

Factors Affecting the Capital Structure of Companies in the Industry, Agriculture, and Services Listed on the Vietnamese Stock Market



Do Thi Kim Tien

National Academy of Public Administration, Hanoi, Vietnam

ABSTRACT: The study collects data from 75 industrial, agricultural, and service companies listed on the two stock exchanges HOSE and HNX in the period from 2020 to 2023. At the same time, the study uses Hausman and Breusch, and Pagan Lagrangian multiplier tests to select the model that best explains the factors affecting capital structure. The research results show that corporate income tax rate and revenue growth rate have a positive impact on the debt ratio, while the profitability ratio and operating risk of the company are negatively correlated with the debt ratio. Other factors such as tangible assets and company size have an impact on the choice of a firm's capital structure but are not statistically significant.

KEYWORDS: capital structure, industry, agriculture and services, stock market.

1. INTRODUCTION

Capital is one of the prerequisite factors determining the existence and development of all types of businesses - an important economic potential to ensure the business operations of a company. Therefore, building an optimal capital structure is what company managers always want. In the current process of international economic integration deepening, the problem of choosing a reasonable financing structure between equity and debt to maximize the company's value is not an easy problem for businesses. How to find an optimal capital structure is also a very necessary issue at the moment, because each industry has its characteristics, so the capital structure also has different features. Therefore, the problem of studying capital structure has long been of interest to economic researchers. For example, the trade-off theory of capital structure proposes the construction of capital structure based on the idea of balancing the benefits and costs of using debt. Because, the use of debt has advantages such as leverage, which increases income for owners and firm value, and low cost of capital, but conversely, high debt use increases interest expense and financial distress costs. Or Myer's pecking order theory (1984) is based on the asymmetry problem that managers prefer to finance investment opportunities using three sources: that is, through the company's retained earnings, followed by debt, and choose equity financing as the last option. Besides, there are many experimental studies in countries around the world, as well as in Vietnam. On the other hand, industry, agriculture, and services are identified as one of Vietnam's key economic sectors, contributing to 45.33% of the country's GDP and 25.7% of Vietnam's agricultural GDP. However, the industry is still facing certain difficulties. Therefore, the objective of this study is to clarify the factors affecting the capital structure of industrial, agricultural, and service companies listed on Vietnam's stock market, to contribute to improving the efficiency of capital structure planning of these companies.

2. OVERVIEW OF RELEVANT EMPIRICAL STUDIES

Le Tham Duong et al (2020), have a study on the factors affecting the capital structure of enterprises in the food industry on the stock market. The study uses financial statement data from 52 food companies listed on the Vietnamese stock market from 2011 to 2018 using the GLS method. The research results show that the profitability of food businesses, the ratio of fixed assets to total assets, and the number of years of operation have a negative influence on the capital structure. In contrast, size and growth rate are two factors that have a positive influence on capital structure. In addition, the corporate income tax rate does not affect the capital structure decision of food businesses. Through the research, the authors propose recommendations for food business managers to build an effective capital structure.

Factors Affecting the Capital Structure of Companies in the Industry, Agriculture, and Services Listed on the Vietnamese Stock Market

Khaki, A. R., & Akin, A. (2020) has a research paper that identifies the determinants of capital structure construction in countries in the GCC Gulf including specific countries such as Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the United Arab Emirates. In the study, the author uses unbalanced panel data from 329 non-financial companies in the GCC Gulf countries from 2009 to 2017. The study uses 3 regression models: Pooled Ordinary Least Square (Pooled OLS), Fixed effects model (FEM), and Random effects model (REM) with panel data. In addition, we use tests (Hausman and Breusch and Pagan Lagrangian multiplier) to choose the model that best explains the factors affecting capital structure. The study also analyzes whether there are differences in the key determinants of structural capital across countries in the GCC Gulf. The results show that size, tangible assets, and revenue growth opportunities have a positive effect on a company's debt ratio.

On the other hand, profitability, liquidity, company years, dividends, and government ownership have negative effects on debt ratios in the country-by-country model and the all-country sample. In contrast, tangible assets, revenue growth, and operational risk are positively correlated with debt ratio. The results also imply the country's characteristics of capital structure choice. Le Quang Dinh et al (2022), have studied the factors affecting the capital structure of enterprises in the wholesale industry on the stock market. The study uses financial statement data from 69 food companies listed on the Vietnamese stock market from 2014 to 2020 using the FGLS method. Research results show that operating leverage, liquidity, and profitability have negative effects on capital structure. In contrast, firm size and tangible assets have a positive impact on capital structure. Hoang Thi Kim Thoa (2012) studied the factors affecting the capital structure of joint stock companies in the real estate industry listed on the Vietnam stock market in the period 2015-2019. The study uses a regression model for panel data collected from the consolidated financial statements of 55 joint stock companies in the real estate industry for the period 2015-2019. The results show that factors such as firm size, age of the chairman of the board of directors, and return on equity (ROE) have a positive impact on capital structure. In contrast, factors such as operating time, gender, liquidity, asset turnover, and return on total assets (ROA) hurt the capital structure of joint stock companies in the real estate industry. Firms with a female chairman of the board of directors have a higher debt ratio than those with a male chairman. However, with increasing age, male board chairmen tend to use loans higher than women.

3. RESEARCH MODEL, METHOD, AND DATA

3.1. Research data

The study filters out companies in industry, agriculture, and services that have all the variables in the research model. The study uses balance sheet data collected from the annual reports of 75 companies in industry, agriculture, and services listed on the Vietnamese stock market from 2020 to 2023.

3.2. Research models

$$LEV_{it} = \beta_0 + \beta_1 ROA + \beta_2 SIZE + \beta_3 TAX + \beta_4 ASET + \beta_5 GROW + \beta_6 VOL + it$$

Where: *i* - corresponds to the company in the survey sample

t - Time

Table 1. Description of variables in the model

Code	Variables	Measure
LEV	Capital Structure	Total debt to total assets
ROA	Yielding	Profit after tax on total assets at the end of the fiscal year
SIZE	Company size	Natural logarithm of net sales
TAX	CIT rate	Income tax on pre-tax income
ASET	Tangible assets	Fixed assets to total assets
GROW	Revenue growth rate	(Year Revenue (n) - Yearly Revenue (n-1))/Year Revenue (n-1)
VOL	Profit volatility	Standard Deviation of Ebit/Total Assets

3.3. Research Methods

In this article, we use quantitative research with Stata 12.0 software to estimate the factors affecting the capital structure of enterprises in the industry, agriculture, and services listed on the Vietnam stock market. The study uses 3 regression models Pooled Ordinary Least Square (Pooled OLS), Fixed effects model (FEM), and Random effects model (REM) with panel data. In addition, we use tests (Hausman and Breusch and Pagan Lagrangian multiplier) to choose the model that best explains the factors affecting capital structure. At the same time, we also use Robust and Cluster options to overcome the phenomenon of variance,

Factors Affecting the Capital Structure of Companies in the Industry, Agriculture, and Services Listed on the Vietnamese Stock Market

autocorrelation, and the Ramsey Reset test to test the model's omission of variables. With such a model definition, the estimated regression coefficients in the stable and efficient model can best explain the factors affecting capital structure.

4. RESEARCH MODEL RESULTS

Check out the choice between Pool OLS and REM. models

Assumption H0: Pool model selection OLS

H1: Selection of REM. model

From the results of the Breusch and Pagan Lagrangian multiplier test, we see that $\text{prob}(\chi) = 0.000 < 0.01$. This proves the acceptance of hypothesis H1 at a 1% significance level.

Therefore, the REM model is more suitable than the Pool OLS model.

Check out the choice between REM and FEM. models

Assumption H0: Selection of model REM

H1: Selection of FEM. model

From the results of the Hausman test we have:

$\text{Spend } 2(7) = 61.93$ Prob > $\text{Spend } 2(7) = 0.0000$

We see $\text{prob} = 0.0000 < 0.01$. This proves to reject the null hypothesis H0 at the 1% significance level.

Therefore, the FEM model is more suitable than the REM model.

Summarize through the comparison between 3 models Pool OLS, REM, and FEM. The FEM model results are the best fit. In addition, the results of running the FEM model in Table 3 used regression with robust and cluster estimates to overcome the phenomenon of autocorrelation and variable variance. From there, the model results will best explain the change in capital structure. The results also show that these variables explain 50.18% of the change in the capital structure of companies in industry, agriculture, and services listed on Vietnam's stock market.

Table 2. Results of 3 models

	Pool OLS Coef.	REM Coef.	FEM Coef.
TAX	3.564*	2.142*	0.636**
ASET	0.155	0.242	0.317
GROW	0.165**	0.135***	0.128**
SIZE	0.008	0.007	0.008
VOL	-0.466***	-0.562***	-0.758***
ROA	-0.907*	-0.888*	-0.780*
R ²	0.797*	0.586*	0.613*
F-test	23.24*		13.05*

The regression coefficient for the variable TAX is 0.636, showing that when the corporate income tax rate increases, companies will increase the debt ratio to take advantage of financial leverage to amplify income for owners at a 5% significance level. This result is consistent with theory and experimental studies in Vietnam.

The regression coefficient corresponding to the GROW variable is 0.128, showing that the higher the company's revenue growth rate, the more debt the company uses at the 5% significance level. This result is consistent with theory and experimental studies in Vietnam. Because a company with a higher growth rate needs more capital to meet business needs and has a very good ability to pay interest and principal, the company uses more debt to take advantage of low-cost debt capital and leverage to increase profits for owners.

The regression coefficient for the VOL variable is -0.758, showing that the risk variable is negatively correlated with the debt ratio at the 10% significance level. This result is consistent with theory and experimental studies in Vietnam. Because, when the company has a higher business risk, the cash flow fluctuates quite high, proving that the ability to pay interest and principal will be greatly affected during difficult business times, putting great pressure on the company. Therefore, the company should use a low debt ratio to ensure business operations, maintain good operations in difficult years in business, and avoid falling into financial distress when using a high debt ratio.

Factors Affecting the Capital Structure of Companies in the Industry, Agriculture, and Services Listed on the Vietnamese Stock Market

The regression coefficient corresponding to the ROA variable is -0.780, showing that the company uses a low debt ratio at the 1% significance level. Because the company can retain profits to better meet business needs, avoid using a high debt ratio that increases the company's financial risk. This result is consistent with theory and experimental studies in Vietnam.

Regression coefficients for the remaining variables including tangible assets and firm size are positively correlated with the debt ratio but not statistically significant.

5. CONCLUSION

Determining an optimal capital structure has a huge impact on firm value. Therefore, building an optimal capital structure suitable to the characteristics of each industry and each stage of business development is of great significance to managers in the company. Theoretical studies show that many factors affect the capital structure planning of a company. The results of the author's empirical research show that these variables explain in the research model explain 61.93% of the change in determining the debt-to-total asset ratio of companies in industry, agriculture, and services. The results of this study help managers to build a reasonable capital structure for companies in the industry, agriculture and service industries, to optimize the cost of capital and increase the market value of the company. Specifically as follows, when the company predicts that its business activities will be subject to high business risks, it is necessary to have a roadmap to adjust the debt ratio at a low level so that when risks occur, the company can still afford to pay interest and maintain business operations. On the other hand, when the company has a higher revenue and profit growth rate, combined with corporate income tax incentives, the company can be more likely to pay its due debts in the future, so it is better to take advantage of financial leverage to amplify income for owners and increase the value of their company.

REFERENCES

- 1) Le Tham Duong, Bui Dan Thanh, Le Thi Han (2020), Factors affecting the capital structure of food industry enterprises on the Vietnamese stock market, *Financial Review*, March 2, 2020.
- 2) Le Quang Dinh (2022), Factors affecting the capital structure of wholesale enterprises on the Vietnamese stock market, *Financial Review*, 1st August 2022.
- 3) Khaki, A. R., & Akin, A. (2020). Factors affecting the capital structure: New evidence from GCC countries. *Journal of International Studies*, 13(1), 9-27.
- 4) Hoang Thi Kim Thoa. (2021). Factors affecting the capital structure of joint stock companies in the real estate industry listed on the Vietnam Stock Exchange. *Journal of Economic and Management Science*, University of Economics, Hue University, (18).
- 5) Ahmad, N., Salman, A., & Shamsi, A. F. (2015). Impact of financial leverage on firms' profitability: An investigation from the cement sector of Pakistan. *Research Journal of Finance and Accounting*, 6(7), 75-80.
- 6) Alghusain, N. A. S. (2015). Do financial leverage, growth, and size affect the profitability of the Jordanian industrial firms listed? *International Journal of Academic Research in Business and Social Sciences*, 5(4), 335-348.
- 7) Cophieu68. (2018). Industry financial growth. Retrieved October 20, 2017, from Stocks 68 website: <http://www.cophieu68.vn/categorylist.php?o=cm&ud=>
- 8) Dang, Q. T., & Quach, Y. T. H. (2014). Factors affecting the capital structure of enterprises listed on the Ho Chi Minh City Stock Exchange (HOSE) [Factors affect the capital structure of businesses listed on the Ho Chi Minh City Stock Exchange (HOSE)]. *Journal of Development & Integration*, 18(28), 34-39.
- 9) Do, L. T. (2018). Research on factors affecting the financial structure of the business [Research on factors affecting the financial structure of the business]. Retrieved October 25, 2017, from <http://vaa.net.vn/nghien-cuu-cac-nhan-to-anh-huong-den-cau-truc-tai-chinh-cua-doanh-nghiep/>
- 10) 10. Harc, M. (2015). The relationship between tangible assets and capital structure of small and medium-sized companies in Croatia. *Ekonomski Vjesnik*, 28(1), 213-224.
- 11) Kraus, A., & Litzenberger, R. H. (1973). A state-preference model of optimal financial leverage. *The Journal of Finance*, 28(4), 911-922.
- 12) Le, N. T. M. (2016). Factors affecting capital structure: A study in the cement industry in Vietnam [Factors affecting capital structure: A study in the cement industry in Vietnam]. *Van Hien University Journal of Science*, 4(3), 30-37.
- 13) Le, P. T. (2017). Effect of ownership structure on the performance of a listed company [Ownership structure impact on the performance of a listed company]. Retrieved October 27, 2017, from <http://tapchitaichinh.vn/nghien-cuu--trao-doi/trao-doi-binh-luan/nhan-to-anh-huong-toi-cau-truc-von-cua-cac-cong-ty-nganh-xay-dung-niem-yet-tren-san-8>

Factors Affecting the Capital Structure of Companies in the Industry, Agriculture, and Services Listed on the Vietnamese Stock Market

- 14) Le, P. T. M. (2014). Factors affecting the capital structure of construction companies listed on the stock exchange [Factors affecting capital structure of construction companies listed on the stock exchange]. *Financial Review*, 8, 23-30.
- 15) Marete, D. (2015). The relationship between firm size and financial leverage of firms listed at Nairobi securities exchange (Doctoral dissertation, University of Nairobi, Kenya).
- 16) Modigliani, F., & Miller, M. H. (1958). The cost of capital, corporation finance, and the theory of investment. *The American Economic Review*, 48(3), 261-297.
- 17) Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. *The American Economic Review*, 53(3), 433-443.
- 18) Nguyen, C. T. (2011). Factors affecting the capital structure of Vietnamese seafood processing enterprises [Factors affecting capital structure of Vietnamese seafood processing enterprises]. *Journal of Science and Technology Development*, 14(1), 28-54.
- 19) Nguyen, D. T. T., Diaz-Rainey, I., & Gregoriou, A. (2012). Financial development and the determinants of capital structure in Vietnam. Retrieved October 5, 2017, from <http://www.nzfc.ac.nz/archives/2013/papers/updated/46.pdf>
- 20) Nguyen, H. T. T. (2017). Factors affecting financial leverage of Vietnam Travel Companies [Factors affect the financial leverage of Vietnam Travel Companies]. *Journal of Science - Hue University*, 126(5A), 5-17
- 21) Nguyen, K. T. D., & Ramachandran, N. (2006). Capital structure in small and medium-sized enterprises: The case of Vietnam. *ASEAN Economic Bulletin*, 23(2), 192-211.
- 22) Pham, L. T. D. (2017). Factors affecting the capital structure of state-owned enterprises after equitization in the integration period. Retrieved May 5, 2017.



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0 (<https://creativecommons.org/licenses/by-nc/4.0/>)), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.