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Capital Structure and Changes of Capital Structure: A Case Study of Listed Vietnam Non-Financial Companies

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Abstract
Capital structure and capital structure change are important issues in corporate financial management. Changes in capital structure are important information reflecting the situation of enterprises. The article focuses on assessing the capital structure and capital structure change of listed companies in Vietnam through data collected from the financial statements of 50 non-financial companies for the period 2018–2022. The analysis results show that capital structure change is strongest at the beginning of the period, then the level of change gradually decreases, concentrating more clearly towards the end of the period. Companies listed on the Hanoi Stock Exchange tend to increase their debt ratio, while companies listed on the Ho Chi Minh Stock Exchange tend to decrease their debt ratio.

Keywords: Capital Structure, Capital Structure Change, Listed Non-Financial Companies

1. Introduction
The goal of the business when doing business is to maximize the value of the business – to maximize the value of the owner's assets. According to Do (2018), to realize this goal, enterprises need to take many measures, of which the selection of a reasonable and optimal capital structure is one of the most important and necessary. This is the basis for making correct decisions. Capital structure is the combination of liabilities and equity that a business uses to finance its assets, day-to-day operations, and investment projects. Enterprises that want to survive, develop, or surpass their competitors need to maximize the strength and financial capacity of the business itself. The optimal capital structure will contribute to minimizing the cost of capital and increasing the value of the business. Building a reasonable capital structure is also a way for businesses to maximize their financial strength.

2. Theoretical Background and Research Overview
2.1 Theoretical Basis
Modigliani and Miller (M&M) theory of capital structure, this is the starting theory for capital structure studies proposed by Franco Modigliani and Merton Miller in 1958. Research theory on the relationship between capital structure and enterprise value with two assumptions: an environment without corporate income tax in 1958 and an environment with corporate income tax in 1963. Research in 1958 concluded that in a tax-free environment, capital structure has no effect on firm value. In 1963, the theory of Modigliani and Miller concluded that in a corporate income tax environment, when a firm uses debt, the value of the business will increase thanks to the savings from debt. Because debt will generate interest expense and this expense is tax deductible before the business calculates corporate income tax, creating a tax shield for the business. This shows that the value of the firm is influenced by capital structure in a taxed environment.
The Trade-Off Theory Of Capital Structure, first developed by Kraus *et al*. (1973), concludes that the benefits of tax shields will be offset by the losses if bankruptcy occurs. Bradley *et al*. (1984) also concluded that the value of a firm is negatively related to the costs associated with an increasing capital structure.
The pecking order theory was developed by Donaldson in 1961. The theory solved one of the irrational assumptions in M&M theory. Accordingly, the capital market is a perfect market, there is no asymmetric information phenomenon. After that, pecking order theory continued to be developed by S. C. Myers (1984), based on the analysis of asymmetric information affecting the investment and financing decisions of enterprises. Through research, S. C. Myers and Majluf (1984) drew conclusions about the classification of capital types, in which retained earnings are better than debt and debt is better than equity. Therefore, managers will often prioritize using retained earnings over internal capital. If this capital is still not enough,

the management will prioritize using capital financing through loans with fixed interest rates so as not to have to share profits with new shareholders. Issuing common shares using capital from new owners is the last choice of managers when looking for project funding. In addition, pecking order theory also indicates that there is no well-defined target equity and debt mix. S. C. Myers and Majluf (1984) argue that because equity includes both retained earnings and the issuance of new shares, it is difficult to determine the optimal capital structure.

The market timing theory of Baker and Wurgler (2002) has shown that the market timing theory best explains the state of capital structure of firms. At the same time, it shows that fluctuations in the market price of shares will significantly affect the capital structure of the enterprise. Firms with low financial leverage tend to raise capital when their valuations are high, and conversely, firms with high financial leverage tend to raise capital when their valuations are low. At the same time, the study also concluded that there is no optimal capital structure. The formation of the capital structure of the enterprise is a consequence of the decisions of the management to change the capital structure of the enterprise at the time of its market value.

2.2 Research Overview

Capital structure refers to the proportion of debt and/or equity in a business or corporation to finance its operations and assets. Capital structure is often expressed as a debt-to-equity ratio or a debt-to-total assets ratio.

In capital structure studies, capital structure is mainly reflected in the ratio of total debt to total assets of the company. This is considered the best measure, reflecting corporate sponsorship (Thies & Klock, 1992) [12]. However, the capital structure is the long-term structure of the business, which is also reflected by the ratio of long-term debt to equity. In recent studies by Mai, Y., Meng *et al*. (2017) [8], and Alnori & Alqahtani (2019) [1], the capital structure of the company is determined, including the capital structure according to market value and book value.

Capital structure and capital structure decisions have an important impact on businesses from many different perspectives. Since the research of Modigliani & Miller (1958) [9], there have been many studies on the capital structure of the enterprise made with many different approaches and methods. Later studies have supplemented, updated, and developed more than the background research of Modigliani & Miller (1958) [9]. Most of the studies are aimed at assessing, testing, or corroborating the impact of capital structure on firm performance, profitability, enterprise value, or risk level. Besides, factors affecting the capital structure of the enterprise and adjusting the capital structure of the enterprise are also interesting research directions. This is a testament to the importance of capital structure decisions for businesses. Accordingly, the change in capital structure due to proactive management decisions of enterprises or other influencing variables is an issue that needs attention in financial management and in the study of corporate financial management.

Regarding corporate capital structure change, first of all, in Shah's (1994) [11] study, capital structure change is determined by comparing the capital structure (leverage, debt ratio) at the end of each research year with the capital structure at the end of consecutive years. The change in capital structure from Shah's study is statistically significant in the research models used. The conclusions about changes in capital structure, rapid and slow in the study of Shah (1994) [11] serve as the basis for later studies on changes in capital structure of enterprises. Accordingly, statistically, the change in capital structure, determined for a particular period, is the change in the ending value to the beginning value of the debt ratio. A high value indicates a rapid change or a strong change, whereas a low value indicates a low or slow change. Capital structure changes are determined on a yearly or quarterly basis. In previous studies, capital structure was determined at the end of the year, and change was usually determined for a 1-year period; however, in reality, there can be much variation over a one-year period. Thus, quarterly capital structure change determination can also be identified and included in the analysis of studies related to capital structure and capital structure change.

In a very early study of capital structure change by Dann, L. Y., and Mikkelson, W. H. (1984), based on initial observations, the authors hypothesized a relationship between the sign of capital structure change (change in financial leverage) and other financial information about the enterprise. However, experimental results are not enough to prove this relationship. However, the problem posed by Dann and Mikkelson is also suggestive for further observations and empirical studies to test on a larger scale and in a newer context the hypothesis of the relationship between capital structure changes and the ability to reflect the financial position of enterprises in general and the valuation of convertible debt issuance in particular. Later, Shah's study added conclusions to show that changes in the capital structure of the business are meaningful to reflect information about the situation of the business and that changes in the firm's financial leverage towards an increase or decrease effectively convey information about the business. Shah also emphasized that increasing leverage and decreasing leverage convey qualitatively different information. Proposals to increase leverage appear to reduce investors' assessment of risk to the company's common stock, but are unlikely to change their expectations for cash flow. Proposals to reduce leverage appear to reduce investors' expected cash flows, but do not appear to change their assessment of risk.

3. Research Data and Methods

3.1 Research Data

Research data is collected from 50 non-financial companies listed on two stock exchanges, based on financial statements, annual reports of companies published on the website https://finance.vietstock.vn from 2018 to 2022. The research sample includes 16 joint stock companies listed on the Hanoi Stock Exchange (HNX) and 34 companies listed on the Ho Chi Minh Stock Exchange (HOSE). In which, there are 13 listed companies in the industry (IN), 2 companies in the real estate industry (RE), 2 companies in the mining, oil and gas industry (GAS), 6 companies in the food industry (FO), 9 companies in the construction materials industry (CM), 5 companies in the group of materials industry (MA), 4 companies in the construction industry group (CON), 2 companies in the medical sector (ME).

Table 1: List of listed non-financial companies randomly selected

S. No	Stock	Company	Stock Exchange	Branch
1	AAA	An Phat Bioplastics JSC	HOSE	IN
2	ACL	Cuu Long Fish Joint Stock Company	HOSE	IN
3	AGM	An Giang Import - Export Company	HOSE	IN
4	ANV	Nam Viet Corporation	HOSE	IN
5	ASM	Sao Mai Group Corporation	HOSE	RE
6	BBC	Bibica Corporation	HOSE	IN
7	BCC	Bim Son Cement JSC	HNX	CM
8	BCM	Investment And Industrial Development Corporation	HOSE	IN
9	BTS	Vicem But Son Cement JSC	HNX	IN
10	CAN	Ha Long Canned Food Joint Stock Corporation	HNX	FO
11	DMC	Domesco Medical Import Export Joint Stock Corporation	HOSE	ME
12	DNM	Danameco Medical Joint Stock Corporation	HNX	CM
13	DQC	Dien Quang Group Joint Stock Company	HOSE	IN
14	DRC	Danang Rubber Joint Stock Company	HOSE	IN
15	EMC	Thu Duc Electro Mechanical Joint Stock Company	HOSE	IN
16	FPT	FPT Corporation	HOSE	IN
17	GDT	Duc Thanh Wood Processing Joint Stock Company	HOSE	IN
18	GEX	GELEX Group JSC	HOSE	IN
19	GKM	Khang Minh Group Joint Stock Company	HNX	CM
20	GTN	GTNFoods JSC	HOSE	FO
21	HAG	Hoang Anh Gia Lai Joint Stock Company	HOSE	IN
22	HMH	Hai Minh Corporation	HOSE	MA
23	HPG	Hoa Phat Group JSC	HOSE	IN
24	HT1	Vicem Ha Tien Cement Joint Stock Company	HOSE	CM
25	HVN	Vietnam Airlines JSC	HOSE	MA
26	KDH	Khang Dien House Trading and Investment JSC	HOSE	RE
27	MLS	Mitraco Livestock Joint Stock Company	HNX	IN
28	MSN	Masan Group Corporation	HOSE	FO
29	NCT	Noi Bai Cargo Terminal Service Joint Stock Company	HOSE	MA
30	NET	NET Detergent Joint Stock Company	HNX	IN
31	NTP	Tien Phong Plastic Joint Stock Company	HNX	CM
32	PNJ	Phu Nhuan Jewelry Joint Stock Company	HOSE	IN
33	PTB	Phu Tai Joint Stock Company	HOSE	IN
34	QNC	Quang Ninh Construction & Cement Joint Stock Company	HNX	CM
35	RAL	Rangdong Light Source And Vacuum Flask JSC	HOSE	IN
36	SC5	Construction JSC No 5	HOSE	CON
37	SD5	Song Da No 5 JSC	HNX	CON
38	SDT	Song Da No 10 JSC	HNX	CON
39	SMC	SMC Trading Investment Joint Stock Company	HOSE	IN
40	SMN	South books and Educational Equipment JSC	HNX	IN
41	TAC	TuongAn Vegetable Oil Joint Stock Company	HOSE	FO
42	TCL	Tan Cang Logistics & Stevedoring Joint Stock Company	HOSE	MA
43	TCS	Vinacomin - Cao Son Coal JSC	HNX	GAS
44	THT	Vinacomin - Ha Tu Coal JSC	HNX	GAS
45	TRA	Traphaco Joint Stock Company	HOSE	ME
46	TTC	Thanh Thanh Joint Stock Company	HOSE	CM
47	TTL	Thang Long Joint Stock Corporation	HNX	CON
48	VCX	Yen Binh Cement JSC	HNX	CM
49	VNS	VietNam Sun Copporation	HOSE	MA
50	VPD	Vietnam Power Development Joint Stock Company	HOSE	IN

Source: Compiled by the author's team

3.2 Research Methods

The research methods used in this article include both qualitative and quantitative research methods.

The qualitative method was formed in the research through document survey, survey through previous studies on capital structure, capital structure change of enterprises.

Quantitative method is performed by collecting secondary data from 50 non-financial companies listed on the Hanoi Stock Exchange (HNX) and Ho Chi Minh City Stock Exchange (HOSE), based on on financial statements, annual reports of companies published on website https://finance.vietstock.vn. Through the relevant data for 5 years of 50 companies processed by data analysis application STATA14.

4. Research results

4.1 Capital Structure of Listed Non-Financial Companies

According to Thies & Klock (1992) [12], a firm's capital structure is the ratio of debt to total assets - this is the best measure of corporate capital structure. On the basis of this approach, from the list of companies listed on the Hanoi Stock Exchange and the Ho Chi Minh City Stock Exchange, the authors randomly select non-financial companies listed in a list of enough information for at least 5 years (2018 - 2022) to analyze and evaluate the current situation of capital structure changes. Description of the analysis sample of structure by listing place and by industry as shown in Table 2.

Table 2: Structure by listing place and by industry of the analyzed sample

Stock Exchange	Freq.	Percent	Cum.
HNX	80	36.62	36.62
HOSE	170	63.38	100.00
Total	250	100.00	
Branch	**Freq.**	**Percent**	**Cum.**
RE	10	4.23	4.23
IN	110	50.70	54.93
GAS	10	2.82	57.75
FO	10	12.68	70.42
INF	10	2.82	73.24
CM	40	8.45	81.69
MA	25	7.04	88.73
CON	20	5.63	94.37
ME	15	5.63	100.00
Total	250	100.00	

Source: Compiled by the author's team using STATA14

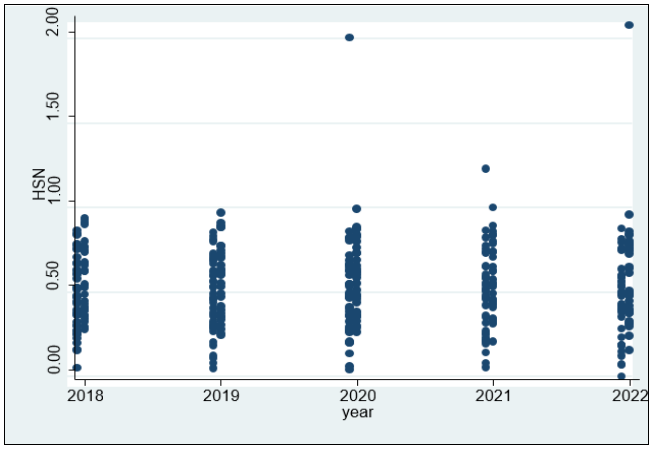
According to Table 2, out of 50 companies (250 observations over 5 years) 36.62% are listed companies on Hanoi Stock Exchange (16 companies) and 63.38% of companies listed on Ho Chi Minh City Stock Exchange (34 companies). In which, the most listed companies are Industry (IN) with 50.70% of the total 50 listed companies selectedat least the companies listed in the Information and Communication (INF) industry account for 2.82%. Descriptive statistical results on some basic parameters: total assets, liabilities, equity, revenue, profit and Ratio Debts of 50 companies over 5 years are presented in Table 3.

Table 3: Descriptive statistics of some basic parameters

Indicator	Obs	Mean	Std. Dev.	Min	Max
Assets	250	7240.115	16480.85	8	106794
Liabilities	250	4073.985	11109.52	.7	81472
Equity	250	3058.886	6721.452	-5252.6	47787
Revenue	250	7003.141	14705.38	1	98228
Profit	250	6466.553	1718.61	-1809	10554
Ratio Debts	***250***	***.5109436***	***.2477345***	***.0002652***	***2.039124***

Source: Compiled by the author's team using STATA14

To better understand the capital structure of the companies in the analysis list, the results shown in the chart in Figure 1 show that most of the companies in the list have a debt ratio value lower than 1, the number of Firms with a debt ratio greater than 1 are very few (3 observations corresponding to 3 time points).



Source: Compiled by the author's team using STATA14

Fig 1: Debt ratios of 50 companies in the period 2018 - 2022

Out of a group of 50 companies randomly selected for analysis, 16 companies are listed on the Hanoi Stock Exchange and 34 companies are listed on the Ho Chi Minh City Stock Exchange. Large enterprises are listed on the Ho Chi Minh City Stock Exchange, while small and medium-sized enterprises are listed on the Hanoi Stock Exchange, therefore, in order to better assess the capital structure of listed companies, it is possible to compare groups of companies in the two stock exchanges. The results of descriptive statistics on the capital structure of the two groups of companies are shown in Table 4.

Table 4: Comparison of the results of descriptive statistical analysis of the capital structure of the group of listed companies by place of listing

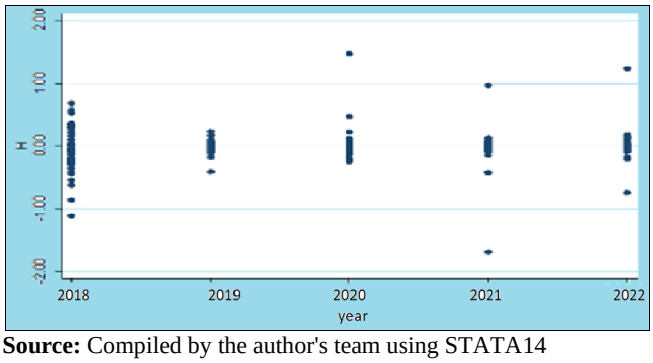
Stock Exchange	Variable	Obs	Mean	Std. Dev.	Min	Max
HNX	HSN	80	.6275096	.2456959	.114534	2.039124
HOSE	HSN	170	.4435943	.2231228	.0002652	2.005587

Source: Compiled by the author's team using STATA14

From the results presented in Table 4, it can be seen that the group of companies on the HNX has a higher average value of the Debt Ratio than the group of companies on the HoSE (0.6275 vs. 0.4435); however, when compared Comparing the Min-Max value, we find that the range of the debt ratio of the group of companies on the Hanoi Stock Exchange is narrower while the dispersion (or volatility of the debt ratio) is higher. This result can initially indicate that the level of debt use in the capital structure of the group of companies on the HNX is higher than that of the group of companies on the HoSE. This can be the basis for conducting information assessment tests: the group of large-scale listed companies (on the HoSE) has a lower level of debt use than the group of small and medium-sized listed companies (on the HNX). However, the difference in sample size between the two groups of listed companies as well as the representativeness of the two groups is not high, so it is difficult to draw reliable conclusions with the data set from two current groups.

4.2 Changes in Capital Structure of Listed Non-Financial Companies

Regarding the change in capital structure of the group of companies within the scope of the study, with the approach of change as the difference in the value of the debt ratio (or debt-to-total assets ratio) at the end of the year compared with the value at the beginning of the year. The summary results of the change in capital structure of 50 non-financial companies listed in the selected list are summarized in Fig 2.



Source: Compiled by the author's team using STATA14

Fig 2: Change in capital structure of 50 listed companies in the period 2018-2022

From the reflection in the graph of the change in capital structure of the group of 50 listed non-financial companies in the period of 2018 -2022, it can be seen that 2018 is the year with the strongest dispersion change. That is also the year of the companies on the list with the strongest capital structure changes. Meanwhile, in the years from 2019 to 2021, the degree of change is lower, the concentration of change is also more obvious.

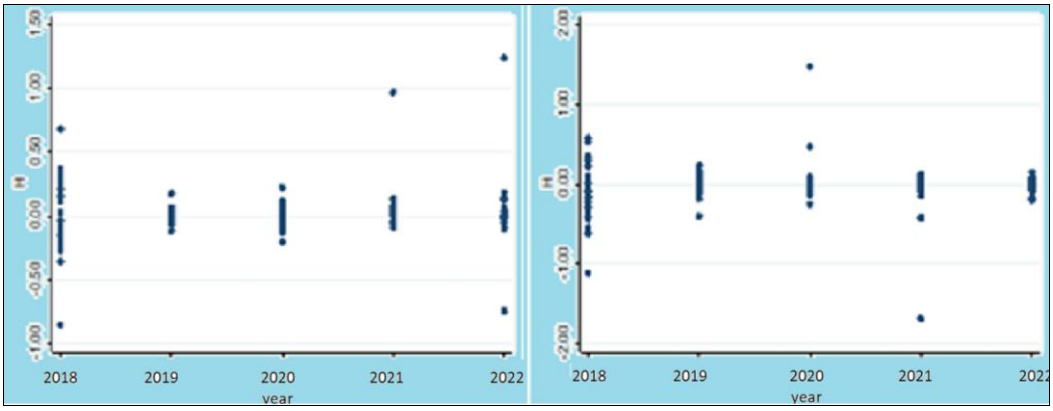
The results of descriptive statistical analysis on the change in capital structure of 50 companies and two groups of companies by place of listing are presented in Table 5.

Table 5: Statistical analysis results describing changes in capital structure of listed companies overall and by place of listing

	Obs	Mean	Std. Dev.	Min	Max
N	250	-.0068736	.2144361	-1.690369	1.477921
HNX	80	.0214995	.2104569	-.8553922	1.24134
HoSE	170	-.0232669	.2154639	-1.690369	1.477921

Source: Compiled by the author's team using STATA14

According to the results presented in Table 5, the average change of capital structure in the period 2018-2022 of 50 non-financial companies listed in the selection list is around -0.0068736. Accordingly, the general trend of this period is that companies have capital structures that change in the direction of reducing debt ratio. Among these, the descriptive statistics of each group of companies by listing place shows that the group of companies listed on the HNX has a general tendency to increase the debt ratio, the value of which varies from -0.8553922 to 1.24134 while the group of companies listed on HoSE tends to reduce debt ratio (average value -0.0232669), the change ranges from -1.690369 to 1.477921. Through this, it can be seen that in the observation range, the group of companies listed on the HNX has a more concentrated distribution, while the group of companies listed on the HoSE has a more dispersed change in capital structure. This statement is also expressed by comparing the standard deviation of the change in the debt ratio (or debt ratio) between the two groups. In addition, the results shown in the graph in Figure 3 also clearly show the difference between the two groups of companies.



Source: Compiled by the author's team using STATA14

Fig 3: Comparison of changes in capital structure of listed companies by place of listing in the period of 2018 -2022

From the results of analyzing the current situation of capital structure and the degree of change in capital structure of listed companies with two groups of companies in the period of 2018 -2022, it can be generalized into the following general assessments:

Firstly, changes in capital structure of listed non-financial companies are uneven over the years, with the strongest and most uneven changes in 2018. This is also the year that Vietnam accelerates the process of negotiating and signing economic agreements and implementing strategies to promote national economic development. Therefore, this can be considered as the year that Vietnamese enterprises in general expect positive opportunities in growth and development.

Second, there is a relatively clear difference in the change in capital structure of listed companies by the two groups. In which, companies listed on HNX have a lower and more uniform change. However, the number of listed companies included in the analysis is not large enough to make a highly representative general statement..

Thirdly, companies listed on HoSE have more complex capital structure changes than companies listed on HNX, the fluctuation range of change is also stronger, the difference between the lowest value and the price. The relatively large peak value combined with a fairly high standard deviation of volatility shows that in the first year of the study period, the rate of dispersion change is strongest. The following years are gradually and most stable in 2019.

Fourth, the initial assessment that can be made is that there is a relatively clear difference in the level of capital structure change of the two groups of companies listed on the two stock exchanges, in which the companies listed on the HoSE more volatile and complex than companies listed on the HSX. Moreover, it is customary for large companies to list and trade on HoSE while small and medium-sized companies are listed on HNX. Therefore, it is possible to make an initial guess that there is a difference in the rate of change of capital structure when grouping listed companies by operating size and operating diversity.

5. Conclusion

From the results of synthesis, analysis, and evaluation of the capital structure and change of the capital structure of non-financial companies listed on Vietnam's stock market in the period of 2018–2022, it can be seen that the degree of structural change is inherently divergent. These are the initial observations as a basis for proposing research directions to re-test and confirm the concluding assessments on capital structure change and search for factors affecting the rate of change.

However, because the sample size is still relatively narrow compared to the number of listed companies, the statements are not representative enough and may not be reliable when conducting research and generalizing conclusions for all listed companies in Vietnam. That is the next direction of implementation to complete the evaluation studies on capital structure changes as well as the factors affecting the rate of capital structure change for listed companies.

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