

# Factors Effect on Capital Structure The Case of Delisted Companies on the Vietnam Stock Market

Nguyen Vinh Khuong<sup>1,\*</sup>, Dinh Thi Thu Thao<sup>2</sup>

<sup>1</sup>*University of Economics and Law,  
Quarter 3, Linh Xuan Ward, Thu Duc Dist., Ho Chi Minh City*  
<sup>2</sup>*Nguyen Tat Thanh University, No. 300A,  
Nguyen Tat Thanh Str., Ward 13, Dist. 4, Ho Chi Minh City*

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**Abstract:** The intent of this study is to investigate the factors effect on the capital structure of companies delisted on the stock market. In the period from 2012 to 2015, 120 companies delisted on Vietnam's stock markets (HNX and HOSE). We classified the chosen companies delisted by delisting reason. We then we chose those companies delisted relating to the issue of capital. Based on data from 80 companies delisted on Vietnam stock markets using quantitative research methods, we find a correlation between the debt ratio of the firms and the proxy of firm's performance, the proxy of firm size, the liquidity ratio and return on assets. The study results have implications for investors and for managers in making decisions about optimal capital structure. The results are a basis for investors to predict the health of the companies in which they intend to invest, or delisted companies that have still the capability of developing.

*Keywords:* Capital structure, stock market, delisted firms, Vietnam.

## 1. Introduction

Firms make their decisions to get the most out of the proportion they are using of their capital. How to structure capital is the very first question that financial managers ask themselves before getting into any financial activity. Capital structure is not only concerned with discovering the right class of finance but it is more than that; it focuses on the optimal mix that should be created to maximize the shareholder's wealth. So, capital structure is characterized as the mix of debt and equity in the total capital of the firm which

entails accomplishing the overall objectives of the firm.

The conflict that arises between managers and the shareholders is as follows: shareholders assume that managers do not spend the cash in the right way, this is due to their different interests. The goal of managers is to find investments that will lead to growth of the company. More growth means more power for them, because of the increasing resources. A developing company usually means a higher compensation for managers as well. Another reward for managers when they deliver good work can be a promotion. Therefore, managers first investigate how they can increase their own wealth before thinking about the shareholder's interests. The shareholders of the company want the manager to spend money in

\* Corresponding author. Tel.: 84-935997116  
Email: khuongnguyentkt@gmail.com

such a way that they will get the highest value or dividend for their investment in the shares of the company. To let the company grow, investments must be made. Hence, managers use some of the money that can be paid as dividends for their own interest to expand the companies value [1].

While the theoretical underpinnings of capital structure suggest a negative association between financial distress costs and leverage, quantifying the impact of financial distress costs on debt ratios is difficult. Early empirical studies of capital structure use a firm's operating risk, measured as either the coefficient of variation or the standard deviation of earnings before interest and taxes (EBIT), to proxy for financial distress costs [2]. These studies find no evidence of a negative relationship between financial distress costs and leverage. Several other studies that investigate the relationship between leverage and financial distress costs do so incorporating firm size as the inverse proxy for expected financial distress costs in their empirical specification states that companies with higher growth opportunities will have a smaller amount of debt comparable to companies with low growth opportunities [3, 4, 5]. Companies find it too costly to finance projects by using debt [6]. Higher growth opportunities increase the likelihood of investing in risky or suboptimal projects. This makes it more difficult to obtain debt since it is less likely for debt providers to get their money back. Therefore, debt suppliers are not willing to lend money to companies that make over-investments [7]. When there is under-investment, the opposite happens. From the overinvestment perspective, it is expected that growth opportunities have a negative influence on leverage. This is in line with the findings in the article Gaud et al. (2007) [8], who found out that growth opportunity, has a negative influence on the leverage of European companies. The results of Chen and Jiang (2001) indicate that for Dutch companies, growth opportunities are positive influences with leverage [6].

Modigliani and Miller (1958) did extraordinary work on capital structure and in response to their theory many authors and scholars jumped into this topic and presented many theories on corporate capital structure [9]. All the theories presented by the authors linked capital-structure with firm-specific features and the institutional environment. Agency costs are a type of internal cost that arise from, or must be paid to, an agent acting on behalf of a principal. These costs arise because of core problems, such as conflicts of interest between shareholders and management. For the case in point some features and institutional environments are: tax advantages of debt [9], debt as a signal of firm's quality [10], agency cost of debt [11], use of debt to overcome the free cash flow problem [1] and use of debt as an anti-takeover device [12].

The structure of the remaining part of this paper is as follows: review of the chief theoretical and empirical studies related to the research; summary of some potential theories of capital structure; the main factors that drive the capital structure of companies; detailed discussion on sources of data and methodology adopted; results and discussions and finally, findings and conclusion of the study.

In Vietnam, in recent years, there have been several studies about the determinants of Vietnamese corporate capital structure; the issue of research for the factors affecting the capital structure of enterprises in Vietnam has attracted the attention of many authors. For example, Tran Dinh Khoi Nguyen and Ramachandran (2006) [13] studied the capital structure of small and medium enterprises in Vietnam whereas Biger Nahum, Nam V. Nguyen, and Quyen X. Hoang (2008) [14] studied the determinants of the capital structure of companies in Vietnam. Additionally, Okuda and Lai Thi Phuong Nhung (2012) [15] identified the factors affecting the debt ratio of listed companies in Vietnam while Dzung et al. (2012) studied the capital structure of listed companies on the stock market in Vietnam in the context of financial development [16].

Regarding the factors influencing corporate capital structure, the above authors typically used the following factors in their research models: firm size, tangible fixed assets, growth opportunities, profitability, liquidity, debt tax shield and tax corporate income. Other factors like business risk and interest expense have not been considered by domestic researchers yet. However, there has been no study conducted with delisted companies on Vietnam stock markets. Delisting is defined as the removal of a listed company from a stock exchange. Companies are delisted and make financial losses and reduce the confidence of the public. The number of companies delisted has increased in recent years, therefore, research on capital structure for delisted companies on Vietnam stock markets is essential.

## 2. Literature review and hypotheses

Capital structure relates to the deciding sources to finance companies' businesses. Ordinarily, at the start-up of a firm, equity is used to run the business, since equity charges no fixed cost on the firm; on the other hand, as the firm grows, debt becomes a preferred choice of a firm's capital, and in the remainder of their life cycle, debt is preferred.

In 1958, Modigliani and Miller [9] conducted research that pointed out that in an ideal world with no bankruptcy cost, a frictionless capital market and no taxes, the value of a firm does not depend on the structure of capital. Various empirical research studies have been conducted to examine Modigliani and Miller's theory, and most of them studied the relevance of capital structure on business firms. As a result, in 1963 Modigliani and Miller [17] included taxes and other market imperfections, and found that firms really can maximize their value by using debt in their operations to take advantage of the tax shield. Other authors (Bradley et al., 1984 [18]; Kraus and Litzenberger, 1976 [19]; Harris and Raviv, 1991 [20]) showed that there is an optimal capital structure of firms' financing.

There are a number of factors that settle on the capital structure of any firm. Many theories have been developed so far, enlightening the optimal capital structure. Some theories are endowed with evidence that supports the utilization of debt and some argue that equity is the best way of enhancing a firm's capital structure. Here, we will briefly review the literature that is the motivation of our research and is related to or study.

Modigliani and Miller (1958) argued that firm value was independent of firm capital structure, using debt or equity had no material effect on firm value. According to this paper, they relaxed their assumption by incorporating corporate tax benefits as determinants of the capital structure of firms [17]. They proposed that firms should employ as much debt capital as possible in order to achieve the optimal capital structure.

Some assumptions put a ceiling on Modigliani and Miller's theorem of debt peripheral nature, which does not exist in reality. When these assumptions are not taken into account, then the choice of the capital structure becomes very indispensable. Fischer et al. (1989) argued that with the passage of time corporations are inclined towards their preferred leverage range by issuing new securities and equity [21].

**Profitability (PROF):** Based on the pecking-order theory, businesses with high profitability will prefer internal financial sources rather than external ones. Specifically, the internal source of retained earnings will be used first, followed by new bonds issued. Finally, new shares will be issued as the last preferred source, if necessary. Profitability is net income before tax divided by net premium. The perceived relationship between profitability and leverage is inversely proportionate. This suggests that there exists a negative relationship between profitability and capital structure. This view is supported by many empirical studies conducted in different countries, including Booth et al. (2001) [22], Eriotis et al. (2007) [23], Faris (2010) [24], Bambang et al. (2013)

[25]. In Vietnam, the empirical studies of Tran Dinh Khoi Nguyen and Ramachandran (2006) [13], Dzung et al. (2012) [16], Okuda and Lai Thi Phuong Nhung (2012) [15],) also found a negative relationship between profitability and capital structure. According to the pecking order theory and empirical results of the previous authors, the author hypothesizes as follows:

*H1: Profitability has a negative relationship (-) with capital structure*

**Business risks (RISK):** Many theoretical studies have shown that business risk or earnings volatility is one of the factors that affects the capital structure of the business. According to the tradeoff theory of capital structure and the pecking order theory, firms with high volatility in income face greater risk in the payment of debts. This implies that firms with high earnings volatility will borrow less and prefer internal funds. Thus, a negative relationship between business risk or earnings volatility and capital structure is expected. The empirical studies supporting this view include Booth et al. (2001) [22], Fama and French (2002) [26], Jong et al. (2008) [27], Sharif et al. (2012) [28]. The author suggests the following hypothesis:

*H2: Business risks has a negative relation (-) to the capital structure*

**Firm performance (TOBINQ):** TOBINQ reflects the market value of the business. TOBINQ is measured by market capitalization over average total assets. As enterprises increasingly work well, then the value of the enterprise market grows higher. Conversely, when the signal is now operating at a loss, at once the market will reflect the value of the business. Meanwhile, the index will be smaller TOBINQ. Therefore, the independent variable TOBIN is added to the model.

*H3: Firm performance has a negative relation (-) to the capital structure*

**Firm size (SIZE):** According to the trade-off theory of capital structure, large-scale firms are generally able to get more loans than small-scale enterprises. Specifically, in order to obtain

external capital, small businesses bear higher costs than big ones due to asymmetric information. Hence, big businesses have an advantage over small businesses when accessing capital markets, which indicates that there exists a positive relationship between capital structure and company size. This view is supported by many empirical studies conducted in different countries, including Booth et al. (2001) [22], Eriotis et al. (2007) [23], Faris (2010) [24]. According to the trade-off theory of capital structure and the empirical studies' results obtained by national and international researchers, the author suggests the following hypothesis:

*H4: Firm size has a positive relation (+) to the capital structure*

**Liquidity (LIQ):** LIQ is calculated by the current ratio. Liquidity ratios measure a company's ability to pay debt obligations and its margin of safety through the calculation of metrics including the current ratio, quick ratio and operating cash flow ratio. Current liabilities are analyzed in relation to liquid assets to evaluate the coverage of short-term debts in an emergency. Bankruptcy analysts and mortgage originators use liquidity ratios to evaluate going concern issues, as liquidity measurement ratios indicate cash flow positioning. A higher liquidity ratio indicates that a company is more liquid and has better coverage of outstanding debts. This information is useful to compare the company's strategic positioning in relation to its competitors when establishing benchmark goals. Liquidity ratio analysis may not be as effective when looking across industries, as various businesses require different financing structures. Liquidity ratio analysis is less effective for comparing businesses of different sizes in different geographical locations. Therefore, for companies with a great ability to generate retained earnings, demand for external capital will not be crucial if current assets are sufficient to finance the investment. This refers to a negative relationship between liquidity and capital structure. The empirical studies

supporting this view include Eriotis et al. (2007) [23], Afza et al. (2011) [29]. However, the trade-off theory of capital structure states that firms with high liquidity generally maintain a higher debt ratio, indicating a positive relation between liquidity and capital structure. According to the pecking order theory and empirical results of the preceding authors, the author hypothesizes as follows.

*H5: Liquidity has a negative relation (-) to capital structure*

**Return on assets (ROA):** ROA is an indicator to assess the profitability of business assets. It is calculated by the formula  $ROA = \text{Profit after tax} / \text{Total Assets}$ . The index shows a property contract could create many profitable contracts. Profit is the ultimate goal of the company and is a basis for investors to assess the performance of the business. However, to assess the profitability of each business, and make comparisons between businesses, there is a need to compare profit with other indicators such as total assets, equity or revenue. ROA is an important financial indicator to assess this aspect. From the comparison between years ROA, corporate managers will assess the performance of the entire enterprise, shrinking investments that are inefficient or ineffective, and avoiding spreading investment inefficiency causing a loss of capital resulting in insolvency affecting the whole social economy. If the enterprise's ROA is low, this will of course, affect the ability to pay debts and increase the risk of falling into bankruptcy. Thus the ROA is an independent variable in nature in the same way as the dependent variable.

*H6: ROA has a negative relation (-) to capital structure*

The mixed results among the empirical results encourage us to use both short-term debt and long-term debt, with the total debt as capital structure. However, the study would be lacking if it did not include other factors such as profitability, business risks, firm performance, firm size, liquidity, return on assets effect on capital structure.

### 3. Data and variables

#### 3.1. Sample description

In this study, the data set includes 80 companies delisted on the Vietnamese stock markets (HNX and HOSE) in the period from 2012 to 2015. For 80 companies, collected data consists of balance sheets and income statements. Following the above sample selection process, a total of 192 observations were collected.

#### 3.2. Variables

Our dependent variable is the debt ratio. It is used as the main measure of capital structure which is defined as the ratio of total debt divided by the total assets of the firm.

$$LEV = \text{Total debt} / \text{Total assets}$$

In this study, on the basis of previous studies, six independent variables are used: profitability, business risk, firm performance, firm size, liquidity and ROA. As far as independent variables are concerned, we have selected several proxies that appear in the empirical literature.

$$PROF = \text{Earnings before Interest and Tax} / \text{Total revenue}$$

$$RISK = \text{Interest Payments} / \text{Earnings before Interest and Tax}$$

$$TOBINQ = \text{Market capitalization} / \text{Average Total assets}$$

$$SIZE = \text{Natural logarithm of total assets}$$

$$LIQ = \text{Current Assets} / \text{Current Liabilities}$$

$$ROA = \text{Retain Earnings} / \text{Total Assets}$$

### 4. Research methodologies

Since the sample contains data across firms and at different times, the cross-sectional method is employed. The analysis process follows two stages. In the first stage, we conduct regressions of all determinants related to a firm's characteristics (profitability,

business risks, firm performance, firm size, liquidity, return on assets) on capital structure. In the second stage, we add a dummy variable (DUM) to evaluate the differences in the capital structure and its determinants between (LEV ≤ 57.39%) and (LEV > 57.39%).

These regression models can be specified as follows:

4.1. Research model

- Model 1 is applicable to companies delisted on VN market stock:

$$LEV_{i,t} = \alpha + \beta_1 PROF_{i,t} + \beta_2 RISK_{i,t} + \beta_3 TOBINQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 ROA_{i,t} + \epsilon_{i,t}$$

- Model 2 is applicable to evaluate the differences about the capital structure (LEV > 57.39%):

$$LEV_{i,t} = \alpha + \beta_1 PROF_{i,t} + \beta_2 RISK_{i,t} + \beta_3 TOBINQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 ROA_{i,t} + DUM_{i,t} + \epsilon_{i,t}$$

- Model 3 is applicable to evaluate the differences about the capital structure (LEV ≤ 57.39%):

$$LEV_{i,t} = \alpha + \beta_1 PROF_{i,t} + \beta_2 RISK_{i,t} + \beta_3 TOBINQ_{i,t} + \beta_4 SIZE_{i,t} + \beta_5 LIQ_{i,t} + \beta_6 ROA_{i,t} + DUM_{i,t} + \epsilon_{i,t}$$

5. Results

5.1. The reality of the companies delisted in the Vietnam stock markets

The number of companies delisted has increased in recent years. Specifically, calculated from 2012 to 06/30/2015, the number of delisted companies is 120 of which 78 companies were delisted on the HNX and 42 companies on the HOSE for much different reasons (follow on the website: www.hnx.vn, www.hsx.vn) (Table 2).

Table 1. Proxies, Expected relationship and supported theories

No.	Independent variables		Hypothesis	Theories
	Name	Sign		
1	Profitability	PROF	(-)	Bankruptcy cost, trade off theory, pecking order theory
2	Business risks	RISK	(-)	Agency theory, bankruptcy cost
3	Firm performance	TOBINQ	(-)	Agency theory, market timing theory
4	Firm size	SIZE	(+)	Agency cost of debt, bankruptcy cost
5	Liquidity	LIQ	(-)	Free cash flow theory, agency cost of debt, trade off theory
6	Return on assets	ROA	(-)	Agency theory

Source: Adapted from: Deesomsak et al. (2004) [7]

Table 2. Statistics of the company delisted each year

Year	2012	2013	2014	Total
Number companies delisted	18	46	32	96

Source: Authors statistics from Vietnam's stock market

## 5.2. Results

Table 3. Descriptive statistics of sample variables

Variable	Obs	Mean	Std.Dev	Min	Max
LEV	192	0.7635938	0.3495294	0.04	2.69
PROF	192	-0.9375	2.398223	-11.75	28.25
RISK	192	0.6683333	11.12382	-21.01	121.51
TOBINQ	192	0.1730729	0.4786712	0	6.35
SIZE	192	26.32849	1.216191	23.46	29.38
LIQ	192	1.386146	2.133767	0.1	18.13
ROA	192	-0.1059896	0.2107555	-2.21	0.14

Source: Descriptive statistics with STATA.

The mean of the variable explains the average total debt with respect to total assets of the companies in the sample of this study. From Table 3 it also can be stated that companies in this study use a maximum of 269% of total debt to finance the companies' assets. The results of the variable non-debt tax shield are a little bit higher than the mean of 0,026 and 0,028 of De Jong (2002), which indicates that companies in this sample use more depreciation and amortization with regard to total assets. Companies in this study make less use of tangible assets in comparison with the article of De Jong (2002), who found that the mean is 0,556 and median is 0,586. Deesomak et al. (2004) used the same method to measure volatility as this study, but they used data from companies from Asia (Table 4).

To test the correlation between the variables, the Pearson correlation coefficient was used. With this test how variables move from each other has been measured. The correlations between the variables in Table 4, gives a first indication of the sign and the influence of the variables in determining leverage. The correlation of -0.05 for profit and leverage indicates that there is a negative relation between the variables. The same applies for the TOBINQ, LIQ and ROA with a correlation of -0.1668, -0,4878 and -0,6151. Firm size and leverage are positively correlated, with a correlation of 0.4186. The same applies for the RISK with a correlation of 0.0169 (Table 5).

Table 4. Pearson correlation coefficient matrix

	LEV	PROF	RISK	TOBINQ	SIZE	LIQ	SIZE
LEV	1.0000						
PROF	-0.0500	1.0000					
RISK	0.0169	0.0095	1.0000				
TOBINQ	-0.1668	0.0070	-0.0173	1.0000			
SIZE	0.4186	0.0099	0.0449	0.0053	1.0000		
LIQ	-0.4878	0.0133	-0.0174	0.1477	-0.2554	1.0000	
ROA	-0.6151	0.2094	0.0465	0.0818	-0.0297	0.1422	1.0000

Source: Pearson correlation with STATA.

Table 5. The regression results of model 1 (Pooled OLS)

Independent variables	Coef.	P> t
PROF	0.0103136	0.114
TOBINQ	*-0.0555263	0.087
SIZE	***0.092262	0.000
LIQ	***-0.0515206	0.000
ROA	***-0.9443178	0.000
CONS	***-1.682591	0.000
Observations	192	
R-squared	63.77%	
P_Value > $X^2 = 0.0000$ ***		

Source: Regression with STATA.

Table 6. The regression results of model 2- (LEV &gt; 57.39%)

Independent variables	Coef.	P> t
PROF	**0.0032961	0.023
TOBINQ	** -0.025756	0.016
SIZE	***0.0409082	0.001
LIQ	***-0.0879829	0.000
ROA	***-0.8482399	0.000
CONS	-2.009464	0.534
Observations	137	
R-squared	67.13%	
P_Value > $X^2 = 0.0000$ ***		

Source: Regression with STATA.

Table 7. The regression results of model 3- (LEV ≤ 57.39%)

Independent variables	Coef.	P> t
PROF	***0.0409525	0.004
SIZE	***0.1033748	0.004
LIQ	** -0.0123674	0.035
ROA	***-1.488746	0.001
CONS	** -2.297706	0.011
Observations	55	
R-squared	72.13%	
P_Value > $X^2 = 0.0000$ ***		

Source: Regression with STATA.

*For firm performance (TOBINQ)* has a negative sign relationship with a leverage ratio and is statistically significant at 10%, specifically, it supports hypothesis *H3: Firm performance has a negative relation (-) to the capital structure*. As the stock market in Vietnam has low trading, that way relies more on the debt and the companies can meet problems. And if these companies cannot earn

more, then a rise in interest payments may result in bankruptcy.

*For firm size (SIZE)*, the variable of size also bears a positive relationship with the leverage ratio and is statistically significant at 1%., Specifically it supports hypothesis *H4: Firm size has a positive relation (+) to the capital structure*. The result shows that a larger

size by assets will lead to higher financial leverage, which is relevant to Trade-off theory and the experimental research findings by Booth et al. (2001) [22], Eriotis et al. (2007) [23], Tran Dinh Khoi Nguyen and Ramachandran (2006) [13]. According to trade off theory, large firms may rely more on debt as they can diversify their risk and enjoy tax shield benefits. Though trade-off theory suggests benefits, it also predicts adverse factors such as the cost of bankruptcy, arguing that benefits of lower debt is the same as a rising in the debt level.

**For liquidity (LIQ)**, regression coefficients of this variable are negative and statistically significant at 1%. Specifically, this supports hypothesis *H5: Liquidity has a negative relation (-) to capital structure*. This negative relation is agreed by the author to fit in the context of the companies delisted in Vietnam, because of their capital structure characterized by the large proportion of short-term or working capital over the total capital.

**For return on assets (ROA)**, regression coefficients of this variable are negative (-0.9443) and statistically significant at 1%, specifically. This supports hypothesis *H6: ROA has a negative relation (-) to capital structure*.

## 6. Conclusion

In this study, we conducted our analysis in order to investigate how some specific firm characteristics determine a firm's capital structure. We use the data of the financial statements of 80 companies delisted on the Vietnamese stock exchanges during 2012-2015.

According to the results, there is a negative relation between the debt ratio of the firms and their firm performance, their liquidity ratio and their return on assets. Size appears to maintain a positive relation. The variable non-debt tax shield is the most important factor, which is measured for the trade-off theory. The other variables are significant and do influence the amount of leverage. Many researchers also use firm size to test trade-off theory, because bigger

firms are more stable and it is less risky for them to borrow debt. Therefore, the result for firm size confirmed the trade-off theory.

This research contributes to the existing literature by adding evidence for some important factors in determining the capital structure. As mentioned before, research on the capital structure using data of Vietnamese delisted companies is scarce. The results contribute due to the most recent data that has been used in comparison with other studies on Vietnam firms.

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