*APPENDIX 1: Descriptions of variables*

*Dependent variable (LEV) is represented by 3 proxies:*

TLEVi,t is the ratio of total debt to total assets of firm i in year t;

LTLEVi,t is the firm 's long-term debt to total assets ratio in year t;

STLEVi,t the short-term debt to total assets ratio of firm i in year t.

*Overconfidence - OVER*

Ben-David et al. (2007) adopted CFO forecasts for stock market returns. Malmendier and Tate (2008) used two method to measure managerial overconfidence: CEO's Personal Portfolio Decisions and CEO knowledge.

Oliver (2005) and Tomak (2013) use the University of Michigan Consumer Sentiment index as a measure of confidence.

In the study of Malmendier and Tate (2005) on the effect of managerial overconfidence on corporate investment decisions in the 1980-1994 period, based on the "net buyer" concept. Executives are considered overconfident if they are in the net buying position of the company during the initial period of the survey period. In this study, managers were considered overconfident as those who had more net stock buying years than net stock selling year during the 6-year period of the observation period (1980-1994). Malmendier and Tate (2005) also argued that managerial overconfidence as a trait in their personality should be considered constant in the research phase.

The study by Glaser et al. (2008) on the impact of managerial optimism on business investment in the German market for the period 2001-2006, suggests that investment decision making process is complex. Investment decisions are not solely driven by CEO or CFO but are also highly dependent on the senior manager. The measure of managerial optimism is determined based on volume, which is the stock trading volume from internal trading behavior of the manager; or on the basis of quantity, that is the number of managers involved in internal trading.

In this study, the measure of managerial overconfidence followed studies by Malmendier and Tate (2005) and Glaser et al. (2008). Accordingly, the overconfidence measured by the executives in this study was an adjusted net buyer measure. “Net buyer” measures the net purchase of shares in the internal transactions of both the board and the CEOs. Businesses are considered to have overconfident managers when their total net buying exceeds the total net sales in internal trades during the study period (2011-2016) and vice versa.

OVER represents the managerial overconfidence as a dummy variable.

OVER = 1, representing the enterprise has an overconfident manager;

OVER = 0, when the business does not have an overconfident manager.

Managerial overconfidence is a behavioral characteristic that is considered constant throughout the study period, according to Malmendier and Tate (2005).

*Firm size (SIZE)*

The size of the firm - expected to have a positive relationship with the capital structure - is one of the core factors always used by economists in the literature on capital structure. The measurement of firm size is usually defined in two ways:

The natural logarithm of total assets - according to Deesomsak et al. (2004), Chen (2004), among others.

The natural logarithm of revenue - according to Reimoo (2008).

In this study, the firm scale factor is measured by the natural logarithm of total assets.

*Profitability (PROF)*

Unlike the size of the company, profitability is expected to bear negative sign (-) against the company’s capital structure. To measure profitability there are many different ways such as:

Earnings before interest, tax, and depreciation (EBITDA)/revenue ratio - according to researches by Deesomsak et al. (2004), Chen (2004), Oliver (2005) and Tomak (2013).

Earnings before Taxes and Interest (EBIT)/Total Assets - according to Huang (2006).

In this study, the profitability of the firm is measured by the ratio of earnings before tax, interest, and depreciation on sales.

*Growth Opportunities (GROWTH)*

There are some ways to measure growth opportunities for your business:

Chen (2004) used a combination of Revenue Growth/Total Assets Growth Rate.

Titman and Wessels (1988), Reimoo (2008) used the annual percentage change of total assets.

In this study, the growth opportunity is measured by the annual percentage change in total sales of firms during the study period.

*Tangibility (TANG)*

The most commonly used measurement method in the literature is the tangible assets/total assets ratio - Oliver (2005), Huang (2006), Reimoo (2008) and Tomak (2013). Based on previous studies, the measurement of variable tangible fixed assets is based on previous studies.

*Uniqueness (UNIQ)*

In fact, the product uniqueness of the product is rarely found in the capital structure literature. This variable is usually measured by R&D cost/sale ratio. However, due to the limited collection of R & D cost data, research articles often use the cost of sales relative to net sales of the company as a substitute for product uniqueness measurement (Titman & Wessels, 1988; Reimoo, 2008). The UNIQ variable in this research follows the above measurement.

*Liquidity (LIQ)*

It can be seen that most empirical studies show that there is an inverse relationship between liquidity and capital structure. According to Deesomsak et al. (2004), Reimoo (2008), liquidity is measured by the short-term assets/short-term debt ratio. The authors use this mearurement.

*Non-debt tax shields* *(NDTS):*

NDTS is a common factor in the study of capital structure. Chaplinsky and Niehaus (1993), Deesomsak et al. (2004) and Chen (2004) use fixed asset depreciation/total asset ratio to measure the non-debt tax shield. Huang (2006) used both fixed assets depreciation and intangible assets amortization/total assets to measure this factor.

Based on previous studies, the fixed asset depreciation to the total assets ratio used to measure the non-tax debt shield factor in the study

*State Ownership (SO)*

The relationship between the state ownership and the capital structure is the most likely appear in the researches. Zou and Xiao (2006), Li et al. (2009) used the ratio of number of state-owned shares to number of outstanding shares to measure state ownership.

In this study, SO is defined as a dummy variable, in which:

SO = 1, if the proportion of shares held by the State is more than 50%, the company is state-owned; and 0 otherwise.

Table 1: Variables description in the research model

|  |  |  |  |
| --- | --- | --- | --- |
| **Variable name** | **Variable** | **Description** | **Previous authors** |
| Total debt/Total Assets ratio | TLEV | Total Debt to Total Assets ratio | Frank and Goyal (2007, 2009), Barros and Silveira (2007), Reimoo (2008) |
| Long-term debt/Total assets ratio | LTLEV | Long-term Debt to Total Assets ratio | Frank and Goyal (2007, 2009), Barros and Silveira (2007), Reimoo (2008) |
| Short-term debt/Total assets ratio | STLEV | Short-term Debt to Total Assets ratio | Frank and Goyal (2007, 2009), Barros and Silveira (2007), Reimoo (2008) |
| Managerial overconfidence | OVER | The **"net buyer"** metric.OVER = 1 indicates manager is overconfident (net buyer > 0);OVER = 0 indicates manager is not overconfident. | Malmendier and Tate (2005) Glaser et al. (2008) |
| Company size | SIZE | The natural log of total assets | Deesomsak et al. (2004),Chen (2004) |
| Profit | PROF | Earnings before tax, interest, and depreciation to total assets ratio | Deesomsak et al. (2004), Chen (2004), Oliver (2005), Tomak (2013) |
| Growth opportunities | GROWTH | The percentage change in annual gross revenue | Titman and Wessels (1988),Reimoo (2008) |
| Tangible assets | TANG | Tangible fixed assets to total assets ratio | Oliver (2005), Huang (2006), Reimoo (2008), Tomak (2013) |
| Product uniqueness | UNIQ | COGS to net sales ratio | Titman and Wessels (1988),Reimoo (2008) |
| Liquidity | LIQ | Current assets to current liabilities ratio | Deesomsak et al. (2004),Reimoo (2008) |
| Non-debt tax shield | NDTS | Depreciation of fixed assets to total assets ratio | Chaplinsky and Niehaus (1993),Deesomsak et al. (2004), Chen (2004) |
| State ownership | SO | SO = 1 (state ownership > 50%), representing state-owned company;SO = 0, representing non state-owned company. | Follow Zou and Xiao (2006), Li et al. (2009) |

*APPENDIX 2: t-test results*

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Variable |   | Mean value in the sample |   | Hypothesis testing resultsDiff = mean (0) - mean (1) |   |
|   | SO = 0 | SO = 1 |   | Ha: diff <0 | Ha: diff!= 0 | Ha: diff> 0 |   |
|   |   |   |   |   | Pr (T <t) | Pr (| T |> | t |) | Pr (T> t) |   |
| TLEV |   | 0.5007 | 0.5580 |   | 0.0000 | 0.0000 | 1.0000 |   |
| LTLEV |   | 0.067 | 0.1411 |   | 0.0000 | 0.0000 | 1.0000 |   |
| STLEV |   | 0.4040 | 0.4169 |   | 0.0767 | 0.1534 | 0.9233 |   |
| OVER |   | 0.3374 | 0.2627 |   | 0.9999 | 0.0003 | 0.0001 |   |
| *Source: Author’s calculation on STATA 14*  |

*APPENDIX 3: Test results to select appropriate models in three dependent variables*

|  |  |  |
| --- | --- | --- |
| Test |   | Dependent variable |
|   | TLEV | LTLEV | STLEV |
|   |   |   |   |   |
| F-test | Prob> F = | 0.0000 | 0.0000 | 0.0000 |
| Breusch-Pagan Lagrangian | Prob> chibar2 = | 0.0000 | 0.0000 | 0.0000 |
| Hausman | Prob> chi2 = | 0.0000 | 0.0000 | 0.0000 |
|   |   |   |   |   |
| *Note:**- F-test for selecting FEM or Pooled OLS model;**- Breusch-Pagan Lagrangian Test for selectng REM or Pooled OLS models;**- Hausman test for selecting FEM or REM model.* |
| *Source: Author’s calculation on STATA 14* |

 *APPENDIX 4:* *Results of the heteroscedasticity and the autocorrelation test*

|  |  |  |
| --- | --- | --- |
| Test |   | Dependent variable |
|   | TLEV | LTLEV | STLEV |
|   |   |   |   |   |
| Modified Wald | Prob> chi2 = | 0.0000 | 0.0000 | 0.0000 |
| Wooldridge | Prob> F = | 0.0000 | 0.0000 | 0.0000 |
|   |   |   |   |   |
| *Note:**- Modified Wald test used to test heteroscedasticity* *if (Prob> chi2) < 0.05, there is heteroscedasticity;**- Verification of Wooldridge is used to test autocorrelation, if (Prob> F) < 0.05, there is autocorrelation.* |
| *Source: Author’s calculation on STATA 14* |