Determinants of capital structure in emerging markets: Evidence from Vietnam

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CONTEXT: VIETNAM - AN EMERGING MARKET

CAPITAL STRUCTURE

LONG-TERM DEBT - SHORT-TERM DEBT - RATIO OF LONG-TERM TO SHORT-TERM DEBT

GROWTH  TANGIBLE ASSETS  PROFIT  SIZE  LIQUIDITY
Abstract

Capital structure decision is an important corporate behavior which draws strong interest from different stakeholders. It is more important in emerging markets due to their unique legal, cultural and institutional characteristics. This paper sheds further light on the question of whether capital structure determinants are different in emerging markets. We utilize a new and unique data set containing firm specific attributes over the period from 2006 to 2015. Employing GMM estimator to control for endogeneity, the results indicate that the determinants of capital structure are different for long-term and short-term indicators.

Keywords: capital structure, leverage, firm size, growth, emerging markets

GEL Classifications: G10, G30, G32, K22

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1. Introduction

Capital structure decision is an important corporate policy which deals with firm’s activities, with debts and equity (Brounen et al. 2006). Following the famous work of Modigliani & Miller (1958), there is a growing literature concerning capital structure. Even though capital structure has been the central topic of financial economists for decades, there is no single theory explaining the choice of capital structure. Recent paper by Ardalan (forthcoming) even shows that capital structure becomes irrelevant if more appropriate assumptions are made. Many empirical papers providing inconclusive results highlight the importance for further investigation to shed further light into this issue. However, there is little work done on examining capital structure in these emerging countries (Faris 2011) and Vietnam is not a specific case.

This paper explores whether capital structure determinants are different in emerging markets. We use a comprehensive data set of firm specific attributes from firms listed on the Ho Chi Minh City stock exchange covering a period from 2006 through 2015. We also employ the GMM estimation techniques to alleviate biases and provide further robustness for the results. In order to enable easy comparisons, potential determinants of capital structure decision among Vietnamese firms are firm specific factors which are commonly and consistently considered in the literature including asset growth, tangible assets ratio, firm profitability, firm size and liquidity.

Our paper is motivated by a number of perspectives. Firstly, our paper is built on a growing literature examining capital decision. It is well established that capital structure determinants are different in different countries. Particularly, Črnigoj & Mramor (2009) state that although
previous work proves that some capital structure differences can be explained by modern capital structure theory in mature market economies, the forces behind capital structure decision in emerging markets are still an open question for investigation. This difference might be explained by the similarities of the institutional and cultural structure amongst developed countries (Wald 1999) while legal and institutional structure is significantly different in emerging markets.

Secondly, we consider the capital structure decision in the context of an emerging market. Specially, Vietnam is a small and partially open economy where the financial markets and institutional developments are still far behind the developed countries. Since the introduction of the comprehensive economic reform in the mid 1980s, Vietnam is gradually transforming its economy from a command to market oriented approach. This reform creates a more competitive business environment toward equal opportunity for private, foreign owned, state-owned and privatized firms in getting fund in financial markets. In the last two decades, the Vietnamese government sets prioritizes in promoting financial liberalization and facilitating constant institutional reforms (Batten & Vo 2014, 2015).

These constant economic reforms result in some recent developments in equity and bond market in Vietnam. The development of stock market give firms more options to raise finance for their investments, however, most domestic firms are still relying on bank credit as a major or even the sole source of external funding. One possible explanation for this fact is that the stock market in Vietnam is still at the infant stage of development. Similar to most emerging markets, the problems of information asymmetries, higher volatility and higher transaction costs are evidenced in stock market. These problems clearly hinder firms to get
access to finance through stock market. Capital structure decision of firms is clearly affected by these problems in emerging Vietnam financial market.

The first stock exchange in Ho Chi Minh City is established in 2000 with 4 listed firms. However, a strong development is witnessed in Vietnam stock markets including a significant increase in both numbers of listed firms and total trading volume. There are currently more than 300 firms listed on the Ho Chi Minh City stock exchange, the largest stock exchange in Vietnam. Even though the number of listed firms is only a small proportion in comparisons with the total number of firms in the economy, these listed firms are considered the best Vietnamese firms in terms of corporate governance. Hence, financial and investment decisions of these firms are assumed to follow global practice.

Our paper contributes to the current literature on a number of fronts. Firstly, the paper makes an important contribution in the sense that we provide further understanding of the capital structure decision in emerging markets. This is achieved by assessing the relationship between firm attributes and the capital structure choice of Vietnamese firms employing a unique and updated data set. Even though a huge volume of research investigating capital structure determinants are existed, papers utilizing Vietnam data set are still limited. In light of emerging market perspectives, a study investigating capital structure decision in the Vietnamese context is clearly important. Secondly, since endogeneity is a serious problem in corporate finance studies, we utilize the GMM estimator to address the potential endogeneity problem in our analysis. Specially, this estimator technique controls for omitted invariant variables and corrects for endogeneity by using internal instruments. Thirdly, we use a

\footnote{A number of papers provide an overview of Vietnam stock market development (Batten & Vo 2014, 2015; Vo 2015, 2016b, 2016a; Vo & Bui 2016; Vo forthcoming).}
number of explanatory variables in the context of Vietnam to control for the omitted variable problem. Moreover, the use of a comprehensive and updated dataset is important to allow us to achieve this task.

The remainder of the paper proceeds as follows. In the following section, we briefly review the extant literature on the determinants of capital structure. Section 3 introduce the model of capital structure decision. Description of data is presented in section 4. Section 5 outlines the results and discussions of results. The final section provides some concluding remarks to the paper.

2. Literature Review

A number of pioneering work set the framework for explaining drivers of capital structure (Modigliani & Miller 1958; Modigliani & Miller 1963; Jensen & Meckling 1976; Myers 1977; Myers 1984; Myers & Majluf 1984; Myers 2001; Fama & French 2002). These viewpoints can be categorized into three main theoretical approaches explaining firm level determinant of capital structure: the trade off, the agency and the pecking order hypotheses. However, all of these theories have failed to yield conclusive evidence and commonly accepted agreement (Graham 2000; Leary & Roberts 2010). Hence, further investigation is necessary to shed further light on the issue.

These theoretical developments pave the way for the vast empirical research papers testing for validity of these theories from different perspectives. However, most of the papers employ advanced country data, partly due to the availability of data. More importantly, the results are mixed in the literature even though there is a large volume of research empirically
investigating the firm specific determinants of capital structure. In addition, the mixed theoretical and empirical results are also difficult to interpret.

One thing seems to be in common is that most studies on this topic focus on certain firm specific factor including profitability, tangibility and size (Andres et al. 2014). In this paper, we follow the common and well recognized view that the choice between debt and equity of capital decision depends on firm-specific characteristics, or country and industry effects.

Deesomsak et al. (2004) investigate the determinants of capital structure in Asia Pacific region using data of Thailand, Malaysia, Singapore and Australia. With regards to firm specific determinants, this research reports that firm size is positively related to leverage while growth and liquidity are negatively related to firm leverage. de Jong et al. (2008) analyze the importance of firm-specific and country-specific factors in the leverage choice of firms from 42 countries around the world. Results from this study indicate that firm-specific determinants of leverage differ across countries, while the current literature implicitly assumes equal impact of these determinants.

Psillaki & Daskalakis (2009) report that firm size is positively correlated with leverage while asset structure, profitability and risk is negatively explained capital structure. Meanwhile, growth is not a statistically significant determinant of leverage for any of the four countries. The main conclusion of this study is that firm-specific rather than country facts explain differences in capital structure choices of SMEs. Sbeti & Moosa (2012) employ extreme bound analysis to investigate capital structure determinants using Kuwaiti data and report that the results are more supportive of pecking order theory than the trade-off theory. They evidence the importance of growth opportunities and profitability. Recent work also provides
evidence on the relationship between costs associated with discharging workers and capital structure decisions (Serfling 2016).

Using the cash flow as an explanatory variables, Mateev et al. (2013) test some of the predictions of the pecking order theory. According to this theory, firms with more available internal funds should use less external funding. This study finds strong evidence to support the pecking order theory. Particularly, this paper reports a negative and significant correlation between profitability and leverage.

Grounded in agency theory, Santos et al. (2013) seeks to examine how capital structure is affected by ownership concentration in the hands of the main shareholder, whether family firms differ in terms of the choice of funding sources and highlighting the role of multiple large shareholders in this stream of research. There are a number of recent papers providing single country study of capital structure (Chang, Chen, et al. 2014; Ebrahim et al. 2014; Handoo & Sharma 2014) and specific factors explaining capital structure (Antonczyk & Salzmann 2014; Chang, Chou, et al. 2014; Dang et al. 2014; Danis et al. 2014; Hugonnier et al. 2015).

There are an increasing number of papers focusing on the capital structure decision in China (Chen 2004; Chen & Strange 2005; Huang & Song 2006; Li et al. 2009; Qian et al. 2009; Wu & Yue 2009). It is commonly agreed that Vietnam shares strong cultural and institutional similarities with China. Some recent studies enrich the literature by considering the impact of foreign presence on the capital structure of domestic firms (Anwar & Sun 2015).

**Growth and Capital Structure**
The relationship between growth and capital structure has been confirmed in the current literature (Faris 2011). However, the direction of this link is not the same according to different theories. Moreover, this relationship tends to differ between different proxies for capital structure. For example, the agency theory grounds on the argument that firms with high growth opportunities tend to retain financial flexibility in order to be able to borrow more in subsequent years predicting a negative relationship between growth and leverage (Myers 1977; La Rocca et al. 2009).

Several other explanations are also provided for the relationship between growth opportunities and capital structure in the literature. Firstly, a firm with good opportunities for growth would be unlikely to issue debt to finance projects, due to the high financial distress costs this implies, and the fact that intangible assets would be valueless in the case of bankruptcy (Harris & Raviv 1991). Second, firms with a higher growth opportunities are likely to show lower agency costs of free cash flow (Jensen 1986). Third, the asset substitution problem is particularly more relevant in firms with greater growth opportunities. This will in turn lead lenders to impose higher costs of financing, which means that firms whose opportunities for growth are high will have less debts.

Nevertheless, growth opportunities can also positively correlate with leverage, according to the pecking order theory. According to Myers (1984), the preferred means of reducing the costs of asymmetric information is by funding resources. Particularly, firms would prefer using retained earnings in first place, then low-risk debt, high-risk debt and, as the last resource, new equity. It follows, then, that when a company is presented with good investment opportunities, but lacks internal cash flow, debt is a first option for funding projects, and high leverage is the result in such companies. Finally, as companies with higher
growth opportunities present greater information asymmetries, they find that high-debts are a form of signaling the quality of their investments.

**Tangibility and Capital Structure**

Both the agency theory and trade-off theory suggest that tangible assets are important and positively determining capital structure. On the one hand, because tangible assets can be used as collaterals (thus lowering the creditor's risk of suffering such agency costs of debt), a high fraction of tangible assets allows firms obtain external finance easily resulting in a high leverage (Titman & Wessels 1988; Sbeti & Moosa 2012). Moreover, the tangibility of the firm’s assets is closely associated with agency costs of debt and the costs of financial funds (Myers 1977; Booth et al. 2001).

In the same line of arguments, Jensen and Meckling (1976) affirm that if firms do not have collaterals for their debt, moral hazard and hence agency costs of debt increase (La Rocca et al. 2009). In other words, firms unable to provide collaterals may have more opportunities to expropriate bondholder interest by substituting safer projects for riskier projects (Booth et al. 2001). In addition, firms unable to provide collaterals will have to pay higher interest, or will be forced to issue equity instead of debt (Scott 1977). Tangible assets are more valuable on the market than intangible assets in the case of bankruptcy, and so bondholders will demand lower risk premiums. Tangible assets can also mitigate concerns over insider resource expropriation. Moreover, the use of collateral plays a more important role in countries where creditor protection is relatively weak (La Porta et al. 1998) and it is commonly accepted that emerging countries are in this weak creditor protection group.

In summary, a positive relationship between tangibility of assets and leverage is anticipated.
**Profitability and Capital Structure**

The relationship between the capital structure and profitability is both theoretically and empirically controversial (Friend & Lang 1988; Harris & Raviv 1991; Rajan & Zingales 1995; Booth et al. 2001; Sbeti & Moosa 2012). Specially, Modigliani and Miller (1963) state that a company may opt for debt in order to take advantage of tax shields. Moreover, there is a positive relationship between profitability and the existence of free cash flow problems and in these circumstances debt may act as a management tool to ensure that managers do not pursue individual objectives (Jensen 1986).

According the pecking order theory, a more profitable firm is more likely to substitute debt for internal funds. Therefore, by holding the investment level fixed, a negative relationship between debt levels and profitability is expected. However, when there is asymmetric information about the quality of a firm, the more profitable companies may use a higher debt to signal their quality to the market. On the other hand, profitable firms prefer not to raise external equity in order to avoid potential dilution of ownership.

The trade-off hypothesis, in turn, suggests a positive relationship because more profitable firms have a lower probability of bankruptcy (Fama & French 2002). In addition, La Rocca et al. (2009) argue that more profitable firms are more likely to borrow more in order to benefit from the tax shield (Frank & Goyal 2003; Frank & Goyal 2009). In addition, Rajan and Zingales (1995) argue that creditors prefer to give loans to firms with high current cash flow.
In summary, agency costs and bankruptcy costs imply that more profitable firms are associated with higher leverage, and therefore a positive relationship between leverage and profit is expected.

**Firm Size and Capital Structure**

The size of a firm has been reported to be an important determinant of capital structure in many different perspectives (Harris & Raviv 1991; Rajan & Zingales 1995; Hall et al. 2000; Bevan & Danbolt 2002). From a financial distress perspective, many authors state that larger firms tend to be more diversified and have a smaller probability to fail, so size can be an inverse proxy for the probability of bankruptcy (Warner 1977; Ang et al. 1982; Pettit & Singer 1985).

On the other hand, it is commonly established that small companies usually have bigger bankruptcy costs in relative terms (Ang et al. 1982) while larger companies are more likely to use debt than smaller ones, according to the tradeoff theory (Titman & Wessels 1988). Moreover, Diamond (1989) suggests that large firms can assume more debt at lower costs because their better reputations in the debt market (La Rocca et al. 2009). Likewise, Rajan & Zingales (1995) assert that larger firms benefit from lower debt cost because there are more transparent.

**Liquidity and Capital Structure**

It is commonly stated that liquidity ratios may have a mixed impact on the capital structure decision. On the one hand, a negative relation between leverage and liquidity is expected because if firms are having more debt, the associated higher liabilities and lower remaining current assets (Ozkan 2001). Moreover, the agency theory suggests that when the agency
costs of liquidity are high, outside creditors tend to reduce the debt financing limit available to firms (Myers & Rajan 1998). If firms follow the financing hierarchy of the pecking order theory for their capital structure decision, it results in a negative link between liquidity and financial leverage (Sbeti & Moosa 2012).

On the other hand, as firms with higher liquidity ratios might use a relatively higher debt ratio due to greater ability to meet short term obligations when they fall due. This implies a positive relationship between a firm’s liquidity position and debt ratios.

3. Model and variables

In this section, we start by providing a discussion on the dependent variables which represents firm leverage. We then introduce explanatory variables and outline their relations with leverage. We also provide the discussion of relationships between determinate variables and firm leverage through different theoretical lens.

Model

This section focuses on formulating the model that will be used to examine the determinants of the capital structure decision of Vietnamese firms. The model is set up from the capital structure theories to enable us to shed light on the question of whether the capital structure decision in emerging economies is different from the developed ones. Factors that may affect the firms’ capital structure are based on the capital structure theories and the preponderance of existing capital structure studies in the current literature. Specially, firm specific variables explaining capital structure are selected including growth, tangibility, profitability, firm size and liquidity.
In order to avoid the endogeneity problem in corporate finance, our model is a dynamic model which is specified as follows:

\[
CapStructure_{i,t} = CapStructure(-1)_{i,t} + \beta_1 GROWTH_{i,t} + \beta_2 TANG_{i,t} + \beta_3 PROFIT_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LIQD_{i,t} + \epsilon_{i,t}
\]

where CapStructure is the measure of capital structure, proxied by long-term and short-term leverage ratio. In this study, we first investigate two other disaggregated measures of leverage which include the long term debt ratio and the short term debt ratio. This separation allows us to distinguish between short and long term debt determinants. The short term leverage ratio (STDTA) is defined as the ratio of short-term debts to total assets and the long term leverage ratio (LTDTA) is calculated as the ratio of long term liabilities to total assets. Moreover, we also include the ratio of long-term debt to short-term debt to model the preference for long-term debt over short-term debt in capital structure decision\(^2\).

**Control variables**

\(GROWTH_{i,t}\) is the growth variable. In this study, following Rajan & Zingales (1995) and Huang & Song (2006), we use Tobin Q (the ratio of market value of total assets to book value of total assets) as a variable to proxy for the firm’s future growth opportunity. Tobin Q is considered in the current literature to be a better indicator for future growth as it reflects the market value and investor’s valuation of the firm. More specially, Tobin Q is calculated as the ratio of market value of equities plus book value of debts to the total assets.

\(^2\) We thank an anonymous referee for suggesting this ratio as a measure of capital structure.
$TANG_{i,t}$ is a proxy for tangibility. This study uses the ratio of net plant, property and inventory to total assets as a measure for firm tangibility.

$PROFIT_{i,t}$ is the profitability measure. Following most of the existing capital structure studies (Rajan & Zingales 1995; Wald 1999; Booth et al. 2001; Delcoure 2007), we employ return on assets as a measure of profitability.

$SIZE_{i,t}$ is a proxy for firm size. In this paper, firm size is calculated as the natural logarithm of total assets ($\ln(\text{total assets})$) at year end.

$LIQD_{i,t}$ is the liquidity measure. In this study, firm liquidity is calculated as the ratio of current assets to current liabilities at year end.

The above equation is estimated using the dynamic GMM estimation of Arellano & Bond (1991) and Holtz-Eakin et al. (1988). This estimator technique is commonly employed in dynamic model which is controlling for omitted variable problem and potential endogeneity issue. More importantly, this analysis approach is appropriate for our unique dataset which has the characteristics of large cross-section and short time series.

4. Data

The data set used in this research is a collection of market data and accounting data of public firms listed on the Ho Chi Minh City stock exchange for the period from 2006 to 2015. We do not include banks and financial companies in our data sample due to the special financial behaviors and nature of these businesses (King & Santor 2008). The accounting data are taken from balance sheets and income statements. These data are then used to calculate variables measuring growth opportunity, tangibility, profitability, size and liquidity of a firm.
Table 1 describes the summary statistics of the data for our sample over the period of research. It is interesting to observe that on average, Vietnamese firms tend to use much more short-term debts than long-term debts. One possible explanation for this fact is the low level of development of bond market in Vietnam that makes firms harder to access long-term finance. Another possible explanation might be the frequent changes in macroeconomic policy and volatile economic environment of emerging markets. These issues together result in the banks’ reluctance to give long term credit and short-term firm borrowing.

Table 1 Data Description of Variables

<table>
<thead>
<tr>
<th></th>
<th>TDTA</th>
<th>LTDTA</th>
<th>STDTA</th>
<th>GROWTH</th>
<th>TANG</th>
<th>PROFIT</th>
<th>SIZE</th>
<th>LIQD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>0.4781</td>
<td>0.1169</td>
<td>0.3613</td>
<td>1.2240</td>
<td>0.2778</td>
<td>0.0699</td>
<td>11.9565</td>
<td>2.5211</td>
</tr>
<tr>
<td>Median</td>
<td>0.4990</td>
<td>0.0492</td>
<td>0.3296</td>
<td>0.9163</td>
<td>0.2316</td>
<td>0.0560</td>
<td>11.9068</td>
<td>1.6131</td>
</tr>
<tr>
<td>Maximum</td>
<td>0.9925</td>
<td>0.6930</td>
<td>0.9876</td>
<td>20.9330</td>
<td>0.9698</td>
<td>0.7837</td>
<td>14.1629</td>
<td>229.7793</td>
</tr>
<tr>
<td>Minimum</td>
<td>0.0020</td>
<td>0.0000</td>
<td>0.0020</td>
<td>0.0481</td>
<td>0.0000</td>
<td>-0.6455</td>
<td>9.9576</td>
<td>0.0895</td>
</tr>
<tr>
<td>Std. Dev.</td>
<td>0.2121</td>
<td>0.1508</td>
<td>0.2005</td>
<td>1.0554</td>
<td>0.2158</td>
<td>0.0854</td>
<td>0.5369</td>
<td>6.6328</td>
</tr>
</tbody>
</table>

Notes: This table presents the descriptive statistics for the variables employed in the analysis. TDTA is the total leverage ratio, calculated as the ratio of total debts to total assets; STDTA is the short term leverage ratio, calculated as the ratio of short-term debts to total assets; LTDTA is the long-term leverage ratio, calculated as the ratio of long-term liabilities to total assets; GROWTH is calculated as the ratio of market value of equities plus book value of debts to the total assets; TANG is the ratio of net plant, property and inventory to total assets; PROFIT is the return on assets; SIZE is the logarithm of total assets; LIQD is the ratio of current assets to current liabilities.
5. Results and Discussion of Results

Table 2 represents the matrix of correlation results amongst variables. There is a negative correlation between long term and short term leverage. Moreover, the direction of relationship between capital structure and other potential determinants tends to be mixed for long and short term leverage.

[INSERT TABLE 2 ABOUT HERE]

Table 2 Correlations between variables

<table>
<thead>
<tr>
<th></th>
<th>LTDTA</th>
<th>STDTA</th>
<th>GROWTH</th>
<th>TANG</th>
<th>PROFIT</th>
<th>SIZE</th>
<th>LIQD</th>
</tr>
</thead>
<tbody>
<tr>
<td>LTDTA</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STDTA</td>
<td>-0.2971</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GROWTH</td>
<td>-0.0740</td>
<td>-0.0353</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TANG</td>
<td>0.3944</td>
<td>-0.3382</td>
<td>-0.0155</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>PROFIT</td>
<td>-0.2488</td>
<td>-0.2919</td>
<td>0.2145</td>
<td>-0.0290</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SIZE</td>
<td>0.3833</td>
<td>0.0025</td>
<td>-0.1651</td>
<td>0.0112</td>
<td>-0.0883</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>LIQD</td>
<td>-0.0292</td>
<td>-0.2431</td>
<td>0.0143</td>
<td>-0.0539</td>
<td>0.0703</td>
<td>-0.0737</td>
<td>1</td>
</tr>
</tbody>
</table>

Notes: This table presents the correlations amongst variables employed in the analysis. STDTA is the short term leverage ratio, calculated as the ratio of short-term debts to total assets; LTDTA is the long-term leverage ratio, calculated as the ratio of long-term liabilities to total assets; GROWTH is calculated as the ratio of market value of equities plus book value of debts to total assets; TANG is the ratio of net plant, property and inventory to total assets; PROFIT is the return on assets; SIZE is the logarithm of total assets; LIQD is the ratio of current assets to current liabilities.
Table 3, represents the GMM regression results of determinants of capital structure where capital structure is proxied by the long-term, short-term leverage measure and the ratio of long-term to short-term debt measure, respectively.

Table 3 GMM - Regression Results

<table>
<thead>
<tr>
<th>Variables</th>
<th>Long-term Leverage</th>
<th>Short-term Leverage</th>
<th>Long-term/Short-term</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lag of Dep. Var.</td>
<td>-0.0470</td>
<td>0.3062</td>
<td>0.3111</td>
</tr>
<tr>
<td>GROWTH</td>
<td>0.0019</td>
<td>0.8132</td>
<td>0.0060</td>
</tr>
<tr>
<td>TANG</td>
<td>0.6119***</td>
<td>0.0000</td>
<td>-0.2076*</td>
</tr>
<tr>
<td>PROFIT</td>
<td>0.0703</td>
<td>0.5824</td>
<td>-0.6182***</td>
</tr>
<tr>
<td>SIZE</td>
<td>0.2074**</td>
<td>0.0129</td>
<td>-0.1001*</td>
</tr>
<tr>
<td>LIQD</td>
<td>0.0007</td>
<td>0.2353</td>
<td>-0.0027*</td>
</tr>
</tbody>
</table>

J-statistic: 37.2920 50.6386 31.7887

Notes: The table reports parameter estimates of the model:

\[ CapStructure_{i,t} = CapStructure_{(1)_{i,t}} + \beta_1 GROWTH_{i,t} + \beta_2 TANG_{i,t} + \beta_3 PROFIT_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LIQD_{i,t} + \epsilon_{i,t} \]

where: CapStructure is the capital structure indicator; GROWTH is calculated as the ratio of market value of equity plus book value of debt to the total assets; TANG is the ratio of net plant, property and inventory to total assets; PROFIT is the return on assets; SIZE is the logarithm of total assets; LIQD is the ratio of current assets to current liabilities, i and t are firm and time script. We do not report the coefficient estimates for time dummies to conserve space.

*, **, *** denotes the level of significance of 10%; 5% and 1% respectively;
Overall, the results from our analysis of capital structure of Vietnamese firms offer some interesting results. Of particular important is the determinants of capital structure are different for different capital structure measures.

The coefficients of growth opportunity measure are positive but not significant in all regressions for both long-term and short-term leverage. However, this growth parameter is positive and significant in regression explaining the ratio of long-term to short-term debt. This is because Tobin Q is employed to measure the firm’s growth opportunity, higher market value firms tend to use more debts to finance their investment. This finding validates the fact that higher growth Vietnamese firms are unable to take advantage of new equity issue in stock markets. This finding is contrary to the argument of Berens & Cuny (1995) that growth opportunity implies high equity financing and less leverage.

Further, our finding is inconsistent with the agency theory because high growth Vietnamese firms are likely to finance new projects with bank loans. This is interesting since if high growth firms need extra finance for an investment while not be able to issue equity, they may forgo this opportunities because such an investment effectively transfers wealth from stock holders to creditors (Myers 1977). Our results are inconsistent with many previous studies (Berens & Cuny 1995; Jung et al. 1996; Berger et al. 1997) and empirical papers (Kim & Sorensen 1986; Rajan & Zingales 1995; Wald 1999; Booth et al. 2001) but support the finding of Kester (1985). This might also explained by the fact that even though stock market gradually develops in the last decades, most of firm financings are bank credit in Vietnam.

The coefficient for tangible assets is positive and significant in regression explaining long-term leverage but negative and significant in regression explaining short-term leverage. The
coefficient for the preference of long-term debt over short-term debt is also positive and significant. This finding highlights the fact that firms can borrow more long-term debts if they have more tangible assets for collaterals. Tangible assets are important in determining capital structure because the value of tangible assets is higher than intangible assets in case of bankruptcy (Williamson 1988; Harris & Raviv 1991; Huang & Song 2006). This result is consistent with the agency theory of capital structure (Jensen & Meckling 1976; Jensen 1986) as firms may shift to riskier investments and transfer wealth from creditors to shareholders while tangible assets help to reduce the agency costs of debts. This result is also consistent with many empirical studies suggesting that a high fraction of tangible assets is associated with high leverage (Marsh 1982; Long & Malitz 1985; Friend & Lang 1988; Rajan & Zingales 1995). Our result also indicates that Vietnamese firms tend to be obligated to put forward collaterals for both long term borrowing. More important, given the stability of the debt structure, firms with higher tangible assets are using less short-term debts for a more flexible finance structure.

We find that firms with higher profitability tend to borrow less short-term debts in Vietnam as the coefficients for profitability are negative and significant in regression explaining short-term debt and the ratio of short-term to long-term leverage. This result is interesting in the sense that profitable firms in Vietnam tend to borrow long-run while reduce short-run debt. This result is consistent with previous theoretical studies (Jensen 1986; Williamson 1988; Chang 1999) and also similar to other empirical studies documented in the current literature (Friend & Lang 1988; Titman & Wessels 1988; Wiwattanakantang 1999).

The finding also represents the fact of high interest rate in Vietnam during the investigation period due to the strict monetary policy of Vietnamese government to curb inflation. Firms
with high level of debts are significantly affected and their profits reduce significantly due to very high costs of borrowing.

Estimated coefficients of firm size is positive and significant in regression of long term debt, while negative in regression of short term debt. Further, the analysis also indicates the preference of short-term debt for large firms. This result suggests that larger firms tend to use long term debt while smaller firms use short term debt to finance their investments. This result is consistent with agency theory and similar to the finding of previous studies (Marsh 1982; Rajan & Zingales 1995; Wald 1999; Booth et al. 2001). A possible reason is that larger firms in Vietnam do not take the advantage of having more bargaining power over creditors or bankers than smaller firms to borrow long term.

We find that liquidity coefficients are negative and significant in short term leverage regression while positive but insignificant in long term leverage regression. Further, the coefficient of liquidity is positive and significant in regression of the ratio of long-term to short-term leverage. This outcome suggests that liquidity problems limit the firm from borrowing long term and liquidity management is a critical issue for the success of firms in Vietnam.

6. Conclusion

Given the increasing importance of emerging markets, investigation of financing decision in emerging economies is always an interesting topic on its own merits. Despite a huge volume of research in the literature concerning capital structure determinants, there is still a gap in investigating this issue in emerging economies. Even though some capital structure differences can be explained by modern capital structure theory in mature market economies,
the forces behind capital structure decision in emerging economies are still an open question for investigation. The main purpose of this study is to shed further light on forces driving capital structure decision in Vietnam, an emerging market economy.

The paper investigates determinants of capital structure in Vietnam. We utilize a comprehensive dataset of firms listed on the Ho Chi Minh City stock exchange from 2006 to 2015. We formulate a model which leverage is a function of firm attributes hypothesized from the capital structure theories. We consider a large number of firm attributes variables (asset growth, ratio of tangible assets, profit, firm size and liquidity) in explaining capital structure. The finding offers some interesting results. Particularly, the determinants of capital structure are different for long-term and short-term leverage.
References


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