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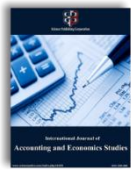

The Impact of Debt-To-Equity Ratio and Return on Assets of Thai-Listed Firms: The Moderating Role of Firm Size

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Abstract

This study examines the effect of capital structure—specifically the debt-to-equity (D/E) ratio—on the profitability of firms listed on the Stock Exchange of Thailand (SET). Profitability is measured using Return on Assets (ROA). Utilizing secondary data from 585 firms over the period 2014–2024, this research employs a quantitative approach, where financial data were collected from publicly available annual reports and financial statements. The study further investigates the moderating role of firm size in the leverage profitability relationship. Fixed effects regression analysis is used to control for unobserved heterogeneity across firms and time. The empirical findings reveal a statistically significant negative relationship between the D/E ratio and ROA. Moreover, firm size positively moderates this relationship, suggesting that larger firms are better positioned to manage the risks associated with higher financial leverage.

The study contributes to the existing body of knowledge by providing updated empirical evidence from an emerging market context. It offers practical insights for financial managers, investors, and policymakers regarding the optimal capital structure and its performance implications. By integrating firm size as a moderating factor, thereby enhancing the understanding of capital structure dynamics in the Thai capital market.

Keywords: *Capital Structure; Debt-to-Equity Ratio; Return on Assets; Firm Size; Thai-Listed Firms.*

1. Introduction

In the context of an increasingly volatile global economy, effective financial management has become a critical determinant of firm competitiveness and long-term sustainability. One of the most fundamental aspects of financial strategy is capital structure, which refers to the composition of a firm's financing through a combination of debt and equity. The configuration of capital structure not only influences the cost of capital but also affects the firm's financial stability, investment capacity, and ultimately, profitability (Pham & Nguyen, 2022).

Theoretical frameworks such as the Trade-off Theory and Pecking Order Theory provide foundational perspectives on capital structure decisions. The Trade-off Theory posits that firms seek to balance the tax benefits of debt financing with the potential costs of financial distress (Kraus & Litzenberger, 1973), while the Pecking Order Theory suggests firms prioritize internal financing due to information asymmetry and external financing costs (Myers & Majluf, 1984). Recent studies have extended these theories in emerging markets, noting that contextual factors—such as institutional quality, access to finance, and market regulation—significantly influence the debt-profitability relationship (Dang et al., 2021; Admed et al., 2023).

In Thailand, although prior studies have investigated general relationships between capital structure and performance, much of the literature either lacks recent data or fails to consider firm-specific characteristics such as organizational size. Thai capital markets, represented by the Stock Exchange of Thailand (SET), feature diverse firms in terms of industry, ownership structure, and capital access. A deeper investigation is warranted, particularly in the post-COVID-19 recovery era where leverage decisions are critical (Admed et al., 2024; Phosen et al., 2023).

This study emphasizes the Debt-to-Equity Ratio (D/E) as the key indicator of capital structure. The D/E ratio represents the extent of financial leverage and indicates the proportion of financing that is derived from debt versus equity. A higher D/E ratio may signal aggressive expansion or, conversely, heightened financial risk. As a measure of firm performance, Return on Assets (ROA) is employed because it captures the efficiency with which a company uses its assets to generate profit (Nguyen & Dao, 2022).

Crucially, this study incorporates firm size as a moderating variable to investigate whether the capital structure-profitability relationship is conditional on organizational scale. Larger firms typically benefit from better access to credit, reduced default risk, and stronger negotiating power, which may mitigate the risks associated with high leverage (Mokaya & Munene, 2022). In contrast, smaller firms may be more vulnerable to financial distress due to constraints in external financing and higher costs of debt.

The research addresses a key gap in the literature by examining the interaction between D/E ratio and firm size on ROA, using panel data from 585 Thai-listed companies during the period 2014–2024. This period captures multiple economic cycles and regulatory adjustments, thus offering a robust context for empirical validation.

In addition to contributing to the theoretical discourse on capital structure, this study provides practical implications for financial managers seeking to optimize capital structure in alignment with firm-specific characteristics. The results may inform policy development aimed at improving financial resilience and promoting capital market efficiency in emerging economies such as Thailand.

2. Literature review

2.1. Theoretical framework

The capital structure decision—how firms allocate financing between debt and equity—remains a central topic in corporate finance. The foundational theory proposed by Modigliani and Miller (1958) argued that under perfect market conditions, a firm's value is independent of its capital structure. However, when real-world frictions such as taxes, bankruptcy costs, and information asymmetry are considered, capital structure becomes a critical determinant of firm performance.

Among the prominent theoretical perspectives, the Trade-Off Theory posits that firms seek an optimal capital structure by balancing the tax advantages of debt with the costs associated with financial distress (Kraus & Litzenberger, 1973). In contrast, the Pecking Order Theory (Myers & Majluf, 1984) suggests that due to asymmetric information, firms prefer internal financing, followed by debt, and view equity issuance as a last resort. These theories form the conceptual foundation for examining the relationship between leverage and profitability across varying firm conditions.

In the context of Thailand, the application of both theories requires consideration of specific institutional and regulatory characteristics. According to the Trade-Off Theory, firms should calibrate their debt usage to maximize tax benefits while minimizing the risk of financial distress. However, in Thailand's environment—where financial institutions play a dominant role and where regulatory oversight is relatively conservative—access to debt is often influenced by non-market factors. For instance, Thai commercial banks frequently impose stringent collateral requirements and interest rate spreads that may limit the full tax shield advantage, particularly for SMEs (Charoenrat & Harvie, 2017). This alters the traditional risk-return calculus assumed by the theory.

The Pecking Order Theory also finds partial support in Thailand's capital markets. Due to persistent information asymmetry and relatively underdeveloped capital market access (especially outside the SET100 firms), Thai firms tend to prefer retained earnings and debt over equity issuance. Family-owned businesses and SMEs, which dominate the Thai business landscape, are especially reluctant to issue new equity, fearing dilution of ownership and control (Nguyen & Vo, 2020). As such, many Thai firms exhibit a strong preference for internal funding and relationship-based bank financing, which reinforces the predictions of the Pecking Order Theory.

Furthermore, the regulatory environment, shaped by institutions such as the Bank of Thailand and the Securities and Exchange Commission (SEC), significantly influences capital structure decisions. Prudential lending regulations, debt-service ratio limits, and guidelines on leverage ratios serve as external constraints that mediate the application of both theories (Bank of Thailand, 2023; SEC Thailand, 2024). These structural factors make Thailand a compelling case for studying the interplay between theory and practice in capital structure optimization. Thus, when applying Trade-Off and Pecking Order frameworks to Thai-listed firms, it is essential to account for the country's unique institutional landscape—characterized by limited financing alternatives, high reliance on banking institutions, and a regulatory climate that prioritizes financial prudence over aggressive leveraging strategies.

2.2. Debt-to-equity ratio and return on assets

The Debt-to-Equity (D/E) ratio is a fundamental indicator of a firm's financial leverage, representing the relative proportion of debt and equity used to finance the company's operations. This ratio is pivotal in assessing a firm's capital structure and has direct implications for its financial performance and risk profile. On the other hand, Return on Assets (ROA) serves as a critical measure of profitability, indicating how efficiently a firm utilizes its total assets to generate earnings.

The relationship between D/E ratio and ROA has attracted significant scholarly attention, particularly due to the trade-offs between the benefits and risks associated with debt financing. A moderate use of debt can lead to improved financial performance by leveraging tax shields and enabling access to additional funds for investment in productive assets. This can enhance asset utilization and increase ROA (Tran & Do, 2023). Conversely, excessive debt increases interest obligations and financial risk, which may erode profitability and reduce the return generated on assets (Vo & Ellis, 2017; Yusuf & Danso, 2022).

In emerging markets like Thailand, the capital market structure, financial regulations, and credit accessibility present unique challenges and opportunities for firms in managing their capital structure. Thai firms often adopt conservative debt policies, particularly following financial crises and during global economic disruptions such as the COVID-19 pandemic. As such, the balance between debt and equity is more delicately managed to ensure sustainability and operational efficiency.

Recent post-COVID-19 studies in the Thai context highlight increased caution in financial structuring, especially among small and medium-sized enterprises (SMEs). Firms faced liquidity shocks and increased uncertainty, leading to tighter credit markets and greater reliance on internal financing. According to Phosen, Chamnongtha, and Jatarach (2023), many Thai SMEs reduced their leverage levels and restructured debt to maintain solvency, favoring long-term sustainability over short-term profitability. Similarly, Ahmed et.al found that firms with lower debt ratios and stronger asset management recovered more quickly post-pandemic. These findings further confirm the nuanced and context-dependent relationship between capital structure and performance in the post-crisis era. Recent studies offer mixed findings on the nature and direction of the D/E–ROA relationship. For instance, Nguyen and Vo (2020) found that moderate levels of debt positively correlate with ROA in well-managed firms. However, this relationship tends to weaken or turn negative in firms with lower financial flexibility or poor asset management. This divergence is often attributed to differences in firm-specific factors such as industry, governance structure, and most importantly, firm size.

In comparison with other ASEAN and emerging market economies, Thai-listed firms tend to adopt more conservative debt policies, particularly in the wake of financial shocks such as the 1997 Asian Financial Crisis and the COVID-19 pandemic. For instance, firms in Vietnam and Indonesia demonstrate higher tolerance for debt as a growth strategy, often due to stronger state-backed credit support and capital subsidies (Mulyana, Putra, & Yasa, 2020; Nguyen & Dao, 2022). Conversely, Thai firms, particularly SMEs, exhibit heightened risk aversion, favoring internal financing and maintaining moderate debt ratios even in growth phases. This divergence highlights how institutional environments, financial regulations, and ownership structures shape capital structure behavior across ASEAN countries.

To further contextualize this study, recent meta-analyses provide comprehensive evidence on the heterogeneous impact of capital structure on firm performance. Similarly, Riaz and Iqbal (2022) concluded that no universally optimal capital structure exists, reinforcing the

importance of incorporating contextual moderators such as firm size, governance, and macroeconomic volatility. These reviews support the premise of this study—that examining capital structure in isolation may overlook critical firm-level and country-specific dynamics.

2.3. Moderating role of firm size

Firm size has been identified as an important factor that moderates the relationship between capital structure and performance. Larger firms typically possess stronger creditworthiness, greater access to capital markets, and economies of scale, enabling them to manage debt more effectively (Hirdinis, 2019; Ibhagui & Olokoyo, 2018; Nguyen & Vo, 2017). In contrast, smaller firms face constraints such as limited access to credit, higher borrowing costs, and vulnerability to market shocks, making them more susceptible to the negative consequences of leverage (Balami, 2024).

Recent studies have incorporated firm size as a moderating variable, finding that the adverse impact of high leverage is more pronounced in smaller firms (Singh & Bansal, 2019; Hermawan, 2023; Syafitri, 2023). These findings suggest that the capital structure–profitability nexus is not uniform across firms and should be assessed within the context of firm size. Accordingly, this study contributes to the literature by examining whether firm size moderates the impact of the debt-to-equity ratio on firm profitability, measured by return on assets (ROA), within the context of Thai-listed firms.

Although considerable research has been conducted on capital structure and firm performance, longitudinal studies using comprehensive datasets from Thailand remain limited. Moreover, few studies have incorporated moderating variables such as firm size into their analytical models. Most existing literature either relies on short-term data or does not consider how firm-specific characteristics shape financial decisions, particularly in the context of emerging economies.

The results of prior studies have been mixed. For instance, Hirdinis M. (2019) and Vo & Ellis (2017) reported a negative association between leverage and profitability, while Ebaid (2009) found no statistically significant relationship. These inconsistencies highlight the need to explore contextual and firm-level variables that may explain divergent findings.

Furthermore, larger firms tend to experience greater stability and bargaining power, potentially mitigating the adverse effects of debt (Khan et al., 2022; Nguyen et al., 2021). However, the extent of this moderating effect in Thai capital markets remains underexplored. Previous studies in the Thai context reveal variation in the influence of capital structure across industries and firm sizes.

This study seeks to bridge these gaps by offering a comprehensive analysis of 585 Thai-listed companies over 10 years, integrating both capital structure metrics and firm size interactions to assess their impact on firm profitability.

2.4. Research hypotheses

Drawing upon the theoretical foundations and empirical findings reviewed, the present study seeks to investigate the relationship between capital structure and firm profitability, with particular emphasis on the role of firm size as a moderating factor. In alignment with the research objectives, the study proposes the following hypotheses:

H_1: The Debt-to-Equity (D/E) ratio has a significant effect on firm profitability, as measured by Return on Assets (ROA).

H_2: Firm size significantly moderates the relationship between the Debt-to-Equity (D/E) ratio and firm profitability (ROA), such that the effect of capital structure on profitability differs across firms of varying sizes.

These hypotheses aim to test not only the direct impact of financial leverage on profitability but also how organizational characteristics—specifically firm size—interact with capital structure decisions to influence financial outcomes.

3. Research methodology

3.1. Research design

This study adopts a quantitative research design using secondary data to examine the relationship between Debt-to-Equity and firm profitability (ROA), with firm size as a moderating variable. The approach is explanatory, aiming to test hypotheses derived from established theories including the Trade-Off Theory and Pecking Order Theory.

3.2. Data collection

The dataset comprises financial information from 585 non-financial companies listed on the Stock Exchange of Thailand (SET) during the period 2014–2024. The data was collected from audited annual reports and financial statements available through the SETSMART, DATASTREAM, and company websites.

Firms in the financial sector were excluded from the sample due to their distinct capital structures and regulatory frameworks. Financial institutions such as banks and insurance companies are subject to industry-specific reporting standards, capital adequacy requirements, and risk-based regulations issued by authorities like the Bank of Thailand. These structural differences make direct comparisons with non-financial firms less meaningful within a unified analytical model.

Although some previous studies have included financial-sector firms, doing so often introduces heterogeneity that complicates interpretation and weakens model consistency. By excluding financial firms, this study ensures greater internal validity and comparability among sampled firms. (Nguyen & Dao, 2022)

3.3. Estimation technique

The study employs panel data regression techniques, with fixed-effects models considered based on the Hausman test. The fixed-effects model was chosen for its ability to control for unobservable, time-invariant, firm-specific factors, allowing for more accurate estimation of the impact of capital structure on profitability. This approach strengthens causal inference and is well-suited for analyzing within-firm variations over time.

3.4. Model specification

To test the hypothesized relationships, the following regression models are used:

Model 1: Base Model (The Debt-to-Equity (D/E) → Return on Assets)

$$ROA_{it} = \beta_0 + \beta_1(D/E)_{it} + \beta_2(SIZE)_{it} + \beta_3(GROWTH)_{it} + \beta_4(TANG)_{it} + IND + YEAR + \varepsilon_{it}$$

Model 2: Moderated Model (Interaction Effects of Size)

$$ROA_{it} = \beta_0 + \beta_1(D/E)_{it} + \beta_2(SIZE)_{it} + \beta_3(D/E \times SIZE)_{it} + \beta_4(GROWTH)_{it} + \beta_5(TANG)_{it} + IND + YEAR + \varepsilon_{it}$$

Table 1: Variables

Variable Type	Description	Measurement
Dependent Variables	Return on Assets (ROA)	Net income / Total assets
Independent Variables	Debt-to-Equity Ratio (D/E)	Total liabilities / Shareholders' equity
Moderating Variable	Firm Size (SIZE)	Natural logarithm of total assets
Control Variables	Revenue Growth (GROWTH)	(Current Revenue – Previous Revenue) / Previous Revenue
	Tangibility (TANG)	Net fixed assets / Total assets
	Industry (IND)	Dummy variables for 8 industry groups
	Year (YEAR)	Dummy variables for each year (2014–2024)

Table 1, summarizes the key variables used in the analysis. Each variable is defined with its respective measurement or proxy to ensure clarity and consistency in the empirical model.

4. Results

As a preliminary step in the empirical analysis, the correlation matrix is presented to assess the strength and direction of linear relationships among the variables, providing an initial indication of potential multicollinearity issues and interaction patterns.

4.1. Correlation matrix of variables

Model 1: Base Model (The Debt-to-Equity (D/E) → Return on Assets)

$$ROA_{it} = \beta_0 + \beta_1(D/E)_{it} + \beta_2(SIZE)_{it} + \beta_3(GROWTH)_{it} + \beta_4(TANG)_{it} + IND + YEAR + \varepsilon_{it}$$

Table 2: Correlation Matrix of Variables

Variables	ROA	D/E	SIZE	GROWTH	TANG
ROA	1.000				
D/E	-0.121***	1.000			
SIZE	0.046**	-0.173***	1.000		
GROWTH	0.098*	-0.092	0.131*	1.000	
TANG	0.056	0.087*	-0.114***	-0.061	1.000

Notes: *p < 0.10, **p < 0.05, ***p < 0.01, ROA = Return on Assets, D/E = Debt-to-Equity Ratio
SIZE = Firm Size, GROWTH = Revenue Growth Rate, TANG = Tangibility

Table 2, presents the correlation coefficient indicates the direction and strength of the linear relationship between variables. The results reveal that Return on Assets (ROA) is negatively correlated with the Debt-to-Equity ratio (D/E), and positively correlated with Firm Size (SIZE) and Revenue Growth (GROWTH).
Model 2: Moderated Model (Interaction Effects of Size)

$$ROA_{it} = \beta_0 + \beta_1(D/E)_{it} + \beta_2(SIZE)_{it} + \beta_3(D/E \times SIZE)_{it} + \beta_4(GROWTH)_{it} + \beta_5(TANG)_{it} + IND + YEAR + \varepsilon_{it}$$

Table 3: Correlation Matrix with Moderating Variable (Firm Size)

Variables	ROA	D/E	SIZE	D/E × SIZE	GROWTH	TANG
ROA	1.000					
D/E	–0.036**	1.000				
SIZE	0.081*	–0.104***	1.000			
D/E × SIZE	–0.028***	0.082*	0.045**	1.000		
GROWTH	0.026**	–0.015	0.028**	0.090	1.000	
TANG	0.073	0.191	0.054	0.166	–0.014	1.000

Notes: *p < 0.10, **p < 0.05, ***p < 0.01, ROA = Return on Assets, D/E = Debt-to-Equity Ratio
SIZE = Firm Size, D/E × SIZE = Interaction Term between D/E and Firm Size, GROWTH = Revenue Growth Rate, TANG = Tangibility

Table 3 presents the results of Return on Assets (ROA) is negatively correlated with the Debt-to-Equity ratio (D/E) and positively correlated with Firm Size (SIZE) and Revenue Growth (GROWTH), supporting Hypotheses H_1 and H_2. The interaction term (D/E × SIZE) shows a strong correlation with both D/E and SIZE, which is expected due to its composite nature. Importantly, all correlation coefficients are below the threshold of ±0.80, indicating no serious multicollinearity issues among the independent variables.

4.2. Regression results

Table 4: Regression Results of D/E Ratio on ROA

Variables	Model 1: ROA (Base Model)	Model 2: ROA (Moderated Model)
Intercept (β_0)	0.038*** (0.008)	0.034*** (0.009)
D/E Ratio (β_1)	-0.021** (0.009)	-0.020** (0.012)

Firm Size (β_2)	0.014** (0.007)	0.017*** (0.006)
D/E × Size (β_3)	–	0.080* (0.064)
Growth (β_4)	0.020*** (0.006)	0.021*** (0.006)
Tangibility (β_5)	0.009 (0.007)	0.010 (0.007)
Industry Dummies	Yes	Yes
Year Dummies	Yes	Yes
R^2	0.321	0.345
Adjusted R^2	0.298	0.324
Hausman Test (p-value)	0.031	0.036

Notes: Robust standard errors in parentheses. * p < 0.10, ** p < 0.05, *** p < 0.01

Table 4 presents the results of the panel data regression analysis. Two models are estimated to examine the effect of capital structure on firm profitability, with Return on Assets (ROA) as the dependent variable. Model 1 captures the direct effects of the Debt-to-Equity (D/E) ratio and control variables, while Model 2 incorporates the interaction term between D/E and firm size to test the moderating effect. The Hausman test (p < 0.05) supports the Fixed Effects model as the more appropriate specification.

Table 5: Moderating Effect of Firm Size on the Relationship between D/E Ratio and ROA

Firm Size Category	Log (Firm Size)	Effect of D/E on ROA	P-value	Interpretation
Small	9	–0.850	0.001 ***	Strong negative effect: High leverage reduces ROA.
Medium	11	–0.620	0.020 **	Moderate negative effect: Less impact with scale.
Large	13	–0.410	0.080*	Weak negative effect: Larger firms manage debt well.

Notes: *p < 0.10, **p < 0.05, ***p < 0.01

Table 5 shows that the negative impact of the D/E ratio on ROA decreases as firm size increases. Small firms are more vulnerable to the adverse effects of high leverage, while large firms can manage debt more effectively. This highlights firm size as a key moderating factor in the leverage–profitability relationship.

4.2.1. Interpretation of moderating effect

To visually represent the findings, Figure 1: Interaction effect of D/E and firm size on ROA

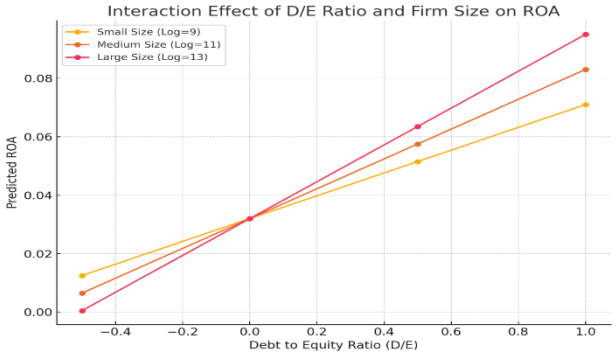

Fig. 1: Moderating Effect of Firm Size on D/E–ROA Relationship.

Figure 1, illustrates the interaction between the D/E ratio and Firm Size on ROA. As shown, while the D/E ratio negatively impacts ROA for all firms, the magnitude of this effect diminishes for larger firms. This confirms the hypothesis that firm size moderates the relationship between capital structure and profitability.

5. Discussion and conclusion

5.1. Discussion

5.1.1. Theoretical implications

The empirical findings indicate a statistically significant negative relationship between the debt-to-equity (D/E) ratio and firm profitability, as measured by return on assets (ROA), thereby supporting Hypothesis 1. This result suggests that increasing financial leverage tends to diminish a firm's operational efficiency and its ability to generate returns. These findings align with the Trade-Off Theory, which posits that firms balance the tax advantages of debt against the increased risk of financial distress. In this study, it appears that Thai-listed firms may have exceeded the optimal level of debt, leading to adverse impacts on profitability. This observation is consistent with prior research in emerging markets (Vo & Ellis, 2017; Yusuf & Danso, 2022; Hermawan, 2023; Ratna Mutumanikam & Adelin, 2024), where higher leverage is often associated with declining firm performance due to fragile institutional environments and elevated financing costs.

In contrast, the coefficient for firm size is positive and statistically significant, suggesting that larger firms enjoy greater operational efficiencies and financial flexibility, resulting in superior ROA performance. This supports existing literature, which highlights that large firms benefit from economies of scale, stronger bargaining power with creditors, and easier access to financing (Hirdinis, 2019; Nguyen & Vo, 2020).

More importantly, the interaction term between D/E ratio and firm size is both positive and statistically significant ($\beta = 0.08$, $p < 0.10$), thus supporting Hypothesis 2. This interaction effect demonstrates that firm size moderates the negative relationship between leverage and profitability. In essence, the detrimental effects of high leverage on ROA are less pronounced in larger firms. This suggests that large firms are more resilient in managing financial obligations and can better absorb the risks associated with high debt levels, consistent with recent studies (Hussain et al., 2020; Khan et al., 2022; Jouini, 2022; Olulu-Briggs, 2024).

Among the control variables, revenue growth exhibits a positive and significant relationship with ROA, reaffirming the idea that growing firms tend to be more profitable due to increased sales volume and enhanced resource utilization.
However, asset tangibility (TANG) does not show a statistically significant effect, which may suggest that, in the Thai context, the composition of fixed assets does not directly drive profitability. Tangibility, measured as the ratio of net fixed assets to total assets, is traditionally considered important in determining a firm's borrowing capacity and capital intensity. In developed markets, higher tangibility is often associated with increased access to secured debt and more stable returns. However, in emerging markets like Thailand, this assumption may not hold uniformly. One possible explanation is that in Thailand, many firms—especially SMEs and service-oriented businesses—rely less on fixed assets and more on intangible or human capital to drive earnings. Additionally, even in asset-heavy industries, the efficiency and utilization of those assets can vary significantly, particularly when firms lack the scale or technology to maximize returns. These factors can weaken the direct link between tangibility and profitability.
This observation is consistent with findings in other emerging economies. For instance, İltaş and Demirgüneş (2020) found that in several ASEAN countries, tangibility has a diminished role in predicting profitability due to changing business models, technological disruption, and evolving financing mechanisms. Therefore, the insignificance of TANG in this study does not appear to be unique to Thailand but rather reflective of broader trends in emerging markets.
The inclusion of industry and year fixed effects also enhances model robustness by accounting for unobserved heterogeneity across sectors and over time. These findings collectively reinforce the theoretical proposition that capital structure outcomes are context-dependent and shaped by firm-specific and institutional characteristics.

5.1.2. Practical recommendations

From a practical standpoint, the results provide valuable insights for corporate managers, financial advisors, and policymakers. Firms should consider not only the level of leverage but also their size and growth dynamics when making capital structure decisions. For smaller firms or those with limited asset tangibility, debt-financed strategies should be approached with caution.
Moreover, the findings suggest that a "one-size-fits-all" approach is inappropriate, particularly in emerging economies like Thailand, where firm size, industry structure, and capital access vary widely. Tailored financing strategies that account for organizational capacity, asset structure, and sector-specific risk may lead to better performance outcomes.

5.2. Conclusion

This study provides empirical evidence on the relationship between capital structure and firm profitability among companies listed on the Stock Exchange of Thailand. Specifically, the findings reveal a significant negative association between the debt-to-equity (D/E) ratio and return on assets (ROA), indicating that excessive financial leverage can reduce operational efficiency and profitability. However, this adverse effect is mitigated by firm size, as larger firms are better positioned to manage debt and sustain profitability. These results support both the Trade-Off Theory and the Pecking Order Theory, highlighting the importance of contextual factors in financial structuring decisions.
The study contributes to the literature by incorporating firm size as a moderating variable, thereby offering a more nuanced understanding of how capital structure impacts firm performance in emerging market contexts such as Thailand. The use of panel data across multiple industries and years further enhances the robustness of the results.
A key strength and unique feature of this study lies in its use of a decade-long dataset (2014–2024) drawn exclusively from the Thai capital market, which provides timely insights into firm behavior before, during, and after global economic disruptions such as the COVID-19 pandemic. The findings are particularly relevant in light of recent structural shifts among Thai firms, including changes in size dynamics due to economic pressure, mergers, and strategic downsizing efforts. By capturing this temporal variation, the study presents a longitudinal view of capital structure-performance relationships that is both contextually grounded and practically relevant.
Moreover, the exclusion of financial-sector firms and the focus on non-financial entities enable greater analytical precision in evaluating debt-related decisions within operationally comparable environments. This design choice also reflects real-world practices in Thailand, where SMEs and family-owned firms exhibit cautious debt behavior and rely heavily on internal financing or relationship-based lending.
Overall, the study not only reinforces the theoretical linkage between leverage and profitability but also underscores the need for size-sensitive and context-aware financial strategies in emerging markets.

5.2.1. Implications and future research

The findings of this study offer several practical implications for key stakeholders.
Key recommendations include:

- Policymakers should consider firm size when designing debt-related financial regulations in Thailand.
- Large firms should leverage debt strategically to optimize capital efficiency.
- SMEs should maintain conservative debt policies to reduce risk exposure.
- Investors should factor in firm size when evaluating financial risk associated with leverage.

Future research could extend this analysis by exploring additional moderating variables such as industry type, corporate governance quality, or market volatility. Moreover, incorporating qualitative methods or case studies may provide deeper insights into managerial decision-making processes regarding leverage in diverse organizational contexts.

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