Print ISSN: 2288-4637 / Online ISSN 2288-4645
doi:10.13106/jafeb.2021.vol8.no10.0001

Capital Structure and Its Determinants: Evidence from Vietnam

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Received: June 15, 2021 Revised: August 29, 2021 Accepted: September 06, 2021

Abstract

This paper attempts to investigate the determinants of capital structure of Vietnamese firms and also shed light on some of the factors of the modern theory of capital structure which is relevant for explaining the capital structure in advanced countries which are also relevant in the context of Vietnam. Using panel data from more than 1000 Vietnamese listed enterprises census 2017–2020, the paper finds that leverage ratio of Vietnamese firms is significantly related to probability. The firms have high level of fixed assets which they use as collateral, resulting in higher debt ratio, which is in line with the pecking order theory. The result also confirm that highly targeted debt ratio is positively correlated with the industry characteristics (using real estate firms as a benchmark), in which firm operates. Furthermore, consistent with the trade-off hypothesis, the leverage ratio is positively affected by non – debt tax shield. The result confirms that a large number of companies are state – owned, will have an insignificant impact of firm's size (as reverse proxy for bankruptcy cost) on leverage ratio. We also find that there is no distinction between state-owned enterprises and private enterprises due to strict adherence to the rules set by the Vietnamese government. Distinct from other countries, corporate income tax has slight impact on capital structure in Vietnamese firms.

Keywords: Capital Structure, Financing Choice, Transition Economy, Capital Market, Vietnam

JEL Classification Code: G32, G33, G39

1. Introduction

In recent decades, financial decisions and their link with optimal risk exposure are central to the financial welfare of the firms (Leland, 1998; Gul & CHO, 2019). A wrong decision about the capital structure may lead to financial distress and eventually to bankruptcy (Sheikh & Wang, 2011). The management of a firm sets its capital structure depending on the attributes that determine the various costs and benefits associated with debt and equity financing. Therefore, selecting a capital structure plays a vital role in maximizing the firm value and resorting to various means of external funding. However, the majority of the capital structure papers have focused on understanding what drives corporate financing behaviour in the United States firms. In contrast, few existing papers add further knowledge of capital structure within developing countries (Chen, 2004; Ali & Faisal, 2020). Thus, this paper aims to provide the empirical results of capital structure decisions in the Vietnamese context, where its practice is unclear and controversial.

The institutional environment for Vietnamese firms has some salient features which is different from the high–developed countries. First, Vietnam is in a transitional period that is it is changing from a command economy to a market economy. Second, the state still exercises control in a large number of major firms. It is not difficult to understand that Vietnam has institutional structures different from highly developed countries. For instance, in the context of the M&M model, a firm's capital structure is not affected by tax authorities because the state or government is the owner of firms or banks (Huang & Song, 2006). Furthermore, state-owned enterprises are often not value – maximisers; firm size (proxy for bankruptcy cost), tangible assets (collateral)

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and even profitability, may not affect their capital structure. Controlling right firms belonging to the state, on the other hand, are less likely to run into the financial crisis than are their counterparts whose controlling shareholders are individuals or private institutes. With such salient features, this paper will provide empirical results to explain whether the factors that affect financing decisions in developed capital markets have similar effects in the Vietnamese context.

The modern theory of capital structure is significantly developed. Since Modigliant and Miller's paper was published in 1958, many researchers have followed and extended this literature to explain capital structure choice as well as providing empirical support to model's applications among different companies and countries in the world (Fama & French, 2002; Booth et al., 2001; Harris & Raviv, 1991; Myers, 1984; DeAngelo & Masulis, 1980; Myers, 1977). However, with the numerous theoretical studies, two widely acknowledged dimensions are aligned with the capital structure decision, which is the static trade-off hypothesis and the pecking order theory.

Theoretically, the trade-off model, initially introduced by Modigliant and Miller (1958), had strong assumptions that in a perfect capital market, there are neither tax, agency costs, nor transaction costs, and the capital structure decision has no effect on the value of the company. In addition, due to deductive interest from taxable profits, cost of debt is less than the cost of equity, which implies that firms may have an incentive to use debt rather than equity and increase firm value by altering their capital structures (Modigliani & Miller, 1963). According to trade-off theory, any increase in the level of debt causes an increase in bankruptcy, financial distress, and agency costs, which lead to a decrease in the firm value (Harris & Raviv, 1991). Hence, the optimal capital structure always exists (Miller, 1977), achieved by establishing equilibrium between the value of interest tax shield and various bankruptcy or financial embarrassment.

On the other hand, the pecking order theory, first suggested by Myers and Majluf (1984), is based on asymmetric information, creates a hierarchy of cost in the use of external financing. This asymmetric information cost also refers to a term known as "lemon premium" that external investors generally have less information than insiders (Akerlof, 1970); thus, common stocks would be undervalued by the market. Moreover, the financing cost that produces pecking order behaviour includes the transaction costs related to the new issues and costs arising from management's superior information about the firms' prospects and the value of its risky securities (Myers, 1984). Hence, it is argued that firms prefer to retain earnings (internal equity) as their main source of funds for investment, then by less risky debts and last comes risky external equity financing (Myers & Majluf, 1984). As a result, variation in a firm's leverage is driven not by optimal capital structure and benefits of debt but rather by the firm's net cash flows (Fama & French, 2002).

Although Modigliani and Miller's original article was released for more than five decades, the theoretical debate still centres on the importance of testing hypothesis, trade-off static or pecking order, is more relevant in explaining firms' financing behaviour. Titman and Wessels (1988), show that the theoretical research lags behind primarily because of testing various models, including all hypotheses jointly in the empirical model. The pecking order theory on the other hand views the theories as contending hypotheses and thus is more likely to have greater time–series explanatory power than the trade-off theory (Shyam-Sunder & Myers, 1999). On the other hand, Shyam-Sunder and Myers's paper may generate misleading inferences when evaluating plausible patterns of external financing, and neither the pecking order nor static trade-off model is assessed in empirical results (Chirinko & Singha, 2000). Fama and French (2002) point out that none of the pecking order and trade-off models can be rejected, and they both play an important role in explaining a firm's financing behaviour. Furthermore, variables in one model can also be classified as other models; thus, distinguishing between these two different models is unnecessary (Booth et al., 2001). A sub-stream of papers provides the empirical tests, and numerous variables in these two models can be used interchangeably (Chen, 2004; Deesomsak et al., 2004; Huang & Song, 2006; Delcoure, 2007).

This paper will use the database from the State Securities Commission of Vietnam to examine the determinants of the capital structure of Vietnamese firms (from 2017 to 2020). In this study, we examine a variety of firm's attributes such as collateralized assets, profitability, corporate income tax, non – debt tax shield, size, growth opportunities, uniqueness, industry classification, and ownership structure stated to affect capital structure decisions.

The study is organized as follows: the related literature for determinants of capital structure in Section 2, is followed by the data, main variables, and research methodology in Section 3. In Section 4, we provide the statistics of our sample along with the empirical results from the econometric analysis. Section 5 concludes the paper and suggests some unexplored avenues of research in the field.

2. Literature Review

2.1. The Determinants of Capital Structure

2.1.1. Collateral Value of Assets

Most capital structure theories argue that the composition of assets owned by a firm affects its capital structure choice. Titman and Wessels (1988) suggest that firms with a high

level of assets can be used as collateral for given debt. The borrower is forced to use resources in the predetermined project, thus curtailing the lender's risk of suffering such agency costs of debts. Their findings support the agency theory that the stockholders of highly leveraged firms have an incentive to invest sub-optimally to transfer wealth from the firm's bondholders to the firm's shareholders (Myers & Majluf, 1984; Jensen & Meckling, 1976; Qayyum & Noreen, 2019). Hence, a high fraction of tangible assets tends to increase leverage. Besides, in the presence of information asymmetry, firms with a high level of assets can use it as collateral and may be expected to sell secured debt as it reduces the information premium (Scott, 1977). The tendency of firm's managers to consume more than the optimal level of perquisites reduces the value of the firms. However, Grossman and Hart (1982) suggest that firms with less collateralizable assets are more vulnerable to the agency costs since monitoring the capital outlays is difficult for such firms. The high debt level of firms would mitigate this tendency because of the increased threat of bankruptcy. Therefore, it is expected that the firms with less collateralizable assets will choose higher debt levels to limit a managers' consumption of perquisites.

In this study, the collateralized value of assets is measured as fixed assets scaled by total assets. As the non – debt portion of liabilities does not need collateral; the collateralized assets are expected to affect either positive or negative capital structure.

2.1.2. Profitability

The pecking order theory and trade-off theory have opposite implications about the relationship between profitability and capital structure choice (Harris & Raviv, 1991; Booth et al., 2001). Especially, the pecking order theory states that firms prefer retained earnings as the main source of the investment project, which is a consequence of information asymmetries existing between insider and outsider investors. More precisely, managers prefer to use internal equity to minimize the associated costs and avoid potential dilution of ownerships (Myers & Majluf, 1984; Myers, 1984). Thus, pecking order theory suggests an inverse relationship between profitability and debt ratio. On the other hand, the trade-off theory suggests the positive relationship between the two variables since the firms that have great profitability have less bankruptcy risk and relatively lower bankruptcy cost, may opt for debt as a financing source to fully benefit from the tax shield (Modigliani & Miller, 1963). Moreover, free cash flow problems and, in these circumstances, debt may act as a management tool to prevent managers from not pursuing individual objectives, which implies a positive relationship for liquidity (Jensen, 1986). In this study, profitability will be defined as earnings before interest and tax scaled by total assets, denoted as ROA.

2.1.3. Effective Tax Rate

According to the trade-off theory, the corporate tax has played an important role in the capital structure choice. The firms with high effective corporate tax should use more debt to attract the tax shield benefit and maximize the debt interest tax deduction (Modigliant & Miller, 1958). The gains from borrowings increase the effective tax rate (Antoniou et al., 2008); thus, there is a positive relationship between effective tax and debt levels. However, many studies have found opposite results from that of the Modigliani and Miller theorem. MacKie-Mason (1990) suggested that examining debt-equity choice based on incremental decisions is more consistent with M&M theorem because most tax shields have a negligible effect on marginal tax rates. Moreover, the tax policy can lead to different results on tax implications of capital structure, especially when the tax system is designed to favour the retention of earnings against dividend payout or vice versa (Antoniou et al., 2008). The average effective income tax rate will be used as a proxy for tax rates to examine the effect of tax on leverage.

2.1.4. Non-Debt Tax Shield

The tax deduction for depreciation and investment tax credits are non-debt tax shield. DeAngelo and Masulis (1980) present a capital structure model where non-debt tax shields serve as a substitute for the tax benefit of debt financing. As a result, firms with larger non-debt tax shields, ceteris paribus, are expected to have an inverse relationship between the amount of non-debt tax shields and leverage. Following the Titman and Wessels (1988), we use the sum of depreciation and amortization expenses scaled by total assets and a direct estimate of non-debt tax shields over total assets (NDT/TA) as a proxy for non-debt tax shields by using the following equation:

$$\mathrm{NDT} = \mathrm{OI} - i - \frac{T}{20\%}.$$

Including:
NDT : Non – debt tax shields
OI : Operating income
i : Interest payment
T : Tax payment
20% : Represent the standard corporate income tax rate in Vietnam.

2.1.5. Firm Size

The predicted relationship between a firm's size and its capital structure has been controversial (Harris & Raviv, 1991; Rajan & Zingales, 1995; Bevan & Danbolt, 2002). In the Modigliant and Miller model context, there should be a positive relationship between a firm's size and leverage, because the larger firms tend to be more diversified and have a smaller probability of experiencing financial distress costs, therefore lower bankruptcy costs allow larger firms to take advantage of economies of scale in issuing long – term debt. Moreover, the small firms will bear the high-level cost of issuing new equity or long–term debt; as a result, they prefer to rely on short–term debt and be more highly leveraged than the larger firms (Smith Jr, 1977). On the other hand, the pecking order theory implies the negative correlation between a firm's size and debt ratio. Large-sized companies tend to disclose more information to outside investors than the small firms, and asymmetric information is a less severe issue in large firms (Rajan & Zingales, 1995). Thus, large firms will prefer to use more equity than debt.

Empirical studies generally found a positive relationship that leverage is positively related to a firm's size, hence supporting the trade-off hypothesis (Rajan & Zingales, 1995; Wald, 1999; Booth et al., 2001; Huang & Song, 2006). Following the sub-stream papers, a natural logarithm of total assets is used to measure the firms' size in this study.

2.1.6. Growth Opportunities

Theoretically, most studies suggest leverage is inversely related to the growth opportunities consisting of future investment opportunities (Jensen & Meckling, 1976; Myers, 1977; Stulz, 1990). It is argued that firms in growing industries incur higher debt and have agency costs since the firms have more flexibility in future investment options (Myers, 1977). Furthermore, under agency theory, debt serves to avoid the managerial discretion for the firms lacking investment projects. It is also suggested that growth opportunities are capital assets that add value to a firm but cannot be collateralized and do not generate current taxable income. This implies that they are intangible due to the high financial distress costs. The fact that intangible assets would be valueless in the case of bankruptcy; thus, firms with high-growth opportunity prefer not to issue debt in the first place (Titman & Wessels, 1988). However, the pecking order theory requires a positive correlation between growth opportunities and the debt ratio of a firm (DeAngelo & Masulis, 1980; Myers, 1984; Myers & Majluf, 1984; Jensen, 1986). This is because growing firms place a greater demand on the internally generated funds. Therefore, the firms can reduce the costs of asymmetric information by funding resources, which have more growth opportunities than the assets owned by the firms (Myers, 1984). Particularly, firms would prefer using retained earnings, low-risk debt, high-risk debt and, as the last resource, new equity (Myers & Majluf, 1984). It is argued that the high-growth firms will have more options in their choice of future investment (Myers, 1977); however, a lack of internal cash flow will lead the firms to prefer to issue debt as the first option for funding projects. Moreover, as companies with high–growth opportunities present greater information asymmetries, this high level of debt is a sort of indication of quality of their investments and high leverage results in such companies (Myers, 1984). Following the previous studies, we use Tobin's Q as a proxy to measure growth opportunities, as suggested by Huang and Song (2006).

2.1.7. Industry Classification

The concept of industry classification is related to the concept of an individual firm's business risk. It is argued that the larger the business risk, the smaller the firm's level of leverage because profit variability is an estimate of the firm's ability to pay their fixed obligations debt (Ferri & Jones, 1979). As a result, a company with high risk or great volatility in earnings can potentially put a firm in financial distress, and therefore has low creditworthiness for debt. Moreover, firms with a high possibility of going bankrupt should not be highly leveraged (Titman & Wessels, 1988). Therefore, both the pecking order and trade-off theories suggest that industry classifications are affected by the debt ratios. In this study, to measure industry classification, we include dummy variables equal to one for firms in real estate to distinguish between firms in other industries.

2.1.8. Ownership Structure

Theoretical studies generally suggest that the ownership structure has a significant effect on the capital structure determined by agency incentives (Booth et al., 2001). There are two types of interest conflict: conflicts between shareholders and managers and conflicts between debt holders and equity holders (Jensen & Meckling, 1976; Harris & Raviv, 1991). The optimal structure leverage level that is used to minimize agency costs and create a capital structure can influence the governance structure of a firm (Jensen, 1986). Therefore, the leverage is expected to have a positive relationship to managerial equity ownerships (Leland & Pyle, 1977). Moreover, Shleifer and Vishny (1994) suggest that direct state ownership is often associated with pursuing political objectives rather than value – maximisers, as the controlling shareholder is government, the firms are less likely to default thus State-owned enterprises have fewer effects on capital structure. Nevertheless, Dewenter and Malatesta (2001) show that state-owned firms are more highly leveraged, and privately owned firms have better performance than state-owned enterprises. Similarly,

Li et al. (2009) showed that the state ownership is positively associated with leverage and firms' access to long-term debt.

In this study, we divide the sample of firms into two groups according to the ownerships type: (i) State shareholding firms include those who have already sold shares to the public but the state has a controlling voting power with over 50% of shares, and (ii) others types of firms.

Now we summarize the determinants of capital structure, definition, and theoretical predicted signs Table 1.

2.2. The Measurements of Capital Structure

The six measures of leverage shown in Table 2 are included in this research. Book long-term debt (LD) is calculated by long-term debt divided by long-term debt plus book value of equity. Book total debt ratio (TD) is calculated by total debt (short-term plus long-term) is divided by total debt plus book value of equity. Book total liabilities ratio (TL) is calculated by total liabilities divided by total liabilities plus the book value of equity. When the market value of equity, book total debt ratio, book long-term debt ratio and book total liabilities ratio replace book value of equity, the market long-term debt ratio (MLD), market total debt ratio (MTD) and market total liabilities ratio (MTL), respectively.

The main measures of leverage use are the Total liabilities ratio (TL) and market total liabilities ratio (MTL). The reason why we believe that total liabilities ratio is a more appropriate measure for capital structure is because of the following reasons: first, the term for which a firm wants to obtain more debt will not only depend on for how much the firm's long-term debt is but also how much the firm's current debt and total liabilities are. As a result, the proportion of other liabilities affects a company's capability to obtain debt funding. Second, current liabilities are quite a steady part of total assets for US firms which also seems to be the case for the Vietnamese companies.

3. Data and Methodology

3.1. Data Source

The data for this analysis is drawn from the State Security Commission of Vietnam (SSC) database. The focus is on non-financial corporations. The SSC database reports accounting information of a large number of firms operating in the Vietnam non-financial corporations sector. From this data set, this study selects firms based on the criteria that the firms should have maintained their identity and reported their annual accounts without any gaps for the financial years 2017–2020. Screening for data consistency based on this criterion led to the selection of a sample of approximately 630 nonfinancial firms across all 3 stock exchanges listed on the Vietnam such as: HOSE, HNX and Upcom. Moreover, the firms with any missing observations for any variable during the sample period have been dropped to ensure reliability, transparency, and accuracy

3.2. The Empirical Model

The above section discussed several attributes and their indicators that may in theory affect a firm's capital structure choice. However, the hypotheses do not specify the practical types explaining how the characteristics apply to the metrics and the debt ratios. These relationships must be linear for the statistical methods used to approximate the model to function.

While previous studies used the OLS model, however, this model is not suitable for the panel data. In this article,

Table 1: Variables Definitions

Proxy Variables	Model	Definitions	Theoretical Predicted Signs
Collateral Value of Asset	CA	Earnings before interest and tax divided by total assets	+
Profitability (ROA)	ROA	Natural logarithm of firm assets	+/−
Effective Tax Rate	ETR	Income tax divided by earnings before tax	+
Non–debt tax shields	NDTs	Depreciation and amortization divided by total assets	−
	DT/A	Estimate of non – debt tax shields over total asset	−
Size	LnS	Natural logarithm of total assets	+/−
Growth Opportunities	GTA	Tobin's *Q*	−
Industry classification	IC	Dummy variable for real estate firms. Firms are assigned value one if real estate firms and zero otherwise	+
Ownership structure	OS	Dummy variable for state-owned enterprise, using state-owned enterprise as a benchmark.	+/−

Table 2: Data Description of Variables

Variables	Obs	Mean	Std. Dev.	Min	Max
LD	2,450	0.318352	5.691564	0	281.2667
TD	2,450	0.392586	0.569587	0	15.72473
TL	2,450	0.59841	1.57402	0	51.37652
MLD	2,449	0.214986	0.400866	0	15.48078
MTD	2,449	0.383987	0.302193	0	3.42644
MTL	2,449	0.553355	0.517659	0	14.12613
CA	2,451	25.84358	22.62135	0	95.95
ROA	2,450	6.508637	10.24478	0	254.56
ETR	2,442	15.42724	33.60779	0	1200
NDTs	2,451	4.126759	35.50025	0	1659.441
DT/A	2,450	2.540925	3.158165	0	40.83793
LnS	2,453	15.25927	2.929759	2.6211	28.38272
GTA	2,444	21.54242	503.2901	0	13901
OS	2,453	0.139829	0.34688	0	1
Industry	2,453	0.178557	0.383059	0	1

we suggest four models that estimate the effect of the control variable to a dependent variable: Random effect model (REM), Fix effect model (FEM), Pooled OLS model, and GLS model run by STATA system. Since the sample contains data across firms and over time, the panel data method is employed. Panel data models are powerful research instruments, which take into account the effects of cross-sectional data. In addition, this paper recommends adding a GLS model because Pools OLS, REM and SEM models will have statistical defects. This will be solved in the GLS model and will give more accurate estimations. The basic regression model can be specified as follows:

$$Y_{it} = \alpha + \sum_{it=1}^{n} \beta_{it} \psi_{it} + \varepsilon_{it} .$$

Where Y_{it} represent the leverage measure of firm i in year t; ψ_{it} is a column vector of firm-specific variables for firm i in year t, which represents the explanatory variables as outlined in Table 1, and β_{it} is the regression coefficient, α is the intercept and ε_{it} is the stochastic error term of the firm i in the year t.

4. Results

4.1. Descriptive Statistics

In Table 2, this paper presents the descriptive statistics of dependent and independent variables. Based on the existing database and the information in Table 2, we see the structure of corporate debt in Vietnam. Looking at the mean of both book value total liabilities ratio (TL) and market value total liabilities ratio (MTL), we can say that the liabilities of Vietnam's firm account for a huge portion of total capital, equivalent to 59.84% and 55.33%. In other words, Vietnamese enterprises tend to be less likely to raise capital by equity. This ratio in Vietnam is much higher than in Chinese (Huang & Song, 2006) (0.51). The firm's debt ratio, Book long-term debt ratio (LD) is 31.83% and the market long-term debt ratio (MLD) is 21.49%. The mean of these two ratios is not too different. It gives the same result with the Chinese firm (Huang & Song, 2006) where these two ratios are almost identical. The mean of book total debt ratio (TD) and market total debt ratio (MTD) is 39.25% and 38.39% respectively. Combined with the book's long-term debt ratio (LD), indicating that Vietnam's firms prefer using short-term debt to using long-term debt. One possible explanation for this fact is the low level of development of the bond market in Vietnam that makes harder for the firms to access long-term finance.

At the dependent variable, the size of the firm (LnS) in Vietnam is about 15.25. In general, the Size of the Vietnam firm is the same in comparison with the firms in the Southeast Asian countries (Deesomsak et al., 2004). The average return on assets is under 6.5%. It means that the Vietnam companies did not manage the business effectively. However, the mean tax rate (ETR) is about 15.42%, which is approximately the tax rate in Vietnam.

4.2. Empirical Analysis

In this section, we present the empirical results on the determinants of capital structure. A quick glance shows that collateral assets, profitability and non-debt tax shield are significantly related to firm's leverage. The coefficient of empirical result reveals that among the explanatory variables profitability and non-debt tax shield has statistically significant effects on firm's debt (Table 3).

Generally, the empirical result supports the pecking order theory hypothesis by finding that the negative relationship between firm's leverage and profitability. The results show that an increase of 1% in ROA can lead to fall from 0.3%–0.8% in MTL. However, our result is also in line with trade – off hypothesis because the total profitability is statistically and positively affected on leverage ratio of Vietnamese firms. Thereby, combined with the results of the model in Table 4, it probably leads to the fact that when firms have the larger profit, they tend to reduce debt but increase other liabilities (credit sales or other leverage).

On the relationship between collateral asset and leverage, the collateral asset is only positively correlated to MTL in OLS model, but significantly related to TL in OLS and REM model. Therefore, the result is consistent with the predictions of the theoretical studies and the result of the prior studies examining the emerging markets (Booth et al., 2001; Chen, 2004). Therefore, the result confirms the idea that the firms usually collateralize assets for debt to reduce lender's risk (Williamson, 1988) and also use tangible assets to issue security for reducing the agency cost.

Consistent with the findings of Titman and Wessels (1988), and Antoniou et al. (2008), the correlation between effective tax rate and firm's debt is not statistically significant in any leverage's measurement. Since the observed theoretical attributes are imperfect representations because of the lack of variation in the corporate tax rate in Vietnamese firms (Titman & Wessels, 1988). Furthermore, a strong positive relationship between non-debt tax shield and debt in Vietnam is found, which contradicts the trade-off hypothesis, but is in line with MacKie-Mason (1990) and Delcoure (2007). A possible explanation is

Table 3: The Empirical Result on Total Liabilities Ratios for Vietnamese Firms

Model	MTL			TL		
	OLS	REM	FEM	OLS	REM	FEM
CA	0.00102* (1.85)	0.000949 (1.37)	0.0024 (1.64)	0.00514*** (3.73)	0.00360** (2.48)	0.00191 (1.12)
ROA	–0.00823*** (–6.76)	–0.00625*** (–4.89)	–0.00380** (–2.38)	0.0538*** (17.67)	0.0143*** (7.64)	0.00896*** (4.84)
ETR	–0.000145 (–0.50)	0.0000437 (0.17)	0.000117 (0.44)	0.000794 (1.11)	0.000529* (1.66)	0.000411 (1.34)
NDTs	0.00203*** (5.73)	0.00149*** (4.26)	0.000516 (1.06)	0.0197*** (22.17)	0.0178*** (32.72)	0.0174*** (30.92)
DTA	0.00386 (0.93)	0.00876* (1.86)	0.0195*** (3.02)	0.0109 (1.05)	0.0166** (2.25)	0.0129* (1.72)
LnS	0.00154 (0.41)	0.0022 (0.43)	–0.00626 (–0.27)	0.0107 (1.14)	0.00431 (0.30)	0.0195 (0.72)
GTA	–0.0000 (–0.16)	–0.0000 (–0.15)	–0.0000 (–0.15)	0.0000 (0.17)	–0.0000 (–0.04)	–0.0000 (–0.15)
OS	–0.00263 (–0.09)	–0.00402 (–0.10)		–0.0543 (–0.77)	–0.11 (–0.78)	
Industry	0.0513* (1.92)	0.0712* (1.88)	0.149 (0.51)	0.188*** (2.81)	0.125 (1.03)	0.0459 (0.14)
_cons	0.509*** (8.22)	0.487*** (5.89)	0.51 (1.40)	0.0255 (0.16)	0.317 (1.36)	0.108 (0.26)
N	2413	2413	2413	2413	2413	2413
R^2	0.21	0.23	0.113	0.4675	0.4367	0.4132

Note: ***, ** and * indicates significant at 1%, 5% and 10% level of significance based on *t*-statistics.

Table 4: OLS Analysis Result on Over Different Measure of Leverage

Variables	Model			
	LD	TD	MLD	MTD
CA	0.0112* (1.65)	0.00355*** (5.35)	0.00455*** (9.97)	0.00203*** (6.17)
ROA	0.000467 (0.03)	–0.00527*** (–3.59)	–0.00566*** (–5.61)	–0.00855*** (–11.53)
ETR	–0.0028 (–0.79)	–0.000571* (–1.65)	0.000115 (0.48)	0.0000399 (0.23)
NDTs	0.00154 (0.35)	0.00262*** (6.13)	0.00157*** (5.35)	0.00263*** (12.22)
DT/A	–0.0205 (–0.40)	0.00881* (1.75)	–0.00015 (–0.04)	–0.00097 (–0.38)
LnS	–0.0762 (–1.64)	–0.00429 (–0.95)	–0.00204 (–0.66)	0.000721 (–0.32)
GTA	0.0000054 (0.02)	0.0000136 (0.60)	–0.00000322 (–0.21)	0.00000401 (–0.35)
OS	–0.0518 (–0.15)	–0.0508 (–1.50)	–0.00357 (–0.15)	–0.0296* (–1.73)
Industry	0.913*** (2.76)	0.0267 (0.83)	0.150*** (6.77)	0.410*** (10.90)
_cons	1.131 (1.48)	0.423*** (5.67)	0.146*** (2.85)	0.00203*** (6.17)
N	2413	2413	2413	2413
R^2	0.0060	0.054	0.086	0.121

Source: STATA 15
Note: ***, ** and * indicates significant at 1%, 5% and 10% level of significance based on *t*-statistics.

that securable assets are the major elements of non-debt tax shield, thereby the more securable assets lead to higer leverage ratio.

There are insignificant correlation between firm's size and debt ratio. Firm's size that may view as a measure of the (inverse) probability of default, it should have less influence on Vietnamese firm's leverage. Therefore, the state-owned firms also have possibly meagre chances to go bankrupt due to the fact that a large number of Vietnamese firms are owned by the state.

Table 4 shows the results of OLS analysis over different measure of firm's debt and the findings in this table is consistent with the findings of the Table 3. However, in the Table 4, the industry classification attribute is consistent with the theoretical predictions due to the significant impact on leverage firms at the 1% level. Furthermore, the result also confirms that there is no distance between state owned companies between other types of firms. Finally, the impact of growth opportunities has no significance on the debt ratio, hence we find no evidence that growth opportunities are important determinants of capital structure choice in our sample.

5. Conclusion

In this study, we have examined the determinants of capital structure in sample of 630 non – financial firms in Vietnam. As predicted by prior studies around the world, the higher proportions of collateral assets tend to have higher level of leverage ratio, though the effect is statistically significant. Besides, the profitability is the strongest and most highly significant driver of financial decisions of Vietnamese firms. Therefore, the result of this empirical study suggest that some of Vietnamese firms with a lot of fixed assets tend to use more financial leverage than firms with few fixed assets. Credit institutions in Vietnam often require collateral assets to check the liquidity of fixed assets of companies before lending. For that reason, firms with more fixed assets have better access to long-term debt. The next finding is that the profitability factor has an effect on the financial leverage. Although the two models of the dependent variable MTL and TL reflect two different ways of influencing the profitability variable on the financial leverage, we conclude that profitability has a positive relationship with debt ratios, since the empirical result on other measure of leverage also show the positive correlation. Besides, Vietnamese bank institutions consider profitability as an indicator for considerations of granting loan to firms, thus the firms with high profitability will have a higher reputation than those with lower profitability.

The result also finds that state ownership or institutional ownership has insignificant impact on the capital structure choice. This concludes that enterprises in Vietnam are all equal and there is no distinction between state-owned enterprises and private enterprises. One explanation is that Vietnamese government have followed the basic rules of market economy in terms of country specific governance. For the industry variable, we see that they have a positive effect on the financial leverage. This implies that real estate prices in Vietnam are quite high and tend to increase

over time. Businesses need a large amount of capital to buy or rent real estate to implement their projects and firm's activities, thus borrowing more capital from banks is an option to fulfil their capital needs. Finally, there is no evidence to conclude that growth opportunities are an influencing factor on the capital structure choice in the Vietnamese firms.

The study reveals that paper workings on capital structure in others countries are also relevant in the context of Vietnam. However, controlling right for most companies belong to state and transforming its economy from command economy to market economy, the tax policy factor has insignificant impact on firm's leverage in Vietnam. Therefore, further studies should focus on the impact of firm's size and tax rate on debt ratio, because almost all Vietnamese companies are small and medium enterprises, thus they would to finance their firms through external debts.

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