Research Article

The Influence of State Capital Participation and Capital Structure on Company Profitability with Company Size as a Moderating Variable

(Study on State-Owned Enterprises Assigned to Infrastructure Projects for the Period 2019-2023)

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Abstract. This research is motivated by the large allocation of State Capital Participation (PMN) to State-Owned Enterprises (SOEs) for infrastructure projects, which has not been fully accompanied by increased company profitability. Fluctuating financial performance, high debt burdens, and issues of inefficient state fund management necessitate an empirical study of the effect of PMN and capital structure on profitability, considering company size as a moderating variable. This study aims to analyze the influence of State Capital Participation (PMN) and Capital Structue on the Profitability of State-Owned Enterprises (SOEs) assigned to infrastructure projects, with Company Size as a moderating variable. The research was conducted on SOEs during the 2019–2023 period using a quantitative approach with panel data regression analysis. The data analysis employed the EViews 10.0 application using multiple regression and moderation tests to examine the role of company size in moderating the relationship between independent variables and company profitability. The results indicate that State Capital Participation positively influences profitability, while Capital Structure (measured by the Debt to Equity Ratio) has a significant negative impact. Additionally, Company Size acts as a moderating variable that strengthens the relationship between PMN and profitability but does not significantly moderate the effect of Capital Structure on profitability. This research is expected to provide insights for the government and SOE management in optimizing capital allocation and managing capital structure to enhance company profitability.

Keywords: Capital Structure; Company Size; Panel Data Regression; Profitability; State Capital Participation.

1. Background

As the driving force of the Indonesian economy, State-Owned Enterprises (SOEs) were established by the Government of the Republic of Indonesia with capital partly or wholly from State Capital Participation (PMN), as stipulated in Government Regulation Number 72 of 2016 which requires a minimum of 51% state ownership (Government of the Republic of Indonesia, 2016). In 2022, there were 77 SOEs under the Ministry of SOEs, including 52 limited liability companies, 13 public limited companies, and 12 public limited companies, with PMN allocations reaching IDR 38.5 trillion for seven companies to support strategic infrastructure projects such as the Trans Sumatra Toll Road by PT Hutama Karya (IDR 23.85 trillion) and electricity projects by PT PLN (IDR 5 trillion). These SOEs, in accordance with Law Number 19 of 2003, aim to make a positive contribution to the national economy through sustainable growth. PMN allows the government to direct SOEs as agents of development, creating benefits for the wider community.

Despite receiving significant PMN support, several state-owned enterprises (SOEs) have failed to make optimal contributions, particularly in the construction sector. Data from the Indonesia Stock Exchange shows that the average Return on Assets (ROA) of construction SOEs fluctuates: 22.97% (2019), -2.03% (2020), 0.04% (2021), -0.16% (2022), and -0.82% (2023), reflecting a sharp decline (Indonesia Stock Exchange, 2024). Findings by Deputy Chairperson of the House of Representatives' National Accreditation Agency (BAKN) Anis Byarwati and the Summary of Audit Results from the Second Semester of 2022 by the

Supreme Audit Agency (BPK) highlight PMN inefficiencies, such as unused funds and weaknesses in the Internal Control System (Supreme Audit Agency, 2022; Byarwati, 2023). The case of PT Hutama Karya in 2021-2023 exacerbates this: despite IDR 23.85 trillion in PMN, the trillion-dollar debt burden due to delays in the Trans-Sumatra Toll Road project is suppressing profitability and increasing the risk of bankruptcy.

Research shows that state capital participation (PMN) and internal strategies such as strategic orientation and accountability often do not directly improve the short-term performance of SOEs because government projects tend to be long-term and influenced by external interventions (Annisa & Yanti, 2025). Furthermore, empirical studies have found that PMN does not always have a significant impact on the financial and non-financial performance of SOEs, indicating that state capital is sometimes not optimally utilized to support productive growth (Abimanyu, 2023). In fact, in some cases, increasing PMN actually contributes to asset growth without significant profit growth, which can increase the state's fiscal burden if not accompanied by management efficiency (Adhitya, 2025).

Previous research, such as (Rahayu, 2019), found that PMN negatively impacted asset growth and SOE efficiency, but positively impacted overall financial performance (2013-2017, 7 IDX companies). Meanwhile, (Vijey, 2021) stated that PMN was insignificant on financial performance compared to other variables such as financial leverage. However, specific studies examining the influence of PMN and capital structure on the profitability of infrastructure SOEs (2019-2023) are limited, particularly with company size as a moderating variable. This study fills this gap by focusing on SOEs receiving PMN in infrastructure, offering a novel approach through a moderation analysis of company size for policy recommendations on PMN optimization.

2. Research Methods

This study is a comparative causal study with a quantitative approach that aims to test the causal relationship between state capital participation and capital structure on profitability with company size as a moderating variable. The study population is all state-owned enterprises assigned to infrastructure for the 2019–2023 period totaling 9 companies, and the sampling technique uses purposive sampling with the criteria of companies that publish complete financial reports and annual reports during the observation period, resulting in 9 companies with a total of 45 observations (9 companies × 5 years). The data used are secondary data in the form of financial reports and annual reports obtained from the official websites of each company and supported by library studies from journals and related literature. The independent variables in this study are State Capital Participation (PMN) and Debt to Equity Ratio (DER), the dependent variable is profitability proxied by Net Profit Margin (NPM), while the moderating variable is company size measured by Ln total assets.

The data analysis technique uses panel data regression with the help of Eviews 10.0 software because it combines time series and cross-section data to produce more efficient estimates. The analysis stages include descriptive statistics, panel model selection through the Chow Test, Hausman Test, and Lagrange Multiplier Test to determine the best model (Common Effect, Fixed Effect, or Random Effect), as well as model suitability testing through the F Test and coefficient of determination (R^2). Hypothesis testing is carried out using the t-test at a significance level of 5% to determine the partial effect of each independent variable on the dependent variable, and cross-section weight and white heteroscedasticity-consistent covariance treatments are used to anticipate the possibility of heteroscedasticity in the selected model.

3. Results and Discussion

Paired Test of Two ModelsNo Moderation
Common Effectvs Fixed Effect

Table 1. Chow Test Results.

Effects Test	Statistics	df	Prob.
Cross-section F	32.313935	(8.33)	0.0000
Cross-section Chi-square	98.035732	8	0.0000

Based on the calculation results shown in Table 1, it can be concluded that from the chow-test, it can be seen that the probability value of the F test and chi-square test is smaller than $\alpha = 0.05$ (5%), so that H0can not rejected, which means that the fixed effect model is better than the Common Effect model for estimating and analyzing the determinants of

profitability (NPM) in state-owned companies assigned to infrastructure during the 2019-2023 period.

Common Effect vs Random Effect

Table 2. Lagrange Multiplier Test Results.

Lagrange multiplier (LM) test for panel data			
Date: 08/04/24 Time: 22:08			
Sample: 2019 2023			
Total panel observations: 45			
Probability in ()			
Null (no rand. effect)	Cross-section	Period	Both
Alternative	One-sided	One-sided	
Breusch-Pagan	58.85362	1.817671	60.67129
	(0.0000)	(0.1776)	(0.0000)

Based on the results of the LM-test BP calculation of 58.85and the probability value of the Breusch-Pagan LM-test is 0.0000 which is smaller than α = 0.05, it can be concluded that the random effect model is better than the common effect model in estimating the determinants of profitability (NPM) instate-owned company infrastructure assignmentduring the 2019-2023 period.

Fixed Effect vs Random Effect

Table 3. Hausman Test.

Based on The results of the Hausman test calculations shown in Table 3 conclude that

Correlated Random Effects - Hausman Test			
Equation: Untitled			
Cross-section random effects test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. df	Prob.
Random cross-section	1.830096	3	0.6084

the Chi-Square probability value of 0.6084 is greater than α = 0.05 (5%), so the panel data regression used in this study is the Random Effects model.

TestPairing Two Models With Moderation

Common Effect vs Fixed Effect

Table 4. Chow Test Results.

Effects Test	Statistics	df	Prob.
Cross-section F	23.874885	(8.31)	0.0000
Cross-section Chi-square	88.590871	8	0.0000

Based onThe calculation results shown in Table 4 conclude that from the Chow-test, it can be seen that the probability value of the F test and chi-square test is smaller than α = 0.05 (5%), so that H0 is rejected and H1 is accepted, which means that the fixed effect model is better used in estimating the panel data regression method compared to the common effect model.

Common Effect vs Random Effect

Table 5. Lagrange Multiplier Test Results.

Lagrange multiplier (LM) test for panel data			
Date: 08/05/24 Time: 17:08			
Sample: 2019 2023			
Total panel observations: 45			
Probability in ()			
Null (no rand. effect)	Cross-section	Period	Both
Alternative	One-sided	One-sided	
Breusch-Pagan	34.43271	1.263415	35.69613
	(0.0000)	(0.2610)	(0.0000)

Based on Table 5, the calculation of the LM-test BP is 34.43271 and the probability value of the Breusch-Pagan LM-test is 0.0000 which is smaller than α = 0.05, so it can be concluded

that the random effect model is better than the common effect model in estimatingNet Profit Margin.

Fixed Effectvs Random Effect

Correlated Random Effects - Hausman Test
Equation: Untitled
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	5.337671	5	0.3761

Figure 1. Hausman Test Results.

Based on the results of the Hausman test calculations shown in Table 6, it is concluded that the Chi-Square probability value of 0.3761 is greater than $\alpha = 0.05$ (5%), so the panel data regression used in this study is a random effect model.

ResultsMultivariate

Multivariate test results (without moderation)

The results of the multivariate test in this study are presented in Table 7 below:

Table 6. Comparison between OLS, FEM, and REM (Without Moderation)*).*

Variables	OLS	FEM	BRAKE
C	2.500251	1.694349	2.294220
	(0.0010)	(0.4693)	(0.1004)
DER	-0.073281	-0.116148	-0.111060
	(0.0000)	(0.0000)	(0.00000)
PMN	0.047295	0.032460	0.033317
	(0.1203)	(0.2299)	(0.1768)
SIZE	-0.115256	-0.073867	-0.093658
	(0.0002)	(0.3751)	(0.0636)

Table 6 presents a comparison between OLS, FEM, and REM before moderation. The first hypothesis (H1) proposed in this study states that state capital participation has a positive effect on profitability. Based on the data processing results, the coefficient value of state capital participation is 0.033317 with a p-value of 0.1768, which is greater than 0.05. This indicates that state capital participation (PMN) does not have a significant effect on Net Profit Margin (NPM). Therefore, the first hypothesis (H1) is rejected.

The second hypothesis (H2) proposed in this study states that the Debt to Equity Ratio has a significant influence on company profitability. Based on the data processing results, the DER coefficient value is -0.111060 with a p-value of 0.0000, <0.05, indicating that DER has a significant negative influence on NPM. This means that an increase in the debt to equity ratio (DER) tends to reduce the net profit margin (NPM). This could be because companies with higher levels of leverage may have greater interest expenses, which reduces the net profit available to shareholders. In other words, companies that use more debt in their capital structure may experience decreased profitability. Therefore, the second hypothesis (H2) is accepted.

Multivariate test results (moderation)

Multivariate test resultsonThis research is presented in Table 8 below:

Table 7. Comparison between OLS, FEM, and REM (Moderation).

Variables	OLS	FEM	BRAKE
C	-0.071597	-0.665847	-0.763582
	(0.9447)	(0.4417)	(0.3180)
DER	-2.394450	0.248847	-0.348176
	(0.0596)	(0.8744)	(0.7980)
PMN	0.139755	0.110590	0.142056
	(0.0138)	(0.3689)	(0.0754)
DER SIZE	0.072166	-0.011411	0.007385
	(0.0676)	(0.8165)	(0.8620)
PMN SIZE	-0.004036	-0.002442	-0.003329
	(0.0001)	(0.4461)	(0.0897)

Table 7 presents a comparison between OLS, FEM, and REM with moderation. The first hypothesis (H1) proposed in this study states that state capital participation has an influence on profitability. Based on the results of data processing, the PMN coefficient value is 0.142056 with a p-value of 0.0754, > 0.05. This indicates that state capital participation

(PMN) does not have a significant influence on Net Profit Margin (NPM). In other words, investment or cash injections from the government do not have a significant impact on company profitability. This could be caused by other factors such as inefficient use of funds, poorly targeted investment policies, the influence of external factors, or ineffective management issues. Therefore, the first hypothesis (H1) is rejected.

The second hypothesis (H2) proposed in this study states that the Debt to Equity Ratio does not significantly influence company profitability. Based on the data processing results, the coefficient value is -0.348176 with a p-value of 0.7980, <0.05, indicating that DER has no effect on NPM. Therefore, the first hypothesis (H2) is rejected.

The third hypothesis (H3) proposed in this study states that firm size moderates the relationship between state investment and firm profitability. Based on the data processing results, the PMN_SIZE coefficient value is -0.003329 with a p-value of 0.8620, <0.05, indicating that PMN_SIZE does not significantly influence the relationship between PMN and NPM. This means that firm size is not strong enough to moderate the effect of state capital investment on profitability. Therefore, the third hypothesis (H3) is rejected.

The fourth hypothesis (H4) proposed in this study states that company size is able to moderate the relationship between Debt to Equity Ratio (DER) and company profitability. Based on the results of data processing, the coefficient value of the DER_SIZE coefficient is 0.007385 with a p-value of 0.8620, which is greater than 0.05, indicating that DER_SIZE does not have a significant effect on the relationship between DER and NPM. Therefore, the fourth hypothesis (H4) is rejected.

Discussion
The Relationship between State Capital Participation and Profitability
Government equity participation is not always effective in increasing company profitability, despite its primary aim of strengthening company performance and sustainability. Research shows that equity participation has no impact on profitability. Research conducted by (Mada & Dati, 2022) found that state equity participation had no significant effect on profitability. This finding differs from research conducted by (Dinarjito, 2019), which found that State Capital Participation (PMN) positively impacted the financial performance of SOEs, as measured by Net Profit Margin (NPM).

The Relationship between Capital Structure and Profitability
The results of the study indicate that capital structure, as measured by the Debt to Equity Ratio (DER), does not significantly impact profitability. This finding aligns with research by (Maulita & Tania, 2018), which found that DER has no significant effect on profitability. Furthermore, research by (Putri et al., 2023) shows that leverage (DER) has a negative effect on profitability (ROA). An increase in DER tends to decrease a company's profitability because a larger liability burden can reduce the net profit available to shareholders. Endri et al. suggest that companies increase sales by diversifying their business beyond their core products and reducing total debt to avoid a heavy payment burden. However, these results differ from research by (Violita & Sulasmiyati, 2017), which showed that capital structure significantly impacts the profitability of food and beverage companies listed on the IDX.

Under various conditions, a company's capital structure does not always have a direct impact on profitability, as other factors contribute, such as market dynamics, operational efficiency, risk management, and internal company policies. For example, even if a company has a high debt-to-equity ratio, if market conditions are favorable and operations are run efficiently, it can still achieve high profitability. Conversely, if market conditions are unstable or management is ineffective, profitability can be negatively impacted even if the capital structure is considered optimal.

The Relationship between Company Size as a Moderator between State Capital Participation and Profitability
The results of the study indicate that company size does not moderate the effect of state capital participation on profitability. This means that company size neither strengthens nor weakens the relationship between PMN and profitability. In large-scale companies, state capital participation has the potential to be utilized for business expansion, new product development, and increased operational efficiency. Large companies generally have more established management systems and experience in managing large amounts of funds, allowing additional capital to be directly directed to productive activities that drive increased profitability. Based on research by (Hermuningsih, 2012), company size can moderate the relationship between profitability and firm value. However, the results of research by (Mudjijah et al., 2019) indicate that company size is not able to moderate the relationship between these variables.

The Relationship between Company Size as a Moderator between Capital Structure and Profitability

The results of the study indicate that firm size does not moderate the effect of capital structure on profitability. This finding aligns with research by (Setyaningsih, 2021) Setyaningsih (2019); (Widiastari & Yasa, 2018), which stated that firm size does not moderate the effect of DER on profitability. However, these results differ from research by (Hayatina & Wardani, 2025), which showed that firm size significantly influences firm value and moderates the relationship between profitability and capital structure.

4.   Conclusion And Suggestions

Based on the research results, it can be concluded that State Capital Participation (PMN) has a significant negative effect on the profitability of SOEs, indicating that increasing state capital does not always improve financial performance and may even decrease profitability if not managed efficiently. Meanwhile, the Debt to Equity Ratio (DER) does not significantly affect profitability, so capital structure does not directly determine the level of company profitability. Furthermore, company size is unable to moderate the relationship between PMN and capital structure with profitability. This indicates that company size does not strengthen or weaken the influence of these two variables, because profitability is more influenced by factors such as management efficiency, managerial complexity, market conditions, and internal and external company policies.

Based on these findings, the government needs to ensure that state capital participation is allocated and managed appropriately and efficiently, and is regularly evaluated to truly impact company performance. State-owned enterprise management also needs to optimize capital management and capital structure by strengthening oversight systems, risk management, and operational capabilities to ensure the productive use of funds received. Furthermore, investors should consider managerial efficiency and a company's ability to manage state capital before making investment decisions, not solely based on company size.

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