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Government Ownership, Leverage, and Financial Performance of Indonesian State-Owned Construction Enterprises: The Mediating Role of Efficiency

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Abstract: This study examines the effect of government ownership and leverage on financial performance, with efficiency as an intervening variable, in state-owned construction enterprises (BUMN Karya) listed on the Indonesia Stock Exchange. The sample comprises seven companies selected by purposive sampling and observed from 2021 to 2025, giving 35 observations. Government ownership is measured by the state's share percentage, leverage by the debt to equity ratio (DER), efficiency by the operating cost ratio, and financial performance by return on assets (ROA). The data were analyzed using panel data regression and the Sobel test. The results show that DER has a positive effect on the operating cost ratio (coefficient 0.019, $p < 0.001$), and the operating cost ratio has a negative effect on ROA (coefficient −0.284, $p < 0.001$). DER has no direct effect on ROA but affects it indirectly through efficiency (Sobel $z = -2.64$, $p = 0.008$), indicating full mediation. Government ownership affects neither efficiency nor ROA. These findings indicate that debt restructuring of state-owned construction enterprises must be accompanied by improvements in operating efficiency for financial performance to recover.

Keywords: Efficiency; government ownership; leverage; return on assets; State-owned construction enterprises.

1. Introduction

1.1 Background to the study

State-owned enterprises (BUMN) in the construction sector, commonly referred to as BUMN Karya, play a central role in accelerating national infrastructure development in Indonesia. Over the past decade, the government has assigned these enterprises to build toll roads, dams, airports, and the new capital city, Ibu Kota Nusantara. These assignments have been financed mainly with debt, both bank loans and bonds, because the companies' own equity is small relative to project values. As a result, the capital structure of BUMN Karya has become highly dependent on debt, and their financial performance is vulnerable when project cash flows deviate from plan.

This condition is evident in the financial statements for 2021–2025. Six of the BUMN Karya in this study's sample, namely PT Wijaya Karya (Persero) Tbk (WIKA), PT Wijaya Karya Bangunan Gedung Tbk (WEGE), PT Wijaya Karya Beton Tbk (WTON), PT PP (Persero) Tbk (PTPP), PT PP Presisi Tbk (PPRE), and PT Adhi Karya (Persero) Tbk (ADHI), jointly recorded a net profit of IDR 0.81 trillion in 2021. This reversed to a loss of IDR 6.27 trillion in 2023 and peaked at a loss of IDR 23.24 trillion in 2025 (Figure 1). Over the same period, the combined total equity of these six issuers shrank by 63%, from IDR 46.27 trillion to IDR 17.08 trillion.

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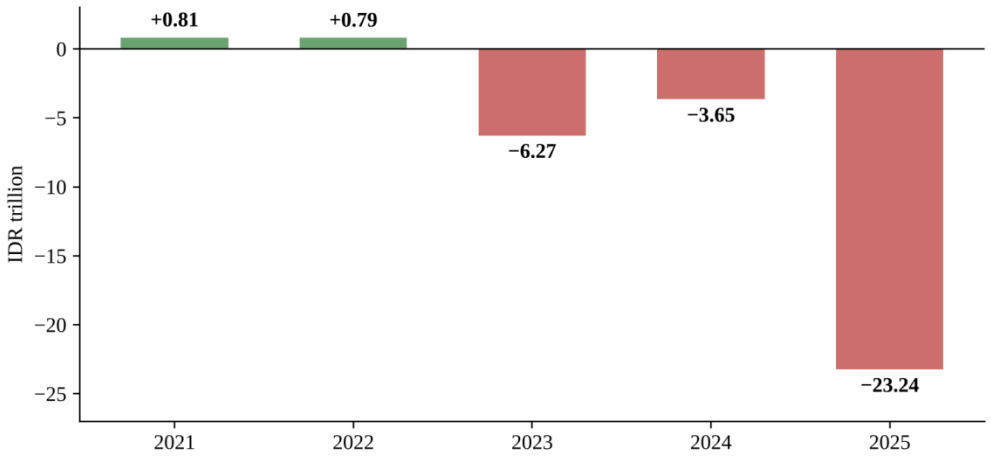


Figure 1: Combined Net Profit (Loss) of Six BUMN Karya (WIKA, WEGE, WTON, PTPP, PPRE, ADHI), 2021–2025

Source: StockAnalysis (2026), processed by the authors

The erosion of equity caused the debt to equity ratio (DER) to surge. WIKA's DER rose from 2.98 times in 2021 to 28.76 times in 2025, as its equity fell to only IDR 1.69 trillion after a loss of IDR 9.71 trillion in a single year. PTPP's DER rose from 2.88 to 8.98 times, and ADHI's from 6.05 to 7.73 times (Figure 2). In contrast, PT Jasa Marga (Persero) Tbk (JSMR), which relies on toll revenue, reduced its DER from 2.97 to 1.57 times and remained profitable. This contrast suggests that debt levels and the ability to manage operating costs are closely related to financial performance.

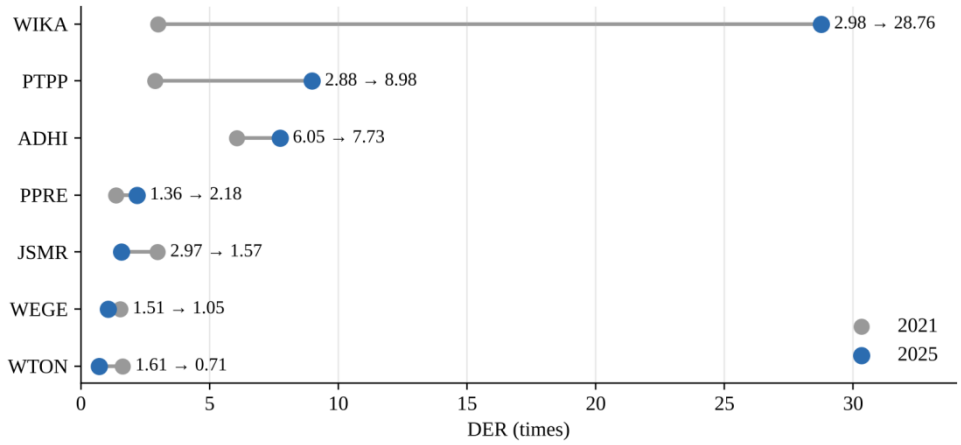


Figure 2: Debt to Equity Ratio (DER) of BUMN Karya, 2021 and 2025

Source: StockAnalysis (2026), processed by the authors

Financial pressure was also visible in the capital market. Trading in the shares of PT Waskita Karya (Persero) Tbk (WSKT) has been suspended since 8 May 2023 and that of WIKA since 18 February 2025, and both are categorized as being at high risk of delisting (IDN Financials, 2025b). The government responded with a plan to merge seven BUMN Karya into three entities (IDN Financials, 2025a). At the same time, state shareholdings in listed BUMN were transferred to the operational holding of the Danantara investment management agency through an in-kind contribution (inbreng) in March 2025, for example 91.018% of WIKA, 64.332% of ADHI, and 51% of PTPP (IDX Channel, 2025; tvOneNews, 2025).

1.2 Statement of the problem

Theoretically, the relationship between debt and performance remains debated. The trade-off theory, rooted in Modigliani and Miller (1963), states that debt provides tax-shield benefits up to a certain point, beyond which the costs of financial distress reduce firm value and performance. The pecking order theory explains that profitable firms tend to use internal funds, so highly indebted firms are generally less profitable (Myers, 1984; Myers & Majluf, 1984). Regarding ownership, agency theory views the government as a principal that monitors the board of directors as agent (Jensen & Meckling, 1976),

whereas Shleifer and Vishny (1994) caution that state ownership is prone to being used for political objectives at the expense of efficiency.

Empirical evidence on the effect of state ownership and intervention on performance is also inconsistent. Megginson and Netter (2001) note that the impact of state ownership on performance depends strongly on the institutional context. Dinarjito (2019) and As'ari and Yaya (2020) examined state capital injections and state ownership in Indonesian BUMN, while Yu (2013) found a non-linear relationship between state ownership and the performance of Chinese listed firms. Studies of leverage in the construction sector generally find a negative effect of DER on ROA (Sukmarani & Purbawati, 2026 : Elliyana, 2020), but rarely test the pathway that explains why debt reduces performance.

This study fills that gap by positioning efficiency as an intervening variable that explains how government ownership and leverage (DER) affect financial performance. The object of the study is BUMN Karya listed on the Indonesia Stock Exchange over 2021–2025, a period that covers the sector's financial crisis of 2023–2025.

1.3 Research objectives

The main objective was to analyze the effect of government ownership and leverage on the financial performance of BUMN Karya, with efficiency as an intervening variable. The specific objectives were to:

1. Determine the effect of government ownership on efficiency.
2. Determine the effect of leverage (DER) on efficiency.
3. Determine the effect of government ownership on financial performance (ROA).
4. Determine the effect of leverage (DER) on financial performance (ROA).
5. Determine the effect of efficiency on financial performance (ROA).
6. Examine the mediating role of efficiency in the effects of government ownership and leverage on financial performance.

The results are expected to inform the management of BUMN Karya, the Ministry of State-Owned Enterprises and Danantara as shareholders, and investors in assessing the capital structure risk of these companies.

1.4 Research hypotheses

The study tested the following hypotheses:

i. H_1: Government ownership affects the efficiency of BUMN Karya.

ii. H_2: Leverage (DER) has a positive effect on the operating cost ratio (i.e., reduces efficiency).

iii. H_3: Government ownership affects the financial performance (ROA) of BUMN Karya.

iv. H_4: Leverage (DER) has a negative effect on financial performance (ROA).

v. H_5: Efficiency (operating cost ratio) has a negative effect on financial performance (ROA).

vi. H_6: Efficiency mediates the effect of government ownership (H_{6a}) and leverage (H_{6b}) on financial performance.

2. Literature Review

2.1 Theoretical framework

2.1.1 Agency Theory

Agency theory explains the contractual relationship between a principal who delegates authority and an agent who exercises it (Jensen & Meckling, 1976). Conflict arises because their interests are not always aligned and the agent holds more complete information. In BUMN, the state acts as principal and the board of directors as agent. A large state shareholding gives the government control rights through the general meeting of shareholders and the Series A Dwiwarna (golden) share, which in theory strengthens oversight of directors. However, Shleifer and Vishny (1994) argue that politicians tend to use state-owned firms for non-commercial purposes, such as assigning financially unviable projects, so that state ownership may instead reduce efficiency. The review by Megginson and Netter (2001) of privatization studies likewise shows that firms with smaller state ownership tend to be more efficient and profitable.

2.1.2 Capital Structure Theories

Capital structure theory provides the basis for understanding the effect of debt. Modigliani and Miller (1963) show that debt provides an interest tax shield, an insight later developed into the trade-off theory: firms add debt as long as the tax benefit exceeds the cost of financial distress. Beyond the optimal point, interest expenses, restructuring costs, and the loss of supplier and creditor confidence depress performance. The pecking order theory states that firms prefer internal funds, so heavily indebted firms are generally those unable to generate sufficient profit (Myers, 1984; Myers & Majluf, 1984). Brigham and Houston (2019) emphasize that leverage magnifies financial risk because interest charges are fixed while project revenues fluctuate.

2.1.3 Financial Performance and Efficiency

Financial performance in this study is measured by return on assets (ROA), i.e., the firm's ability to generate profit from all its assets (Kasmir, 2019). ROA was chosen because it is not distorted by very small or negative equity, a condition experienced by several BUMN Karya. Efficiency is measured by the operating cost ratio, i.e., cost of revenue plus operating expenses divided by operating revenue. This

ratio reflects cost efficiency, the firm's ability to contain costs for every rupiah of revenue. The smaller the ratio, the more efficient the firm; a ratio above 1 means the firm incurs losses from its operations.

2.2 Empirical literature and hypothesis development

2.2.1 Government ownership and efficiency

The effect of government ownership on efficiency can work in two directions. From a monitoring perspective, larger state ownership strengthens control over directors and thus encourages efficiency (Jensen & Meckling, 1976). From a political intervention perspective, larger ownership opens room for non-commercial assignments that reduce efficiency (Shleifer & Vishny, 1994). Chen et al. (2011) found that government intervention reduces the investment efficiency of state-owned firms in China, while Megginson and Netter (2001) observed that a reduced role of the state is generally followed by improved efficiency. These arguments underpin H_1.

2.2.2 Leverage and efficiency

High leverage burdens firms with interest, guarantee, and restructuring costs. In construction firms, swelling debt also limits the ability to purchase materials and pay subcontractors on time, causing project delays and higher costs per unit of revenue. The trade-off theory predicts that beyond the optimal point, financial distress costs reduce operating efficiency (Modigliani & Miller, 1963; Brigham & Houston, 2019), which underpins H_2.

2.2.3 Government ownership and financial performance

Government ownership may also affect financial performance positively, through access to funding and project assignments, or negatively, through political intervention. Yu (2013) found that the relationship between state ownership and the performance of Chinese listed firms depends on the level of ownership, while As'ari and Yaya (2020) tested state ownership together with capital investment on the financial performance of Indonesian BUMN. Dinarjito (2019) examined state capital injections, asset growth, and BUMN performance, whereas Setyadi and Raharjo (2020) found that after receiving a state capital injection, the debt structure of PT KAI improved but its asset utilization efficiency declined. Ikhsan (2021) analyzed the impact of state capital injections on the financial performance of PT Waskita Karya (Persero) Tbk, one of the BUMN Karya. These studies motivate H_3.

2.2.4 Leverage and financial performance

Both the pecking order and trade-off theories predict a negative relationship between leverage and profitability in highly indebted firms. Sukmarani and Purbawati (2026) found that DER has a negative and significant effect on ROA among 27 heavy construction and engineering firms listed on the Indonesia Stock Exchange in 2020–2023, which supports H_4.

2.2.5 Efficiency and financial performance

Efficiency is a direct determinant of profitability, because every rupiah of cost that can be saved adds to profit. Tan and Wang (2010) show that efficiency shapes the performance of state-owned enterprises in China, which supports H_5.

2.2.6 The mediating role of efficiency

If government ownership and leverage affect efficiency, and efficiency affects ROA, then efficiency serves as the pathway linking them (Baron & Kenny, 1986). This mediating role (H_6) is tested with the Sobel test (Sobel, 1982).

2.3 Conceptual framework

The conceptual framework is presented in Figure 3. Dashed lines indicate the direct effects of the independent variables on ROA, while solid lines indicate the paths through efficiency.

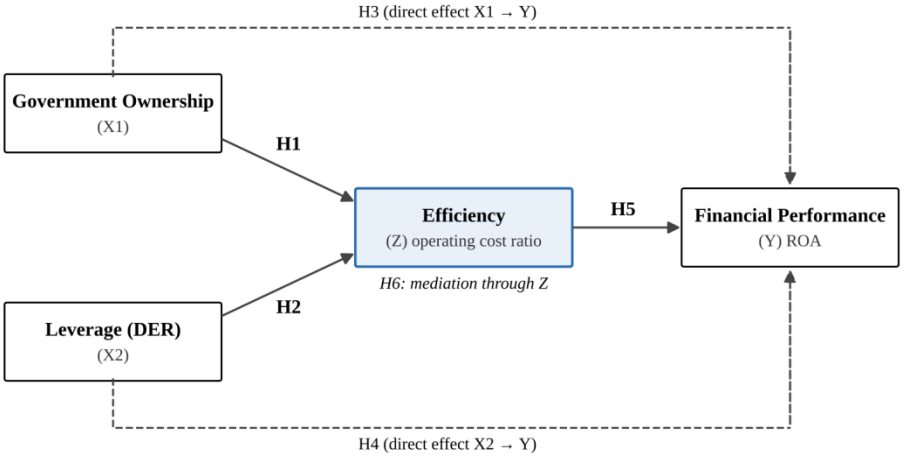


Figure 3: Conceptual Framework

Source: Developed by the authors

3. Research Methodology

3.1 Research design, population and sample

This is a quantitative study with a causal-associative approach, testing the effect of independent variables on a dependent variable through an intervening variable (Sugiyono, 2013). The population comprises BUMN Karya and their subsidiaries listed on the Indonesia Stock Exchange (IDX). The sample was selected by purposive sampling using four criteria: (1) listed on the IDX no later than 2021; (2) published complete annual financial statements for 2021–2025; (3) core business in construction or infrastructure and positive equity during the study period; and (4) data available for all variables. The sample selection is presented in Table 1.

Table 1: Sample Selection

Code	Company name	Status	Remarks
WIKA	PT Wijaya Karya (Persero) Tbk	Parent BUMN	Included
WEGE	PT Wijaya Karya Bangunan Gedung Tbk	Subsidiary of WIKA	Included
WTON	PT Wijaya Karya Beton Tbk	Subsidiary of WIKA	Included
PTPP	PT PP (Persero) Tbk	Parent BUMN	Included
PPRE	PT PP Presisi Tbk	Subsidiary of PTPP	Included
ADHI	PT Adhi Karya (Persero) Tbk	Parent BUMN	Included
JSMR	PT Jasa Marga (Persero) Tbk	Parent BUMN	Included
WSKT	PT Waskita Karya (Persero) Tbk	Parent BUMN	Excluded: incomplete data for 2021, 2022, 2025
PPRO	PT PP Properti Tbk	Subsidiary of PTPP	Excluded: core business in property
ADCP	PT Adhi Commuter Properti Tbk	Subsidiary of ADHI	Excluded: listed on the IDX in 2022

Source: Authors' own analysis, 2026

3.2 Data sources

The final sample consists of seven issuers observed over five years, yielding 35 observations in a balanced panel. The study uses secondary data in the form of the issuers' annual financial statements compiled from the StockAnalysis (2026) database, together with shareholder composition information from annual reports and issuer disclosures reported in the media.

3.3 Operationalization of variables

The operational definitions are presented in Table 2. Government ownership in subsidiaries is measured by the percentage of shares held by the parent BUMN, since the state owns these subsidiaries indirectly. After March 2025, state shares in listed BUMN were transferred to the Danantara operational holding, so ownership in 2025 is also treated as indirect state ownership.

Table 2: Operational Definitions of Variables

Variable	Indicator	Formula
Government ownership (X1)	Percentage of state shares, held directly or through the parent BUMN	State-held shares ÷ total shares outstanding
Leverage (X2)	Debt to equity ratio (DER)	Total liabilities ÷ total equity
Efficiency (Z)	Operating cost ratio	(Cost of revenue + operating expenses) ÷ operating revenue
Financial performance (Y)	Return on assets (ROA)	Net profit (loss) ÷ total assets

Source: Authors' own analysis, 2026

3.4 Data analysis

The data were analyzed using panel data regression with two structural equations, the efficiency equation (1) and the financial performance equation (2):

$$Z_{it} = \alpha_0 + \alpha_1 X1_{it} + \alpha_2 X2_{it} + \varepsilon_{it} \quad (1)$$

$$Y_{it} = \beta_0 + \beta_1 X1_{it} + \beta_2 X2_{it} + \beta_3 Z_{it} + \mu_{it} \quad (2)$$

The subscript *i* denotes the issuer and *t* the year. Each equation was estimated with three approaches: the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The best model was selected using the Chow test (CEM vs. FEM), the Hausman test (FEM vs. REM), and the Lagrange Multiplier test (CEM vs. REM) (Ghozali, 2018). The selected models were then tested for classical assumptions, namely normality (Jarque-Bera), multicollinearity (variance inflation factor), heteroscedasticity (Glejser test), and autocorrelation (Durbin-Watson) (Gujarati & Porter, 2009). Where heteroscedasticity was detected, standard errors were corrected using the White method.

Hypotheses H_1 to H_5 were tested with t-tests at the 5% significance level, while model fit was assessed with the F-test and the coefficient of determination. The mediation hypothesis (H_6) was tested with the Sobel test (Sobel, 1982) using equation (3), where *a* is the coefficient of X on Z in equation (1) and *b* is the coefficient of Z on Y in equation (2). Mediation is significant when |z| exceeds 1.96.

$$z = (a \cdot b) / \sqrt{(b^2 SE_a^2 + a^2 SE_b^2 + SE_a^2 SE_b^2)} \quad (3)$$

All estimations and tests were performed in Python using the NumPy and SciPy libraries, following standard panel data estimators: pooled least squares for CEM, the within estimator for FEM, and Swamy-Arora GLS for REM.

4. Results

4.1 Descriptive statistics

Descriptive statistics are presented in Table 3. Average government ownership is 66.34%, ranging from 51% (PTPP, and ADHI in 2021) to 91.02% (WIKA in 2024–2025 after receiving a state capital injection through a rights issue). Average DER is 3.43 times with a standard deviation of 4.81, far larger than its mean, indicating very wide variation in leverage, from 0.71 times (WTON 2025) to 28.76 times (WIKA 2025). The average operating cost ratio is 0.96 times, meaning that operating costs absorb on average 96% of revenue. The highest value of 1.48 times was recorded by PTPP in 2025 and the lowest of 0.67 times by JSMR in 2023. Average ROA is negative at −1.99%, ranging from −21.57% (PPRE 2025) to 5.25% (JSMR 2023).

Table 3: Descriptive Statistics (N = 35)

Variable	Mean	Median	Maximum	Minimum	Std. Dev.
Government ownership (X1)	0.6634	0.6505	0.9102	0.5100	0.1019
DER (X2), times	3.4284	2.3233	28.7552	0.7066	4.8077
Operating cost ratio (Z), times	0.9592	0.9545	1.4815	0.6747	0.1726
ROA (Y)	−0.0199	0.0064	0.0525	−0.2157	0.0714

Source: Authors' own analysis, 2026

4.2 Model selection

The results of the model selection tests are presented in Table 4. For the efficiency equation, the Chow test yields a probability of 0.0014, so FEM is preferred to CEM; the Hausman test yields 0.7060, so REM is preferred to FEM; and the LM test yields 0.0010, so REM is preferred to CEM. The efficiency equation is therefore estimated with REM. For the ROA equation, the Chow test yields an F probability of 0.1214 and the LM test 0.6119, so CEM is selected. The individual-effect variance in this equation is zero, making REM identical to CEM.

Table 4: Model Selection Tests

Test	Efficiency equation (Z)	ROA equation (Y)
Chow (cross-section F)	5.0859; p = 0.0014 → FEM	1.8945; p = 0.1214 → CEM
Hausman (cross-section random)	0.6962; p = 0.7060 → REM	0.0000; p = 1.0000 → REM
Lagrange Multiplier (Breusch-Pagan)	10.8860; p = 0.0010 → REM	0.2574; p = 0.6119 → CEM
Selected model	**REM**	**CEM**

Source: Authors' own analysis, 2026

4.3 Classical assumption tests

The classical assumption tests for the selected models are summarized in Table 5. All VIF values are below 10, indicating no multicollinearity. The Durbin-Watson values of both equations lie between dU and 4 − dU, indicating no autocorrelation. The residuals of the efficiency equation are normally distributed, but those of the ROA equation are not, owing to three extreme observations in 2025 (WEGE, PPRE, and ADHI) when the sector recorded large losses. With 35 observations, the distribution of the estimators remains approximately normal by the central limit theorem (Gujarati & Porter, 2009). The Glejser test indicates heteroscedasticity in the ROA equation, which is therefore estimated with White heteroscedasticity-robust standard errors.

Table 5: Summary of Classical Assumption Tests

Test	Efficiency equation (REM)	ROA equation (CEM)
Normality (Jarque-Bera)	3.0777; p = 0.2146 (normal)	16.7655; p = 0.0002 (not normal)
Multicollinearity (highest VIF)	1.66 (none)	1.66 (none)
Heteroscedasticity (Glejser)	All p > 0.05 (none)	p = 0.002–0.021 (White-corrected)
Autocorrelation (Durbin-Watson)	2.2024; dU = 1.5838 (none)	1.7390; dU = 1.6528 (none)

Source: Authors' own analysis, 2026

4.4 Panel regression estimation

The estimation results of both equations are presented in Table 6. The efficiency equation has an R^2 of 0.365 with an F-statistic of 9.188 (p = 0.0007), so government ownership and DER jointly affect efficiency and explain 36.5% of its variation. The ROA equation has an R^2 of 0.642 and an adjusted R^2 of 0.608 with an F-statistic of 18.550 (p < 0.001), so the three variables jointly explain 64.2% of the variation in ROA.

Table 6: Panel Data Regression Estimates

Variable	Eq. (1) REM coef.	t	p	Eq. (2) CEM, White SE coef.	t	p
Constant	0.8980	4.191	0.0002	0.3227	2.958	0.0059
Government ownership (X1)	−0.0057	−0.018	0.9861	−0.0948	−1.108	0.2764
DER (X2)	0.0190	3.856	0.0005	−0.0022	−0.914	0.3678
Operating cost ratio (Z)	–	–	–	−0.2836	−3.735	0.0008
R^2 / adjusted R^2	0.365 / 0.325			0.642 / 0.608		
F-statistic (p)	9.188 (0.0007)			18.550 (0.0000)		

Source: Authors' own analysis, 2026

4.5 Mediation test

The results of the mediation test are presented in Table 7. The path from DER through efficiency yields a z value of −2.637 with a probability of 0.0084, so the mediation is significant. The path from government ownership through efficiency yields a z value of only 0.017 with a probability of 0.9864, so it is not significant.

Table 7: Sobel Test Results

Path	a	SE a	b	SE b	a × b	z	p
X1 → Z → Y	−0.0057	0.3252	−0.2836	0.0759	0.0016	0.017	0.9864
X2 → Z → Y	0.0190	0.0049	−0.2836	0.0759	−0.0054	−2.637	0.0084

Source: Authors' own analysis, 2026

5. Discussion

5.1 Government ownership and efficiency (H_1)

H_1 is rejected: government ownership has no effect on efficiency ($p = 0.9861$). A possible explanation is that ownership varies relatively little across issuers and hardly changes over time, except for WIKA in 2024 and ADHI in 2022. In addition, the state retains control through the Series A Dwiwarna share regardless of its ownership percentage, so differences in percentage do not change the pattern of oversight and assignment. The two mechanisms predicted by theory, monitoring that improves efficiency (Jensen & Meckling, 1976) and political intervention that reduces it (Shleifer & Vishny, 1994), probably operate simultaneously and offset each other.

5.2 Leverage and efficiency (H_2)

H_2 is accepted: DER has a positive and significant effect on the operating cost ratio (coefficient 0.0190; $p = 0.0005$). Each one-time increase in DER raises the operating cost ratio by about 0.019 points, or operating costs increase by about 1.9% of revenue. This supports the trade-off theory that debt beyond the optimal point generates financial distress costs (Modigliani & Miller, 1963; Brigham & Houston, 2019). In BUMN Karya, these costs take the form of late payments to suppliers and subcontractors, delayed projects, and impairment losses on project assets. The cases of WIKA and PTPP in 2025 illustrate this pattern: as their DER jumped to 28.76 and 8.98 times, their operating cost ratios rose to 1.36 and 1.48 times.

5.3 Direct effects on financial performance (H_3 and H_4)

H_3 is rejected: government ownership has no effect on ROA ($p = 0.2764$). This is consistent with Setyadi and Raharjo (2020), who found that state capital support does not automatically improve BUMN performance. H_4 is also rejected: DER has no direct effect on ROA ($p = 0.3678$) once efficiency is included in the model. This differs from Sukmarani and Purbawati (2026), who did not include efficiency in their model, suggesting that the negative effect of DER on ROA found in earlier studies actually operates through efficiency.

5.4 Efficiency and financial performance (H_5)

H_5 is accepted: the operating cost ratio has a negative and significant effect on ROA (coefficient −0.2836; $p = 0.0008$). An increase of 0.1 points in the operating cost ratio reduces ROA by about 2.8 percentage points. Figure 4 shows this pattern clearly: JSMR, with an operating cost ratio of around 0.7, consistently records positive ROA, whereas the 2025 observations with ratios above 1 cluster in the negative ROA region. This finding is consistent with Tan and Wang (2010), who show the role of efficiency in determining the performance of state-owned enterprises.

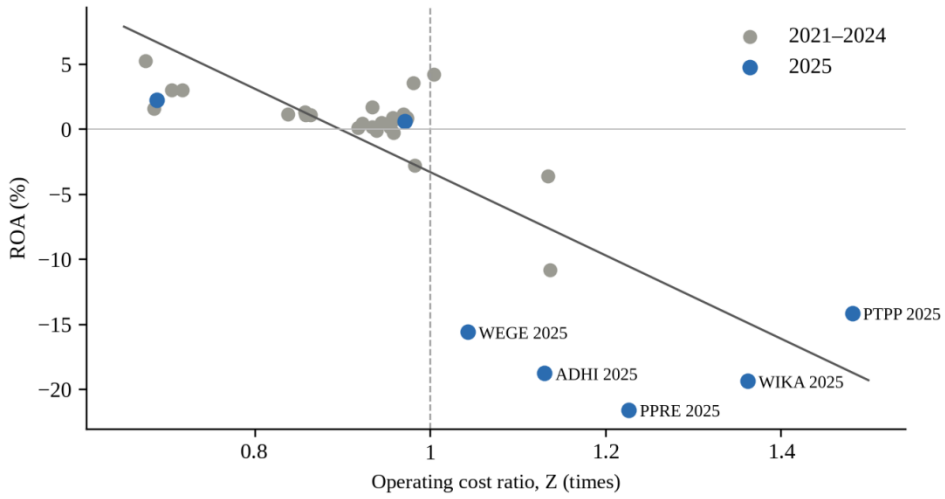


Figure 4: Operating Cost Ratio and ROA, 35 Firm-Year Observations

Source: Authors' own analysis, 2026

5.5 The mediating role of efficiency (H_6)

H_6 is accepted for the DER path (H_{6b}) and rejected for the government ownership path (H_{6a}). Because DER significantly affects efficiency, efficiency significantly affects ROA, and the direct effect of DER on ROA is not significant, efficiency fully mediates the effect of DER on ROA (Baron & Kenny, 1986). In other words, high debt does not reduce ROA directly but through rising operating costs relative to revenue. A summary of all paths is presented in Figure 5.

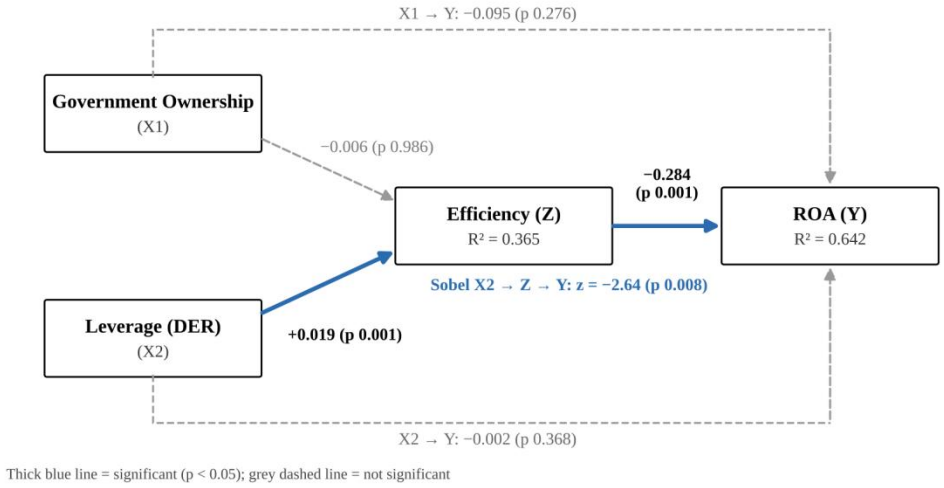


Figure 5: Results of the Path Model

Source: Authors' own analysis, 2026

5.6 Practical implications

Rescuing BUMN Karya through debt restructuring or state capital injections will improve performance only if accompanied by better operating efficiency. Without cost control, reducing DER alone may not restore profitability. For Danantara and the Ministry of State-Owned Enterprises, the planned merger of BUMN Karya should prioritize eliminating projects and business units with cost ratios above 1, rather than merely combining balance sheets.

6. Conclusion and Recommendations

6.1 Conclusion

This study concludes that leverage is a key factor explaining the deterioration in the financial performance of BUMN Karya listed on the IDX during 2021–2025, but its effect operates through efficiency. DER has a positive and significant effect on the operating cost ratio, so the higher the debt relative to equity, the larger the share of revenue absorbed by operating costs. The operating cost ratio in turn has a negative and significant effect on ROA. DER has no direct effect on ROA, so efficiency fully mediates the effect of DER on financial performance. In contrast, government ownership affects neither efficiency nor ROA, and efficiency does not mediate their relationship.

6.2 Recommendations

i. Management of BUMN Karya should prioritize operating cost control, among others by selecting projects with adequate margins, accelerating progress-billing collection, and discontinuing business units with cost ratios above 1.

ii. The Ministry of State-Owned Enterprises and Danantara, as shareholders, should adopt the operating cost ratio as a key performance indicator in the restructuring and merger programme of BUMN Karya, because debt reduction without efficiency improvement may not restore profitability.

iii. Investors should consider DER and the operating cost ratio jointly when assessing the risk of BUMN Karya shares.

iv. Future researchers should extend the sample to all construction firms on the IDX, add variables for national strategic project assignments or state capital injections, use quarterly data to increase observations, and test robustness using a logarithmic transformation of DER.

6.3 Limitations

This study has several limitations. The sample comprises only seven issuers with 35 observations, because the number of listed BUMN Karya is limited and WSKT lacked complete data. The residuals of the ROA equation are not normally distributed owing to extreme losses in 2025, so the results should be interpreted with caution. Government ownership hardly varies over time, and part of the ownership data was obtained from secondary sources. Financial data were compiled from an aggregator database, so some figures may differ from the official financial statements because of restatements.

References

1. As'ari, T. M. H., & Yaya, R. (2020). Capital investment, asset growth, liquidity, and state ownership on the financial performance of state-owned enterprises. Jurnal Reviu Akuntansi dan Keuangan, 10(2), 192–207. https://doi.org/10.22219/jrak.v10i2.11793
2. Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and

statistical considerations. Journal of Personality and Social Psychology, 51(6), 1173–1182.
3. Brigham, E. F., & Houston, J. F. (2019). Fundamentals of financial management (15th ed.). Cengage Learning.
4. Chen, S., Sun, Z., Tang, S., & Wu, D. (2011). Government intervention and investment efficiency: Evidence from China. Journal of Corporate Finance, 17(2), 259–271. https://doi.org/10.1016/j.jcorpfin.2010.08.004
5. Dinarjito, A. (2019). Penyertaan modal negara, pertumbuhan aset, dan kinerja Badan Usaha Milik Negara [State capital injection, asset growth, and the performance of state-owned enterprises]. E-Jurnal Akuntansi, 28(2), 1323–1345. https://doi.org/10.24843/eja.2019.v28.i02.p20
6. Ela Elliyana, Se (2021). Lembaga Keuangan Dan Pasar Moda . Buku Ahlimedia.
7. Ghozali, I. (2018). Aplikasi analisis multivariate dengan program IBM SPSS 25 (9th ed.). Badan Penerbit Universitas Diponegoro.
8. Gujarati, D. N., & Porter, D. C. (2009). Basic econometrics (5th ed.). McGraw-Hill/Irwin.
9. IDN Financials. (2025a, August 9). Merger soon – is there any improvement in BUMN Karya? https://www.idnfinancials.com/news/56490/merger-soon-is-there-any-improvement-in-bumn-karya
10. IDN Financials. (2025b, December 30). Suspensi berkepanjangan, saham BUMN ini berpotensi delisting [Prolonged suspension, these BUMN shares may be delisted]. https://www.idnfinancials.com/id/news/60002/suspensi-berkepanjangan-saham-bumn-ini-berpotensi-delisting
11. IDX Channel. (2025, April 2). 11 emiten BUMN ini sudah alihkan saham negara ke holding Danantara [These 11 listed BUMN have transferred state shares to the Danantara holding]. https://www.idxchannel.com/economics/11-emiten-bumn-ini-sudah-alihkan-saham-negara-ke-holding-danantara
12. Ikhsan, V. H. Y. (2021). Analisis dampak penyertaan modal negara (PMN) terhadap kinerja keuangan PT Waskita Karya (Persero) Tbk [Analysis of the impact of state capital injection on the financial performance of PT Waskita Karya (Persero) Tbk]. Indonesian Rich Journal, 2(2), 17–27. https://doi.org/10.31092/irj.v2i2.31
13. Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305–360.
14. Kasmir. (2019). Analisis laporan keuangan (Rev. ed.). Rajawali Pers.
15. Megginson, W. L., & Netter, J. M. (2001). From state to market: A survey of empirical studies on privatization. Journal of Economic Literature, 39(2), 321–389.
16. Modigliani, F., & Miller, M. H. (1963). Corporate income taxes and the cost of capital: A correction. The American Economic Review, 53(3), 433–443.
17. Myers, S. C. (1984). The capital structure puzzle. The Journal of Finance, 39(3), 574–592.
18. Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13(2), 187–221.
19. Setyadi, E., & Raharjo, T. (2020). Analisis kinerja keuangan PT KAI sebelum dan setelah penyertaan modal negara pada tahun 2015 [Financial performance of PT KAI before and after the 2015 state capital injection]. Indonesian Rich Journal, 1(2), 108–122.
20. Shleifer, A., & Vishny, R. W. (1994). Politicians and firms. The Quarterly Journal of Economics, 109(4), 995–1025.
21. Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in structural equation models. Sociological Methodology, 13, 290–312.
22. StockAnalysis. (2026). Financial statements: WIKA, WEGE, WTON, PTPP, PPRE, ADHI, JSMR (IDX), fiscal years 2021–2025. Retrieved October 20, 2026, from https://stockanalysis.com/quote/idx/
23. Sugiyono. (2013). Metode penelitian kuantitatif, kualitatif, dan R&D. Alfabeta.
24. Sukmarani, F., & Purbawati, D. (2026). Pengaruh struktur modal (DER), likuiditas (CR), dan manajemen aset (TATO) terhadap profitabilitas (ROA) pada perusahaan sub sektor heavy construction & engineering yang terdaftar di BEI periode 2020–2023. Jurnal Ilmu Administrasi Bisnis, 15(2), 888–898. https://doi.org/10.14710/jiab.2026.49801
25. Tan, J., & Wang, L. (2010). Flexibility–efficiency tradeoff and performance implications among Chinese SOEs. Journal of Business Research, 63(4), 356–362. https://doi.org/10.1016/j.jbusres.2009.04.016
26. tvOneNews. (2025, March 30). Danantara resmi kuasai 64,332 persen saham PT Adhi Karya Tbk, kepemilikan negara hanya sisa 1 saham Seri A Dwiwarna [Danantara officially controls 64.332% of PT Adhi Karya Tbk shares; the state retains only one Series A Dwiwarna share]. https://www.tvonenews.com/ekonomi/317032
27. Yu, M. (2013). State ownership and firm performance: Empirical evidence from Chinese listed companies. China Journal of Accounting Research, 6(2), 75–87. https://doi.org/10.1016/j.cjar.2013.03.003