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The Impact of Working Capital, Capital Structure, and Firm Size on Profitability of Publicly Listed State-Owned Enterprises: The Moderating Role of Public Ownership

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Abstract: This study examines the effects of working capital, capital structure, and firm size on profitability, measured by Return on Assets (ROA), and investigates whether public ownership moderates these relationships in publicly listed Indonesian state-owned enterprises (SOEs). The study uses a quantitative design and Moderated Regression Analysis (MRA) on 18 non-banking SOEs listed on the Indonesia Stock Exchange in 2024, selected through purposive sampling. The direct-effect model shows that working capital has a positive and significant effect on profitability, while capital structure and public ownership do not have significant direct effects. Firm size also has a positive and significant effect on profitability. In the moderation model, the interaction between capital structure and public ownership is negative and significant, whereas the interactions between working capital and public ownership and between firm size and public ownership are not significant. The moderated model explains 76.7% of the variation in profitability based on the adjusted R-squared, and the overall model is statistically significant. The findings indicate that profitability among listed SOEs is strongly associated with internal resource management, particularly working capital and organizational scale, while public ownership functions primarily as a governance mechanism that changes the relationship between financing decisions and profitability.

Keyword: Profitability, Working Capital, Capital Structure, Firm Size, Public Ownership, State-Owned Enterprises, Moderated Regression Analysis.

INTRODUCTION

State-owned enterprises (SOEs) occupy a strategic position in the Indonesian economy because they are expected to perform as commercial entities while also supporting national development objectives. Their profitability is therefore important not only for managers and investors but also for the government as the controlling shareholder. Profitability reflects how effectively corporate resources are converted into earnings and is commonly assessed through

Return on Assets (ROA), which captures the ability of a company to generate returns from the assets under its control (Brigham & Houston, 2019; Ross et al., 2022).

Recent aggregate conditions indicate that the scale of Indonesian SOEs has continued to expand even though profitability has not increased proportionally. The thesis underlying this article reports that aggregate SOE assets increased from approximately Rp9,800 trillion in 2022 to more than Rp10,900 trillion in 2024, while aggregate net income declined from about Rp327 trillion in 2023 to approximately Rp304 trillion in 2024. Aggregate ROA also declined from around 3.0% in 2023 to 2.8% in 2024 (Badan Pusat Statistik, 2024; Kementerian Badan Usaha Milik Negara, 2024). This divergence between asset growth and profitability raises an important managerial question: whether the efficiency of working capital, financing decisions, and organizational scale can explain differences in SOE profitability.

Working capital is particularly relevant because it represents the net resources available to support short-term operations. In this study, working capital is measured as current assets minus current liabilities. Efficient management of these resources can support liquidity, operational continuity, and the productive use of funds. Prior studies have generally associated efficient working capital management with stronger profitability, although the empirical evidence is not uniform across firms and contexts (Khajar et al., 2020; Pham & Nguyen, 2022; Nguyen et al., 2023; Rahmawati et al., 2024).

Capital structure is another important internal factor. Debt can provide financing for expansion and investment, but excessive leverage may increase financial costs and risk. Trade-Off Theory suggests that firms should balance the benefits of debt financing against bankruptcy, agency, and financing costs. Empirical studies likewise report mixed findings concerning the effect of leverage on profitability (Bui et al., 2020; Le & Phan, 2021; Evelyne et al., 2024; Febriyanti & Hasibuan, 2025). The relevance of this issue may be particularly strong for SOEs because large-scale projects and public-policy responsibilities can generate substantial financing requirements.

Firm size may create economies of scale, broader access to financing, stronger operational capabilities, and more diversified resources. However, larger organizations may also face bureaucratic complexity and higher coordination costs. Previous evidence therefore does not imply that size automatically produces higher profitability, even though several studies report a positive relationship (Alarussi & Gao, 2021; Nainggolan et al., 2022; Vo & Ellis, 2023).

Public ownership provides an additional governance dimension. In listed SOEs, ownership is divided between the government and non-government shareholders. From an agency perspective, public shareholders can increase external monitoring, transparency, and market discipline. However, public ownership may have little direct effect on profitability while still changing how managerial financial decisions translate into performance. This possibility is consistent with the governance arguments of Agency Theory and with evidence that ownership structure can influence firm performance (Nguyen et al., 2020; Alabdullah, 2021; Zhang et al., 2023; Yuliani & Prasetyo, 2024).

The research gap addressed by this study has three dimensions. First, previous findings concerning working capital, capital structure, and firm size are inconsistent. Second, many prior studies focus on private firms or specific industries rather than publicly listed Indonesian SOEs. Third, public ownership is more commonly examined as an independent governance variable than as a moderator of the relationship between financial factors and profitability. This study therefore integrates financial-management variables and public ownership in a Moderated Regression Analysis framework using the most recent 2024 cross-sectional observations available in the thesis.

Accordingly, this study aims to examine the direct effects of working capital, capital structure, firm size, and public ownership on profitability and to test whether public ownership moderates the effects of working capital, capital structure, and firm size on profitability. The hypotheses are: H1, working capital affects profitability; H2, capital structure affects

profitability; H3, firm size affects profitability; H4, public ownership affects profitability; H5, public ownership moderates the working-capital–profitability relationship; H6, public ownership moderates the capital-structure–profitability relationship; and H7, public ownership moderates the firm-size–profitability relationship.

METHOD

This study uses a quantitative associative design. The unit of analysis is a publicly listed Indonesian SOE, with profitability as the dependent variable. The population consists of non-banking SOEs listed on the Indonesia Stock Exchange (IDX), while banking entities are excluded because their working-capital and capital-structure characteristics are fundamentally different from those of non-financial companies. Purposive sampling produced 18 eligible SOEs and therefore 18 observations for the 2024 cross-sectional analysis.

Profitability (Y) is measured by Return on Assets (ROA). Working capital (X1) is measured as current assets minus current liabilities. Capital structure (X2) is measured by the Debt-to-Equity Ratio (DER). Firm size (X3) is measured using the natural logarithm of total assets. Public ownership (M) is measured as the percentage of shares held by the public or non-government shareholders. The interaction variables are X1×M, X2×M, and X3×M.

Data were obtained from the financial and ownership information used in the thesis, including annual reports and supporting official SOE statistics. Descriptive statistics were used to summarize the data. Classical assumption testing included the Shapiro–Wilk normality test, tolerance and Variance Inflation Factor (VIF) tests for multicollinearity, the Glejser test for heteroscedasticity, and the Durbin–Watson statistic for autocorrelation. Direct effects were tested through multiple linear regression, followed by Moderated Regression Analysis (MRA). The moderation model was specified as:

$$ROA = \beta0 + \beta1WC + \beta2CS + \beta3SIZE + \beta4PO + \beta5(WC\times PO) + \beta6(CS\times PO) + \beta7(SIZE\times PO) + \varepsilon$$

Hypothesis decisions use a 5% significance level. A p-value below 0.05 is interpreted as statistically significant. The thesis reports that the interaction variables were formed after mean-centering the main variables to reduce excessive multicollinearity and facilitate interpretation.

RESULTS AND DISCUSSION

Descriptive Statistics

The descriptive statistics indicate substantial differences across the 18 listed SOEs. The average working-capital value is negative, while average public ownership is approximately 31.43%. Profitability also shows considerable dispersion, with the minimum ROA at -54.11% and the maximum at 12.21%.

Table 1. Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Working Capital	18	-23.40	9.02	-2.7050	9.68186
Capital Structure	18	-5.90	7.24	0.9006	2.90914
Firm Size	18	27.15	33.33	31.18	1.46
Public Ownership	18	8.98	48.99	31.4300	12.66996
ROA	18	-54.11	12.21	-2.0311	15.81699

Source: SPSS output reported in the thesis (2026).

The negative mean of working capital (-2.7050) suggests that, on average, the sampled SOEs experienced pressure in short-term resource management. The wide ROA range illustrates strong differences in asset-use effectiveness. The thesis identifies PT Indofarma Tbk (INAF) as having the lowest ROA and PT Bukit Asam Tbk (PTBA) as having the highest ROA among the observations. Firm size varies from 27.15 to 33.33 in natural-log total assets, reflecting meaningful differences in organizational scale.

Direct Regression Results

The direct regression model includes working capital, capital structure, firm size, and public ownership. The model is statistically significant overall ($F = 8.562$; $p = 0.001$), and its adjusted R-squared is 0.640. Thus, the four predictors jointly explain 64.0% of the variation in ROA in the direct-effect model.

Table 2. Direct Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	-2.802	2.250		-1.245	0.235
Working Capital	0.592	0.249	0.362	2.376	0.034
Capital Structure	0.270	0.817	0.050	0.331	0.746
Firm Size	8.528	1.673	0.783	5.099	0.000
Public Ownership	-0.163	0.195	-0.131	-0.836	0.418

Source: SPSS output reported in the thesis (2026).

The direct regression equation is $ROA = -2.802 + 0.592WC + 0.270CS + 8.528SIZE - 0.163PO + \varepsilon$. Working capital has a positive and significant coefficient ($B = 0.592$; $p = 0.034$), supporting H1. Firm size also has a positive and significant coefficient ($B = 8.528$; $p < 0.001$), supporting H3. Capital structure is not significant ($p = 0.746$), so H2 is not supported. Public ownership is also not significant as a direct predictor ($p = 0.418$), so H4 is not supported.

Moderated Regression Analysis

The MRA model introduces public ownership and the three interaction terms. The adjusted R-squared increases from 64.0% to 76.7%, an improvement of 12.7 percentage points. The overall moderated model is statistically significant ($F = 9.006$; $p = 0.001$), indicating that the combined predictors and interaction terms explain a substantial proportion of the variation in ROA.

Table 3. Moderated Regression Coefficients

Variable	B	Std. Error	Beta	t	Sig.
Constant	0.734	2.336		0.314	0.760
Working Capital	0.292	0.236	0.178	1.238	0.244
Capital Structure	-1.642	0.911	-0.302	-1.803	0.102
Firm Size	1.760	2.651	0.162	0.664	0.522
Public Ownership	0.072	0.179	0.057	0.399	0.698
Working Capital × Public Ownership	-0.005	0.017	-0.041	-0.304	0.767
Capital Structure ×	-0.317	0.103	-0.875	-3.078	0.012

Public Ownership					
Firm Size × Public Ownership	-0.005	0.188	-0.004	-0.029	0.978

Source: SPSS output reported in the thesis (2026).

The moderation equation is ROA = 0.734 + 0.292WC - 1.642CS + 1.760SIZE + 0.072PO - 0.005(WC×PO) - 0.317(CS×PO) - 0.005(SIZE×PO) + ε. Only the interaction between capital structure and public ownership is statistically significant (B = -0.317; p = 0.012). The working-capital interaction is not significant (p = 0.767), and the firm-size interaction is not significant (p = 0.978). Consequently, H5 and H7 are not supported, while H6 is supported.

Classical Assumption Tests

The Shapiro–Wilk statistic is 0.941 with p = 0.297, indicating normally distributed residuals. Tolerance values range from 0.867 to 0.938 and VIF values from 1.067 to 1.153, indicating no multicollinearity. The thesis reports that the Glejser test produces p-values of 0.382 for working capital, 0.236 for capital structure, 0.042 for firm size, and 0.309 for public ownership. The Durbin–Watson statistic is 2.091, which the thesis interprets as indicating no autocorrelation.

Hypothesis Testing and Discussion

Working Capital and Profitability

H1 is supported. The positive coefficient indicates that stronger net working capital is associated with higher ROA. For SOEs, adequate short-term resources can support uninterrupted operations and reduce liquidity pressure. The finding is consistent with the working-capital perspective in financial management and with studies emphasizing the importance of efficient working-capital management (Baños-Caballero et al., 2016; Khajar et al., 2020; Pham & Nguyen, 2022; Nguyen et al., 2023). It also supports Signalling Theory because a healthier short-term financial position can signal stronger operational resilience to investors. The result differs from studies reporting insignificant working-capital effects, suggesting that institutional context and the post-restructuring condition of Indonesian SOEs may matter (Rahmawati et al., 2024).

Capital Structure and Profitability

H2 is not supported. Although the direct coefficient is positive in the basic regression, its significance level is 0.746. This means that differences in debt-equity composition did not independently explain profitability in the sampled SOEs. The result is compatible with the idea that debt can provide financing benefits but may simultaneously create interest costs and financial risk. In the SOE context, project financing, restructuring, and policy-related investment requirements may weaken a simple linear relationship between leverage and ROA. The finding contrasts with studies reporting significant capital-structure effects (Bui et al., 2020; Le & Phan, 2021; Evelyne et al., 2024), highlighting the importance of context.

Firm Size and Profitability

H3 is supported. Firm size has a positive and highly significant effect in the direct model. Larger SOEs may possess broader operating networks, stronger access to financing, more diversified assets, and greater potential to spread fixed costs across activities. This result supports the Theory of Economies of Scale and is consistent with evidence that firm size can be associated with stronger financial performance (Alarussi & Gao, 2021; Nainggolan et al., 2022; Vo & Ellis, 2023). Nevertheless, the result should not be interpreted as meaning that asset expansion alone guarantees profitability; efficient use of assets remains essential.

Public Ownership and Profitability

H4 is not supported. Public ownership has no statistically significant direct effect on ROA (p = 0.418). This indicates that a higher public shareholding proportion does not automatically translate into higher profitability. Public investors may provide monitoring and transparency benefits, but these mechanisms may operate indirectly through managerial decisions rather than through a direct profitability effect. This interpretation is consistent with an agency perspective in which ownership structure affects incentives and monitoring rather than necessarily producing immediate operating gains.

Moderating Role of Public Ownership in the Working-Capital Relationship

H5 is not supported because the working-capital × public-ownership interaction is insignificant (p = 0.767). The profitability benefits associated with working-capital management therefore appear to depend more directly on operational efficiency than on the proportion of public ownership. Public monitoring may not be strong enough, or sufficiently homogeneous across firms, to change the effectiveness of short-term resource management.

Moderating Role of Public Ownership in the Capital-Structure Relationship

H6 is supported. The capital-structure × public-ownership interaction is negative and significant (B = -0.317; p = 0.012). The thesis classifies public ownership as a pure moderator because public ownership is not significant as a direct predictor while its interaction with capital structure is significant. The negative interaction suggests that as public ownership changes, the relationship between financing leverage and profitability also changes, rather than remaining constant. From an Agency Theory perspective, public shareholders can intensify external monitoring of financing decisions. From a Trade-Off Theory perspective, this result suggests that the profitability consequences of debt depend on the governance environment in which debt is used.

Moderating Role of Public Ownership in the Firm-Size Relationship

H7 is not supported because the firm-size × public-ownership interaction is not significant (p = 0.978). The positive direct relationship between firm size and profitability in the basic model is therefore not statistically altered by public ownership in the moderated model. This indicates that scale-related advantages, where present, are more closely related to operating capacity and resource utilization than to the proportion of shares held by the public.

Table 4. Hypothesis Testing Summary

Hypothesis	Statement	Sig.	Decision
H1	Working capital → Profitability	0.034	Supported
H2	Capital structure → Profitability	0.746	Not supported
H3	Firm size → Profitability	0.000	Supported
H4	Public ownership → Profitability	0.418	Not supported
H5	Working capital × Public ownership → Profitability	0.767	Not supported
H6	Capital structure × Public ownership → Profitability	0.012	Supported
H7	Firm size × Public ownership → Profitability	0.978	Not supported

Source: SPSS output and hypothesis evaluation reported in the thesis (2026).

Overall Findings and Implications

The findings provide four theoretical implications. First, the positive working-capital effect supports the view that efficient short-term resource management contributes to profitability. Second, the firm-size result supports economies-of-scale reasoning. Third, the insignificant direct effect of public ownership but significant interaction with capital structure extends the agency perspective by showing that ownership may operate through governance and monitoring rather than through a direct performance channel. Fourth, the absence of a direct capital-structure effect but the significance of its interaction with public ownership is consistent with the Trade-Off Theory argument that financing outcomes depend on the balance between benefits, costs, and risk.

From a managerial perspective, SOE managers should prioritize working-capital efficiency, including the management of cash, receivables, inventories, and short-term liabilities. Asset expansion should also be accompanied by productivity improvements so that increases in firm size translate into economic value rather than merely larger balance sheets. Financing policies should be evaluated against expected returns and financing costs, while public investors and the government can strengthen transparency and monitoring mechanisms around major financing decisions.

The study also has limitations. The sample contains only 18 listed non-banking SOEs and covers a single year, 2024. The model uses three financial predictors and one ownership moderator, leaving other possible determinants of profitability outside the model. The thesis reports an adjusted R-squared of 76.7%, implying that 23.3% of profitability variation remains associated with factors not captured by the moderated model. Future research should extend the observation period, enlarge the sample, compare SOEs with non-SOEs, and consider additional governance and financial variables such as institutional ownership, independent commissioners, audit quality, sales growth, liquidity, dividend policy, and business risk.

CONCLUSION

This study concludes that profitability among publicly listed Indonesian SOEs in 2024 is significantly associated with working capital and firm size in the direct-effect model. Working capital has a positive and significant effect on ROA, indicating the importance of efficient short-term resource management. Firm size also has a positive and significant effect, supporting the relevance of economies of scale and organizational capacity. In contrast, capital structure and public ownership do not have significant direct effects on ROA.

The moderation analysis shows that public ownership does not moderate the relationship between working capital and profitability or between firm size and profitability. However, public ownership significantly moderates the relationship between capital structure and profitability, with a negative interaction coefficient. The overall moderated model is statistically significant and explains 76.7% of profitability variation on an adjusted basis. The central implication is that SOE profitability is primarily linked to the efficiency of internal resource utilization, while public ownership operates more strongly as a governance mechanism affecting how financing policies translate into performance.

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