capita and growth are positive. As GDP per capita and growth increase, medium firms borrow more short term debt. The coefficient estimate for inflation is negative, indicating that increases in inflation cause to decrease in short term debt for medium firms. The coefficient estimate for interest is positive, suggesting that medium firms continue to borrow short term debt in spite of the increases in interest rate. The coefficient estimate for tax is positive, implying that as tax increases, medium firms borrow more short term debt.

Table 5 Column 7 presents the coefficient estimates for leverage of large firms. The coefficient estimate for asset tangibility is negative, indicating that large firms with more collateral have less leverage. The coefficient estimate for profitability is negative, suggesting that more profitable large firms have lower leverage. Most of the macroeconomic variables do not have an impact on the leverage decisions of large firms. GDP per capita, growth and inflation do not affect the leverage. The coefficient estimate for interest is positive, implying that as interest increases, leverage increases. The coefficient estimate for tax is positive, indicating that as tax increases, large firms borrow more.

Table 5 Column 8 shows the outcome for long term debt of large firms. The coefficient estimate for asset tangibility is positive, suggesting that as tangible assets increase, large firms borrow more long term debt. The coefficient estimate for profitability is negative. The more profitable large firms have lower long term debt. The impact of the most macroeconomic variables is not significant. Only the coefficient estimate for growth is positive, indicating that as economy grows, large firms increase their long term debt financing. GDP per capita, inflation, interest and tax do not have any impact on long term debt financing decisions of large firms.

Table 5 Column 9 presents the results for short term debt of large firms. The coefficient estimate for tangibility is negative, indicating that large firms with more collateral borrow less short term debt. Profitability does not have any impact on short term debt financing decisions of large firms. Also GDP per capita and inflation do not affect the short term debt financing decisions. The coefficient estimate for growth is negative, suggesting that large firms borrow less as economy grows. The coefficient estimate for interest is positive, indicating that large firms continue short term debt financing even if the increases in interest rate. The coefficient estimate for tax is positive, implying that as tax increases, large firms borrow more short term debt.

Therefore, according to our sample the determinants of capital structure show some differences among small and medium size enterprises and large firms. Collateral is important for all types of firms to access debt financing and they follow the maturity matching principle. Also the firms follow the pecking order; therefore, they choose to be financed internally first. However, for short term debt financing, profitability does not have any impact for small and large firms. But overall, firm level variables have the same affect on debt financing decisions of all sizes of firms. On the other hand, the effect of macroeconomic variables shows differences among small, medium and large firms. Large firms have access to both domestic and international financial markets; therefore, the changes in economic environment of the country do not affect them as much as small firms. GDP per capita and inflation do not affect their leverage and debt maturity decisions. They do not consider the changes in interest rate and tax for their long term debt financing decisions. Only economic growth of the country has an impact on the long term debt financing decisions of large firms. On the other hand, small firms' decisions about debt financing are also depended on the changes in economic environment of the country.

3.3. Are capital structure and debt maturities of listed and private firms different?

To answer our third question whether the listed and private firms have the same determinants of capital structure, we split our sample into two sub-samples based on the firms which are listed and privately held. Table 6 shows the regressions for leverage and debt maturities of listed and private companies.

Table 6 Column 1 presents the results for leverage of listed firms. The coefficient estimate for asset tangibility is negative, indicating that listed firms with more collateral have lower debt. The profitability does not have an effect on leverage decisions of listed firms. The coefficient estimate for small is negative, suggesting that smaller listed firms have lower leverage. On the other hand, being a larger firm does not affect the leverage decisions of listed firms. Some of the macroeconomic variables are statistically significant. The coefficient estimates for GDP per capita and growth are positive, indicating that as GDP per capita and growth increases, listed firms borrow more. On the other hand, inflation, interest and tax do not have significant impact on the leverage decisions of listed firms.

Insert table 6 here

Table 6 Column 2 shows the outcome for long term debt of listed firms. Firm level variables do not affect the long term debt financing decisions of listed firms. The coefficient estimates for tangibility, profitability and large are not statistically significant. Only the coefficient estimate for small is negative, indicating that being a smaller listed firm causes to have less long term debt. The impact of macroeconomic variables, except interest, on long term debt financing of listed firms is statistically significant. The coefficient estimate for GDP per capita is positive, indicating that as country becomes richer, listed firms are financed by more long term debt. The coefficient estimate for growth is positive, suggesting that as economy grows, listed firms increase their long term debt financing. The coefficient estimate for inflation is negative. As inflation increases, long term debt decreases. Interest does not have an impact on the long term debt financing decisions of listed firms. The coefficient estimate for tax is positive, suggesting that listed firms use more long term debt financing as tax rate increases.

Table 6 Column 3 presents the results for short term debt of listed firms. The coefficient estimate for asset tangibility is negative. Listed firms with more tangible assets have lower short term debt. Profitability does not affect the short term debt financing decisions of listed firms. The coefficient estimate for small is negative, implying that as smaller the firm, the less short term debt they have. Large firms do not have an impact on short term debt of listed firms. Also not all macroeconomic

variables affect the short term debt of listed firms. The GDP per capita, growth and interest are not statistically significant, indicating that they do not influence the short term debt financing decisions. The coefficient estimate for inflation is positive, suggesting that listed firms borrow more in spite of increases in inflation. The coefficient estimate for tax is negative, implying that as tax increases, listed firms borrow less short term debt.

Table 6 Column 4 shows the estimations for leverage of private firms. As opposed to listed firms, all firm level variables are statistically significant. The coefficient estimates for asset tangibility and profitability are negative, suggesting that as tangibility and profitability increase, private firms borrow less. The coefficient estimate for small is negative, while the coefficient estimate for large is positive. As firms get larger, private firms borrow more. Macroeconomic variables have also impact on leverage decisions of private firms. The coefficient estimate for GDP per capita and growth are positive, suggesting that as GDP per capita and growth increase, leverage increases. Inflation does not influence the leverage decisions of private firms. The coefficient estimate for interest is positive, indicating that private firms borrow more even if the interest increases. The coefficient estimate for tax is negative, suggesting that as tax increases, leverage increases.

Table 6 Column 5 presents the results for long term debt of private firms. The coefficient estimate for asset tangibility is positive, suggesting that private firms borrow more long term debt as they have more collateral. The coefficient estimate for profitability is negative. As profitability increases, long term debt decreases. The coefficient estimate for small is negative while the coefficient estimate for large is positive. As firms get larger, private firms borrow more. Most macroeconomic variables have impact on long term debt decisions of private firms. The coefficient estimates for GDP per capita and growth are positive, implying that GDP per capita and growth increase, private firms borrow more long term debt. The coefficient estimates for inflation and interest are negative, suggesting that as inflation and interest increase, private firms borrow less long term debt. Tax does not have any impact on long term debt financing decisions of private firms.

Table 6 Column 6 shows the results for short term debt financing of private firms. The coefficient estimates for asset tangibility and profitability are negative. As asset tangibility and profitability increase, short term debt decreases. The coefficient estimate for small is negative while the coefficient estimate for large is positive. As firms get larger, private firms have more short term

debt financing. Macroeconomic variables, except tax, have an effect on the short term debt financing decisions of private firms. The coefficient estimates for GDP per capita, growth, inflation and interest are positive. As GDP per capita, growth, inflation and interest increase, private firms borrow more short term debt. Tax does not have any effect on short term debt financing decisions of private firms.

Therefore, according to our sample the determinants of capital structure show some differences for private and listed companies. Some of the firm level variables are not considered by listed firms for the capital structure decision. Listed firms do not consider collateral for long term debt financing, while private firms follow the maturity matching principle. Profitability of the firm does not have any impact on debt financing for listed firms. But private firms follow pecking order. As firm size increases, leverage and debt maturities increase for private firms; however, it has no effect on listed firms. Being small firms affect leverage and debt maturities negatively for both private and listed firms. GDP per capita and growth do not have any effect on short term debt financing decisions for listed firms. However, for private firms, as GDP per capita and growth rate increase, short term debt financing increases. Both types of firms react inflation same way. On the other hand, listed firms do not consider interest rate for the debt financing decisions as opposed to private firms. Tax has different impact on debt financing decisions of private and listed companies. For private firms, as tax increases, leverage increases; whereas it does not affect long term or short term borrowing. For listed firms, as tax increase, long term debt financing increase, while short term decrease but it does not affect the leverage. So, listed firms increase their long term borrowing to take advantage of tax shields.

4. Conclusion

This paper examines the determinants of capital structure decisions of firms in developing countries. Previous research is mainly focus on the large listed firms covering small number of countries. We discuss the capital structure decisions of firms in developing markets covering 25 countries from different regions. In contrast to early studies, our main focus is on the small firms because their contribution to the GDP is higher than large firms and they comprise the majority of firms in developing countries. We analyze whether the determinants of capital structure show differences among small, medium and large firms and we examine whether the determinants of capital structure are same for listed and private firms. We use database which has not been used for the examination of the capital structure, before.

We draw the following major conclusions from the results. Regardless of how the firm defines, in accordance with the capital structure theory, the importance of firm level variables, such as tangibility and profitability is confirmed. According to the results, private, small, medium and large firms follow the maturity matching principle and pecking order on their debt financing decisions. But listed firms prefer equity financing to long term debt financing. Moreover, internal funds do not have an impact on the debt financing decisions.

Another major finding is the size effect. We see different responses from small and large firms towards debt financing. As firms become larger, they become more diversified and risk of failure is reduced as a result of that they can have higher leverage. Based on our results, small and large companies have different debt policies. Due to the information asymmetries, small firms have limited access to finance; therefore, they face higher interest rate costs. Also, they are financially more risky compared to large firms. As a result of that, small companies have restricted access to debt financing which may influence their growth.

Economic environment of the countries have influenced the debt decisions of firms differently. Since large and listed firms can have easily access to both the domestic and the international financial markets, their financing decisions are not influenced by the economic conditions of the country as much as the small, medium and private firms. For instance, large firms do not consider most of the macroeconomic factors for their long term debt financing decisions. The environment is important for short term borrowing.

We find differences in the capital structure decisions of listed and private firms and small and large companies. Large and listed companies can have easily access to finance in developing countries; whereas, for small and private firms, access to finance is more depended on the conditions of economic environment of the country.

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Abbreviations

EBT	Earnings before tax
EBT/TA	Profitability (earnings before tax to total assets)
GDP/Cap	Gross domestic product per capita
Growth	Growth of GDP
Interest	Lending interest rate
Large	Large companies (more than 500 employees)
LTDEBT	Long Term Liabilities to Total assets
NFA/TA	Tangibility (fixed assets to total assets)
Sale	Total Sales
Small	Small companies (less than 50 employees)
SMEs	Small and medium size enterprises
STDEBT	Short Term Liabilities to Total assets
TA	Total Assets
Tax	Corporate tax rate

Appendices

Our sample contains 25 emerging market countries from 5 different regions, which are Eritrea, Ethiopia, Malawi, South Africa, Tanzania, Zambia from Africa region; Cambodia, Indonesia, Philippines from East Asia and Pacific; Brazil, Chile, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Peru from Latin America and Caribbean; Morocco, Oman, Syrian Arab Republic from Middle East and North Africa; Bangladesh, India, Pakistan and Sri Lanka from South Asia. Those countries are selected because the data for firm level variables are only available for those countries.

The countries included in our sample are different from the previous studies. Most of the countries are low income and lower middle income countries from different regions. Since they are emerging market countries, their economic environment is different than developed countries.

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	0.3910	0.3774	1.0000	0.0000	0.2974	27826
Ltdebt	0.1401	0.0254	0.9973	0.0000	0.1989	27297
Stdebt	0.2495	0.1826	0.9995	0.0000	0.2477	27297
Tangibility	0.4521	0.4409	1.0000	0.0000	0.2722	27153
Profitability	0.3396	0.1957	6.8096	-4.0425	0.7031	27125
Small	0.4812	0.0000	1.0000	0.0000	0.4997	27826
Large	0.1087	0.0000	1.0000	0.0000	0.3113	27826
GDP/Cap	1693.6	996.1	8961.5	120.8	1569.7	27826
Growth	0.0326	0.0307	0.0804	0.0015	0.0155	27826
Inflation	0.0697	0.0620	0.3082	-0.0704	0.0634	27826
Interest	0.2127	0.1369	0.6288	0.0618	0.1707	27738
Tax	0.2964	0.3000	0.4500	0.1200	0.0919	27826

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

	All	Private	Listed	Small	Medium	Large
Leverage	0.3910	0.3681	0.4423	0.3065	0.4600	0.5049
Ltdebt	0.1401	0.1411	0.2004	0.0961	0.1718	0.2139
Stdebt	0.2495	0.2254	0.2431	0.2076	0.2869	0.2921
Tangibility	0.4521	0.4664	0.4444	0.4816	0.4280	0.4144
Profitability	0.3396	0.3589	0.3087	0.3048	0.3525	0.4460
Small	0.4812	0.5073	0.2594	NA	NA	NA
Large	0.1087	0.0960	0.2753	NA	NA	NA
GDP/Cap	1693.6	1758.7	1293.4	1775.5	1715.6	1248.3
Growth	0.0326	0.0323	0.0322	0.0309	0.0338	0.0356
Inflation	0.0697	0.0751	0.0685	0.0714	0.0681	0.0688
Interest	0.2127	0.2245	0.1682	0.2201	0.2148	0.1719
Tax	0.2964	0.2911	0.3031	0.2895	0.2983	0.3196
No. of Obs	27826	23365	2452	13389	11412	3025

Table 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.

Correlation	**Leverage**	**Ltdebt**	**Stdebt**	**Tangibility**	**Profitability**	**Small**	**Large**	**GDP per capita**	**Growth**	**Inflation**	**Interest**	**Tax**
Leverage	1.0000											
Ltdebt	0.5650***	1.0000										
Stdebt	0.7482***	-0.1212***	1.0000									
Tangibility	-0.2317***	0.0245***	-0.3031***	1.0000								
Profitability	-0.0521***	-0.0406***	-0.0305***	-0.0141**	1.0000							
Small	-0.2736***	-0.2124***	-0.1621***	0.1034***	-0.0477***	1.0000						
Large	0.1337***	0.1301***	0.0603***	-0.0485***	0.0526***	-0.3363***	1.0000					
GDP/Cap	0.0601***	-0.0585***	0.1232***	-0.1316***	-0.0046	0.0502***	-0.0991***	1.0000				
Growth	0.0702***	0.1741***	-0.0522***	-0.0190***	-0.0109*	-0.1066***	0.0672***	-0.4360***	1.0000			
Inflation	-0.0720***	-0.0546***	-0.0456***	0.0463***	0.0279***	0.0247***	-0.0054	-0.0039	-0.3708***	1.0000		
Interest	0.0009	-0.1102***	0.0920***	0.0162***	0.0619***	0.0418***	-0.0834***	0.4207***	-0.4489***	0.2385***	1.0000	
Tax	-0.0245***	0.0700***	-0.0849***	0.0470***	-0.0133**	-0.0718***	0.0882***	-0.8085***	0.4607***	0.0062	-0.6104***	1.0000

Table 3

Leverage and Debt Maturities

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. p-values are in parentheses. 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 4

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. p-values are in parentheses. 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	0.0243***	0.0100***	0.0143***
Sale	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	0.0208***	0.0106***	0.0100***
Asset	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

Table 5

Leverage, Long term debt and Short term debt for small firms

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. p-values are in parentheses. 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%.

	SMALL FIRMS			**MEDIUM FIRMS**			**LARGE FIRMS**		
	Leverage	**Ltdebt**	**Stdebt**	**Leverage**	**Ltdebt**	**Stdebt**	**Leverage**	**Ltdebt**	**Stdebt**
Constant	-0.1759***	-0.0644*	-0.3190***	0.5184***	0.4153***	0.1096	0.3843**	0.2354*	0.2581*
	-0.061	-0.038	-0.049	-0.078	-0.064	-0.074	-0.169	-0.135	-0.145
Tangibility	-0.2190***	0.0192**	-0.2456***	-0.2071***	0.0597***	-0.2684***	-0.1047***	0.0924***	-0.1988***
	-0.013	-0.008	-0.011	-0.017	-0.013	-0.015	-0.033	-0.028	-0.029
Profitability	-0.0124***	-0.0063**	-0.0052	-0.0478***	-0.0237***	-0.0243***	-0.0273**	-0.0187**	-0.0097
	-0.005	-0.003	-0.004	-0.006	-0.005	-0.005	-0.012	-0.008	-0.01
GDP/Cap	0.0683***	0.0256***	0.0619***	-0.0096	-0.0304***	0.0198***	-0.002	-0.0168	0.0051
	-0.006	-0.004	-0.005	-0.007	-0.006	-0.007	-0.016	-0.013	-0.013
Growth	2.1861***	1.3215***	1.2973***	3.7980***	3.3478***	0.5237*	0.2465	1.4370***	-1.1957**
	-0.373	-0.249	-0.283	-0.36	-0.237	-0.309	-0.671	-0.512	-0.601
Inflation	-0.2137***	0.0896***	-0.2535***	-0.2063***	0.0509	-0.2675***	0.1491	0.044	0.0826
	-0.047	-0.027	-0.043	-0.055	-0.04	-0.051	-0.121	-0.104	-0.099
Interest	0.0419	-0.1585***	0.2319***	0.1625***	-0.1077***	0.2761***	0.2493***	0.0457	0.1863***
	-0.03	-0.019	-0.025	-0.031	-0.022	-0.027	-0.071	-0.053	-0.057
Tax	0.1856***	-0.1320***	0.4752***	-0.1046	-0.4623***	0.3520***	0.4333**	0.0192	0.3013*
	-0.058	-0.034	-0.05	-0.084	-0.064	-0.077	-0.209	-0.155	-0.169
Observations	12625	12329	12329	10925	10766	10766	2865	2836	2836
R^2	0.1166	0.0311	0.1675	0.0818	0.0902	0.1225	0.0206	0.0423	0.049

Table 6

Leverage and Debt Maturities for listed and private firms

The table shows regressions of leverage, long term debt and short term debt on firm specific and macroeconomic variables for listed and private firms. We estimate regressions by using OLS estimators with fixed effects corrected with white standard errors. 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. p-values are in parentheses. 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%.

	LISTED FIRMS			**PRIVATE FIRMS**		
	Leverage	**Ltdebt**	**Stdebt**	**Leverage**	**Ltdebt**	**Stdebt**
Constant	0.3644***	-0.2498***	0.6080***	0.2643***	-0.0365	0.1807***
	-0.115	-0.089	-0.11	-0.052	-0.035	-0.042
Tangibility	-0.1436***	0.0045	-0.1549***	-0.1839***	0.0246***	-0.2122***
	-0.037	-0.032	-0.03	-0.011	-0.008	-0.009
Profitability	-0.0123	-0.0037	-0.0056	-0.0220***	-0.0163***	-0.0056*
	-0.013	-0.012	-0.011	-0.004	-0.003	-0.003
Small	-0.1355***	-0.0883***	-0.0513***	-0.1434***	-0.0698***	-0.0743***
	-0.022	-0.019	-0.019	-0.006	-0.004	-0.005
Large	-0.0193	-0.0199	0.0034	0.0910***	0.0449***	0.0492***
	-0.022	-0.018	-0.019	-0.01	-0.008	-0.009
GDP/Cap	0.0278**	0.0432***	-0.0152	0.0247***	0.0174***	0.0179***
	-0.012	-0.009	-0.012	-0.005	-0.003	-0.004
Growth	1.9098***	2.4953***	-0.5733	2.8812***	2.6832***	0.4645**
	-0.714	-0.514	-0.566	-0.258	-0.177	-0.209
Inflation	0.0287	-0.0889*	0.1165**	0.0553	-0.0431*	0.1324***
	-0.057	-0.05	-0.058	-0.037	-0.025	-0.03
Interest	0.0085	0.0147	0.0008	0.0997***	-0.0526***	0.1757***
	-0.077	-0.055	-0.06	-0.022	-0.015	-0.018
Tax	-0.2013	0.3591***	-0.5478***	-0.0933*	0.0387	-0.0338
	-0.133	-0.094	-0.108	-0.051	-0.034	-0.038
Observations	2311	2148	2148	22100	21779	21779
R^2	0.0961	0.0813	0.0718	0.1517	0.096	0.1463