THE IMPACT OF FINANCIAL LEVERAGE ON FIRM VALUE: EVIDENCE FROM COAL JOINT STOCK COMPANIES OF VINACOMIN

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Abstract: ***This study aims to show the impact of financial leverage on the value of coal joint stock companies under the Vinacomin.The study results show that factors such as financial leverage, fixed asset ratio, sales growth, etc have significant impact on firm's value. From the results of this study, the authors analyzed and proposed suggestions for further research directions on issues related to financial leverage and firm value.***

• Keywords: *firm value, financial leverage, coal joint stock companies, vinacomin.*

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1. Introduction

In reality, the necessity for determining enterprise value is significant. Valuation is needed not only when seeking capital but also during the operation process, enabling enterprise administrators to evaluate actual performance against the established strategic objectives and expectations set for the enterprise. If these objectives are not achieved, it is necessary to identify the cause in order to adjust the enterprise plan or restructure the enterprise. According to Thi Van Trang Do et al (2021), firm value also reflects the value of assets owned by a company. It is influenced by many factors, including company size, cash flow, financial leverage, etc. The financial leverage of an enterprise affects its value (Hung et al., 2019). Financial leverage is a measure that helps businesses evaluate and balance the enterprise's current investment and financial situation. Using financial leverage helps enterprises supplement the missing capital, meet the maintenance of production and business activities, and increase the enterprise's profit margin in the future. In addition, financial leverage is also a tool to promote the increase in the after-tax profit margin of equity, helping enterprises reduce taxes payable to the state. However, financial leverage does not always bring positive results. Financial leverage can negatively impact the company if it is not used effectively. Excessive borrowing causes the company to face financial risks, debt repayment pressure, and interest rates. If revenue is insufficient to repay the debt, the company will face financial difficulties, leading to bankruptcy. When market interest rates increase, borrowing costs increase, reducing the expected return on investments using borrowed capital and reducing the company's value.

In Vietnam, there is limited research on the relationship between financial leverage and firm value, especially for enterprises in the coal industry. Due to the characteristics of the coal mining sector, companies need production lines, machinery, and equipment, such as coal cutting machines, conveyor systems, etc., with substantial values, resulting in significant capital needs. Equity capital is not enough to finance coal mining enterprises' capital needs. Thus, companies mobilize capital from different sources, including loans from external credit institutions. Therefore, the authors collected data from coal joint stock companies under the Vietnam National Coal - Mineral Industries Holding Corporation Limited (Vinacomin) as a research sample to examine the relationship between financial leverage and firm value. The study results provide additional contributions in terms of academics and practice.

2. Literature review and hypothesis development

2.1. Literature review

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- Financial leverage and firm value have a positive relationship. According to Scott (1976), the theory of optimal capital structure has shown that in a company, there will be an optimal capital structure, which is a combination of debt and equity, whereby the cost of capital is the lowest, and the value of the enterprise is maximized. In addition to using equity, companies mobilize through loans and debt, showing that the company has used financial leverage in the process of enterprise operations. When a company borrows money, it has to pay interest, creating a tax shield for the enterprise and saving a part of the corporate income tax payable to the state. Hence, the value of the business increases with the increase in the use of financial leverage. The higher the leverage, the higher the company's profit. The more profits distributed to shareholders, the higher the stock price. According to Sutrisno et al. (2023), the company's stock price affects the value of the enterprise; the increase in stock price increases the value of the enterprise and vice versa. Vo Minh Long collected data from companies listed on the HSX in the period from 2008 to 2015 to research on the relationship between capital structure and firm value (Long, 2017). The research result: financial leverage is formed when an enterprise increases its borrowing capital because the interest creates a tax shield. The value of the enterprise will increase. Therefore, financial leverage has a positive relationship with the firm value (Le Hoang Vinh et al., 2022).

- Financial leverage and firm value exhibit an inverse relationship. There are many empirical studies conducted to investigate the relationship between financial structure and firm value, the results that the more a firm uses borrowed capital, the lower its operational performance. Anh & Thuy (2017) researched the impact of financial leverage on the performance of Vietnamese businesses with data collected from 100 companies listed on the Vietnam stock market during the period from 2012 to 2016. Research results have shown that financial leverage has a negative impact on corporate performance. When studying the relationship between financial leverage and cement firm's profitability in VietNam stock exchange, collected data from the audited financial statements of 22 cement companies during the period from 2009 to 2016 (Thi Thuy Hanh, 2017). The result is the higher financial leverage is, the more profit decline, significant at the 1% level. Therefore, corporate managers should consider adjusting long-term debt levels with an increase in equity to enhance firm value. The lower the debt ratio, the higher the firm value. Financial leverage and firm value have an inverse relationship (Hung et al., 2019). According to the research results of Ibrahim (Ibrahim & Isiaka, 2020), financial leverage has a negative impact on corporate value and encourages recommend that company managers consider reducing long-term debt and increasing equity with the expectation of creating an increase in corporate value.

2.2 . Hypothesis development

Ibrahim & Isiaka (2020) studied the impact of financial leverage on firm value with evidence from a sample of selected firms listed on the Nigerian Stock Exchange. The study applies panel data analysis method using secondary data obtained from financial statements of selected companies in the period form 2014 to 2018. Research results shown: Financial leverage has a negative impact on firm value and recommends that company managers consider reducing long-term debt and increasing equity with the expectation of creating an increase in firm value.

Given that the cost of debt is often lower than that of equity capital, enterprises tend to incur higher debt levels. The reliance on debt also exposes enterprises to financial risks, and financial costs increase, reducing the company's profits and thereby reducing the value of the company. For businesses in the mining industry, assets are mainly fixed assets. This is one of the collateral assets for loans. Companies with many fixed assets tend to use more debt, thereby increasing financial leverage. According to trade-off theory, businesses using tangible assets as collateral will help reduce risks for creditors, and tangible assets can support businesses in reducing the costs of financial distress. The more

fixed assets a business has, the more its ability to borrow increases (Sarah et al, 2019) , which means the higher the financial risk.

Moreover, if the company's business is inefficient, the business cannot afford to pay costs and loans, which negatively affects the value of the business. Overuse of financial leverage can expose businesses to many risks and reduce business value, even leading to the risk of bankruptcy

Therefore, the authors propose a hypothesis that financial leverage has a negative impact on firm value.

3. Research methods and data

Based on the models studied by Le Hoang Vinh et al. (2022) and Anh chung et al. (2023)… with the above theoretical basis, the study establishes the following research model to test the hypothesis on the relationship between financial leverage and firm value:

$$GTDN_{it} = \alpha_0 + \alpha_i (DF\ Var)_{it} + \beta_i (Control\ Var)_{it} + \varepsilon \quad (1)$$

Table 1: Definition of variables in the research model

STT	Variable name	Symbol	Measurement method	Source
A.	**Dependent variable**			
1	Firm value	GTDN	Book value of debt + market value of equity / Total book value of assets	Hung et al. (2019)
B	**Independent variable**			
1	Financial leverage	DF	Debt to total assets	Hung et al. (2019), Arora & Gill (2022),
C	**Control variables**			
1	Tax	TAX	Ratio of tax expense to total profit before tax	Arora & Gill (2022), Le Hoang Vinh et al. (2022)
2	Tanggible Asset Ratios	TANG	Fixed assets to total assets of the company	Thi Van Trang & Thi Van Huyen (2021),
3	Sales Growth	GROWN	Net revenue of the following year over net revenue of the previous year	Long (2017) Khan & Qasem (2024)fixed and random effects regression, and feasible generalised least square (FGLS
4	Return on total assets	ROA	The ratio of firms' net income / Total assets	Anh chung et al. (2023), Khan & Qasem (2024)fixed and random effects regression, and feasible generalised least square (FGLS
5	Economic development	GDP	Natural logarithm of GDP	Faradila & Effendi (2023)

Source: Author's own synthesis

The study uses data from coal joint stock companies under Vinacomin during 2014-2023 as a research sample. To ensure the scientific and empirical nature of the sample selection process, companies with unusual or missing financial data and those under five years old are excluded. This study randomly selects 70 observations of coal joint stock companies under Vinacomin.

4. Results and discussion

4.1. Descriptive statistics

Table 2 shows that low-value companies account for a relatively large proportion of the research sample.

Table 2: Descriptive statistics of research variables

Variable	Obs	Mean	Std.dev	Min	Max
GTDN	70	0.9561559	0.5669424	0.7301123	5.594713
DF	70	0.7810984	0.0822539	0.5664276	0.92063
TAX	70	0.2316115	0.1376254	0	0.8045455
TANG	70	0.5083719	0.3447816	0.0748099	2.985532
GROWN	70	1.012944	0.2292524	0.0011746	1.463575
ROA	70	0.1308993	0.0683099	0.0000382	0.291576
GDP	70	5.74836	0.20467	5.453182	6.063785

Source: Author's calculation

Due to the nature of the enterprise in this sector requiring the use of very valuable fixed assets, companies need to mobilize capital from borrowing from individuals and organizations inside and outside the enterprise. Therefore, the debt ratio of coal joint stock companies mostly exceeds 50% of total capital.

4.2. Correlation analysis

Table 3 reveals that multicollinearity is not present in the research model.

Table 3: Correlation matrix analysis

Variable	GTDN	DF	TAX	TANG	GROW	ROA	GDP
GTDN	10.000						
DF	0.1642	10.000					
TAX	-0.2071	0.0878	10.000				
TANG	0.0885	0.3747	-0.1246	10.000			
GROW	0.1302	0.2204	-0.0601	0.0727	10.000		
ROA	-0.0559	-0.0499	-0.1929	-0.0776	0.1703	10.000	
GDP	0.1282	0.0678	-0.1449	-0.0156	0.0751	0.2698	10.000

Source: Author's calculation

4.3. Regression results and discussion

To evaluate the impact of financial leverage on the value of coal joint stock companies of Vinacomin, the authors performed regression with the research model (1) using Pooled model (OLS), Fixed effects model (FEM), and random effects model (REM). Then conduct the Hausman

test and Breusch - Pagan LM test to choose the suitable model for the study.

Findings presented in Table (4) reveal the F-Test result of F(6.54) = 57.08, Prob > F = 0.0000, so the Pool OLS model should not be used. The authors performed the Hausman Test with Chi2(6) = 7.37; Prob >chi2 = 0.2879, showing that the REM model is more optimal than the FEM model. However, variable error variance exists when testing the defects of serial correlation and variable error variance. Therefore, to address the defects of the model, the authors employed the generalized least squares (GLS) model.

The regression results reveal a statistically significant negative correlation between the dependent variable (financial leverage) and firm value. The results of the GLS method are shown in column (1) of Table 4. The correlation coefficient between financial leverage and the value of coal joint stock companies is α = -1.570, with a statistical significance of 1%. This finding indicates that borrowing is associated with a decrease in the value of coal joint stock companies. The results support the hypothesis proposed by the research, showing that financial leverage negatively correlates with firm value. The research results align with the conclusion of (Hung et al., 2019). Furthermore, since the business lines of the research enterprises are coal mining, their fixed assets in enterprises are often of great value and have a long payback period, requiring a large amount of investment capital. Therefore, these enterprises tend to increase their borrowing, leading to increased financial costs and reduced after-tax profits, as reflected in the financial statements. For joint stock companies, declining profits affect the psychology of investors. Investors may choose to withdraw their capital, leading to a decrease in the companies' stock prices, and a decrease in the value of the enterprises. The use of borrowed capital is related to the emergence of interest expenses, which are not fixed amounts, as interest rates fluctuate depending on market conditions. So, if the borrowed capital increases, the debt-to-equity ratio rises, and the interest rate on the loan is higher, the business efficiency of the enterprise decreases. When companies borrow for an extended period, they may encounter rising costs due to poor management and challenging conditions in the consumer market, which can elevate their financial risks, thereby reducing their value. Therefore, businesses that want to survive and develop, increasing firm value need to effectively mobilize capital in a timely manner and utilize funding sources efficiently. Therefore, flexibility in capital structure policies is essential for all businesses, aiming to minimize costs and maximize profits, while appropriately utilizing funding sources. To effectively leverage financial leverage in the most appropriate way, businesses should base their efforts on building an optimal capital structure - a capital structure is the best mix of debt and equity financing that maximizes a company's market value while minimizing its cost of capital. Determining the Optimal Capital Structure, The enterprise relies on the optimal leverage ratio of leading industry companies to determine its own financial leverage. In addition, each year the company needs to determine the marginal cost of capital to choose the capital structure for the business.

The coefficient of fixed asset ratio is positive, showing a positive relationship with the value of the enterprise. The result in column (1) of Table 4 is 1.574, showing a positive impact on the value of joint stock companies, with a statistical significance of 1%. According to the trade-off theory, the larger the proportion of fixed assets in a business, the more assets the business has that can be used as collateral, thereby reducing the likelihood of bankruptcy. At the same time, the business has more investment opportunities, mobilize more capital for the for the business, contributing to an increase in the value of the business. According to the pecking order theory, the larger the proportion of fixed assets, the less the issue of information asymmetry, and the lower the costs related to agency problems, which contributes to increasing the value of the enterprise. For coal mining enterprises, business efficiency depends mainly on machinery and equipment technology. Due to the specific

business lines of coal companies, the more modern the machinery and equipment, the higher the labor productivity and the better the enterprise performance. The larger the company's size, the more assets the company owns, the stronger the financial potential, so the research results are appropriate.

The coefficient of Sales Growth variable is positive, 0.264, and statistically significant at the 5% level, indicating that the Sales Growth has a positive relationship with Firm value. Enterprises with more significant growth have stronger financial potential.

Table 4: Relationship between financial leverage and the value of coal joint stock companies by gls, fem, and rem methods

	(1) GLS	(2) FEM	(3) REM
DF	-1.570***	-1.752**	-1.570*
	(-4.56)	(-4.63)	(-4.33)
TAX	-0.208	-0.249	-0.208*
	(-1.08)	(-1.01)	(-1.03)
TANG	1.574***	1.616***	1.574***
	(19.55)	(17.24)	(18.55)
GROW	0.264**	0.224	0.264**
	(2.30)	(1.24)	(2.18)
ROA	-0.533	-0.0734	-0.533
	(-1.35)	(-0.15)	(-1.28)
GDP	0.445***	1.370	0.445***
	(3.44)	(0.62)	(3.26)
_cons	-1.323*	-6.531	-1.323*
	(-1.75)	(-0.51)	(-1.66)
N	70	70	70
F-Test	F(6.54) = 57.08 Prob > F = 0.0000		
Hausman Test	Chi2(6) = 7.37 Prob >chi2 = 0.2879		

*Note : * , ** and *** represent statistical significance at 10% level , 5% and 1%*

In addition to the micro factors of the enterprise, there is also a macro factor affecting firm value, which is the development of the economy. When the economy grows rapidly, it creates favorable conditions for businesses to operate more efficiently. The study uses the value of the gross domestic product index to reflect Vietnam's economic environment, which affects the value of coal mining companies. The coefficient of economic development is 0.445 and statistically significant at 1%, indicating an influence of economic development on firm value; when the economy develops, the value of the enterprise also increases (Thi Van Trang & Thi Van Huyen, 2021). Hence, the return on total assets to the firm value is not statistically significant, showing that the influence of and the return on total assets on firm value is negligible.

Conclusion

The study used a panel data regression model to examine the relationship between financial leverage and firm value of companies participating in the Vietnamese stock market. The research results reveal an inverse relationship between financial leverage and firm value of coal joint stock companies of Vinacomin during 2014 - 2023. Therefore, in the coming time, coal mining companies need to adjust their capital structure to increase the equity and financing capacity of the enterprise. Companies must fully exploit retained profits and develop a reasonable profit distribution policy, especially retained profits for reinvestment. In addition, to increase equity, coal joint stock companies can consider options for raising additional capital, such as issuing additional shares and calling for additional capital contributions from joint ventures and associations.

References:

Anh chung H., Le Minh Duy, Phan Thuy Lam, Phan Van Minh Thang, & Do Thi Thuy Trang. (2023). Enhancing Corporate Value in Non-financial Companies on the Vietnamese Stock market. Industry and Trade Online Magazine.

Anh, T. T., & Thuy, Đ. T. T. (2017). The impact of financial leverage on the corporate performance of Vietnameses: Approach using branch regression. Ho Chi Minh City Open University Journal of Science, 12(3), 16–25.

Faradila, S., & Effendi, K. (2023). Analysis Of Financial Performance And Macroeconomic On Firm Value. Jurnal Manajemen, 27, 276–296.

Hung, D. N., Van, V., Xuan, N., & Thi Viet Ha, H. (2019). Study the Impact of Growth, Firm Size, Capital Structure, and Profitability on Enterprise Value: Evidence of Enterprises in Vietnam. Journal of Corporate Accounting & Finance, 30, 144–160.

Ibrahim, U., & Isiaka, A. (2020). Effect of Financial Leverage on Firm Value: Evidence From Selected Firms Quoted on the Nigerian Stock Exchange. European Journal of Business and Management.

Khan, S., & Qasem, A. (2024). Are the firms' capital structure and performance related? Evidence from GCC economies. Cogent Business & Management, 11(1), 2344749.

Le Hoang Vinh, Tran Ngoc Huong, Tran Thi Ngoc Hieu, Nguyen Tra Mai, Pham Hoang Kim Ngan, & Nguyen Tuong Vi. (2022). Financial Leverage, Tax, Financial Distress and Firm Value: The Case of Non-financial Listed Companies in Vietnam. Journal of Science and Banking Studies, 244, 26–37.

Long V. M. (2017). The Relationship between Capital Structure and Firm Value: The case of Companies listed on the Ho Chi Minh City Stock Exchange (HSX). Ho Chi Minh City Open University Science Journal, 12(1), 180–192.

Sarah ALmuaither & Mahmoud Marzouk. (2019). Determinants of Capital Structure: Evidence from the UK. Journal of Modern Accounting and Auditing, 15(6).

Scott, J. H. (1976). A Theory of Optimal Capital Structure. The Bell Journal of Economics, 7(1), 33–54.

Sutrisno, F., Trisnawati, E., & Jap, Y. (2023). Factors Affecting Firm Value With Profitability As A Mediating Variable In Consumer Cyclicals Sector Companies. Jurnal Pajak Dan Keuangan Negara (PKN), 4, 521–528.

Thi Van Trang, Do, & Thi Van Huyen, P. (2021). Impact of capital structure on firm value: Evidence from listed real estate firms in Vietnam. Journal of Economic and Banking Studies, 230, 34–46.