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THE EFFECT OF FUNDING POLICY AND MACROECONOMICS ON ECONOMIC VALUE-ADDED CREATION IN INFRASTRUCTURE STATE-OWNED ENTERPRISES

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Abstract

Determining the optimal capital structure for a company is crucial as it impacts its value. Additionally, macroeconomic conditions such as Inflation and interest rates can affect a company's value. This study aims to establish a correlation between capital structure, measured by the Debt to Equity (DER) ratio, macroeconomic factors, reflected in Inflation and interest rates, and the creation of economic value added (EVA) and company profitability, measured by the ratio of return on invested capital (ROIC). A panel data regression methodology was used to conduct this research, and a sample of infrastructure state-owned enterprises that carried out National Strategic Projects (PSN) between 2011 and 2021 was taken. The results showed that DER had a negative and significant impact on EVA and ROIC, while Inflation did not affect ROIC and EVA. Additionally, the interest rate had a positive and significant impact on ROIC but not on EVA.

Keywords: capital structure, DER, EVA, macroeconomic, National Strategic Projects.

Introduction

The fundamental objective of a corporation is to generate profits by maximizing its shareholders' value (Andreadakis, 2012). To achieve this objective, firms strive to decrease their total capital costs and increase their stock market price (Kimathi et al., 2015; Mbonu & Amahalu, 2021). One approach to minimizing capital costs is to secure the firm's capital using an appropriate mix of debt and equity (Jreisat et al., 2021; Khan et al., 2022). Typically, businesses finance their activities and investment needs through either debt or equity. The composition of a company's capital, in terms of debt and equity, is referred to as Capital Structure and is usually measured using ratios such as debt-to-equity or debt-to-total asset. Determining whether to use debt or equity to finance operations involves many variables, and striking an optimal balance between the two can be challenging (Team, 2022).

The topic of Capital Structure has attracted significant attention from scholars, especially since Modigliani (1958) presented their arguments. They claimed that the amount

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of debt a firm issues does not affect its market value under certain circumstances, such as unconstrained arbitrage, no bankruptcy, and no corporate taxes. However, the assumptions presented by Modigliani and Miller are seldom met in reality. Later studies have shown that Capital Structure is relevant to a company's market value, and excessive debt levels may lead to a decrease in value.

In addition to the Modigliani and Miller theory, there are other prevailing theories on firms' optimal Capital Structure, such as the trade-off theory, the pecking order theory, and the agency theory. These theories suggest that Capital Structure decisions involve balancing tax benefits and the potential for financial risk, borrowing instead of issuing stock when there are insufficient internal funds, and using debt to increase a company's value if its operating cash flows exceed its investment needs.

Despite the widely accepted Modigliani and Miller theory that states that a company's capital structure does not affect its value, recent studies have shown that Capital Structure composition is crucial for a firm's profitability and value. In the infrastructure industry in Indonesia, particularly in the toll road industry, state-owned enterprises usually fund toll road construction with 70% debt and 30% equity (Chan & Pribadi, 2022), which raises questions about the impact of Capital Structure on the profitability of infrastructure SOE.

This study aims to investigate the Capital Structure-profitability relationship in the infrastructure industry in Indonesia. The study employed panel data methodology and analyzed a sample of 9 SOEs in Indonesia that managed National Strategic Projects between 2011 and 2021. This study contributes to the existing literature by providing empirical evidence on the effect of Capital Structure on firm performance, particularly in the infrastructure sector in Indonesia. The results will benefit business managers, policymakers, regulators, and academics.

Literature Review

Every company faces the problem of deciding on the appropriate source, funding scheme, or capital structure to support its business activities (K. Shahveisi et al., 2022). Determining the capital structure is crucial because the cost of capital will serve as the basis for investment decision-making. Capital structure refers to the proportion of a company's funding, which can come from outside the company (debt financing) or through self-financing by issuing shares (equity financing), or a combination of both (Şamiloğlu-Riegermann, 2014).

Modigliani-Miller (MM) theory (Modigliani & Miller, 1958) states that the capital structure will not affect the company's value. However, this theory assumes that there is a perfect market with symmetrical information among economic actors. Contrary to this theory, a study held in Vietnam found that capital structure will affect a company's performance (Phan et al., 2017). In addition to the MM theory, there are other theories

regarding capital structure in imperfect markets, such as the trade-off theory, the pecking order theory, and the agency theory (Ahmed & Bhuyan, 2020).

The trade-off theory, developed by Kraus and Litzenberger in 1973 and Myers in 1984, assumes that to maximize the company's value, the company's management will trade off the cost of debt with the benefits of debt. The benefits of debt are primarily obtained from tax reductions resulting from a decrease in the company's profits due to interest payments. Meanwhile, debt costs can be reduced by direct and indirect bankruptcy costs through an increase in financial risk (Ricca et al., 2021).

In addition to the above studies, there is another theory in the field of corporate finance known as the pecking order theory (Chen et al., 2013). This theory proposes a specific order in which companies prefer to obtain financing, with internal financing being the first choice, followed by debt financing. Equity financing is considered a last resort and is only pursued when other sources of financing have been exhausted.

Lastly, the agency theory, developed by Jensen and Meckling in 1976, focuses on the relationship between different company stakeholders, particularly shareholders, and management. This theory suggests that the interests of these parties may not always be aligned, and conflicts of interest may arise. The agency theory proposes that the optimal capital structure can impact a company's value by minimizing these conflicts of interest. If the capital structure is structured to align the interests of various stakeholders, it can increase the company's overall value. It encourages all stakeholders to work together to maximize the company's value (Singh & Bagga, 2019).

The influence of Capital Structure on profitability in various industries has been a research topic for some scholars. Additionally, numerous studies have been conducted on the relationship between capital structure and firm performance in developing and developed countries. Some studies found a non-linear relationship between capital structure and firm performance, which can have positive and negative impacts. In developing countries, the capital structure tends to have a negative effect on firm performance, while in developed countries, it tends to have a positive impact (Detthamrong et al., 2017).

A study on 30 selected companies from the FTSE-100 Index on the London Stock Exchange also examined the impact of capital structure on firm profitability. The results showed that the debt-to-equity ratio (DER) has a significant positive impact on return on equity (ROE) but has a significant negative impact on return on assets (ROA) and return on invested capital (ROIC). A further study recommended that to achieve the targeted efficiency level in business, companies should use an optimal capital structure level and effective resource utilization and allocation (Nasimi, 2016). A study using panel data analysis of 208 Canadian non-financial firms listed on the Toronto Stock Exchange between 1999 and 2016 found that factors such as age, liquidity, asset tangibility, size, growth opportunities, and profitability are significant determinants of capital structure (Gebru et al., 2021).

In a different study focused on the Indian service sector, the researchers used panel data to investigate the impact of capital structure on firm performance. The results indicated that short-term debt to total assets and long-term debt to total assets had a negative and significant relationship with firm performance, as measured by ROA, ROCE, and EPS (Farhan et al., 2020). Similar research was also conducted by Câmara (2022), who examined the effect of the TLTA and TETA ratios on the ROA and ROE of telecommunications companies in the United States. The study found that TLTA and TETA significantly impact ROA, while they do not affect ROE.

H1: Capital structure affects ROIC
H2: Capital structure affects EVA
H3: Inflation has a negative impact on ROIC
H4: Inflation does not affect EVA
H5: Interest rates have a positive impact on ROIC
H6: Interest rates have a positive impact on EVA

Research Method

Data

The data was collected using purposive sampling based on specific considerations. The population in this study is State-Owned Enterprises (SOEs) that carry out national strategic projects. The sample criteria used in this study are SOEs that carry out national strategic projects in the road, port, railway, and airport sectors listed in Presidential Regulation Number 109 of 2020 on the Third Amendment to Presidential Regulation Number 3 of 2016 concerning the Acceleration of National Strategic Project Implementation and SOEs that have not undergone any corporate merger during the study sample year (2011 to 2021). The data collection was carried out by collecting secondary data from the Company's Annual Reports and Bloomberg. From the criteria that have been set, 9 (SOEs) meet these criteria as follows:

Table 1
Criteria

No	Company
1	PT Adhi Karya (Persero) Tbk
2	PT Pembangunan Perumahan (Persero) Tbk
3	PT Wijaya Karya (Persero) Tbk
4	PT Jasa Marga (Persero) Tbk
5	PT Waskita Karya (Persero) Tbk
6	PT Hutama Karya
7.	PT Kereta Api (Persero)
8.	PT Angkasa Pura I (Persero)

9.	PT Angkasa Pura II (Persero)

Table 2
Variable

	Variable	Formula
Independent	Debt to Equity Ratio	DER = Total Debt / Total Equity
	Macroeconomic	Inflation: Yearly inflation rate released by BPS Interest Rate: BI Rate
Dependent	Economic Value Added (EVA)	EVA = invested capital x (ROIC –WACC)
	Return on Invested Capital (ROIC)	ROIC = NOPAT / Total Invested Capital

Data Analysis

The data analysis in this research uses the panel data regression method, using the software Eviews 12. Specifically, the model can be presented as follows:

$$Yit = a + b1X1it + b2X2it + b3X3it+uit$$

Where:
Yit = ROIC or Economic Value Added for the company i in the year t
a = Constanta
b = Regression coefficient
X1it = Debt to Equity Ratio for a company i in the year t
X2it = Inflation for a company i in the year t
X3it = Interest Rate for a company i in the year t
uit = Standard Error

Result and Discussion

The aim is to determine whether there is an influence between the Debt to Equity Ratio, Inflation, and BI Rate on ROIC and EVA. Hypothesis testing and data analysis were performed through descriptive analysis and statistical analysis of panel data regression models.

Descriptive Analysis

Based on the model used, statistical descriptions of data for independent variables and bound variables are obtained as shown in Table 3 below:

Table 3

`	DER	INFLASI	BIRATE	ROIC	EVA
Mean	107.849192	4.019091	5.613636	7.084343	-2.655859
Median	94.210000	3.350000	5.750000	7.210000	-2.410000
Maximum	571.030000	8.380000	7.750000	23.770000	13.090000
Minimum	3.320000	1.680000	3.500000	-5.070000	-16.000000
Std. Dev.	85.482179	2.188941	1.450841	5.021224	4.935918
Skewness	2.378212	1.212367	0.119899	0.044501	-0.167832
Kurtosis	12.159315	3.122556	1.724836	3.942610	3.998029
Jarque-Bera	439.381096	24.314232	6.944627	3.697797	4.573519
Probability	0.000000	0.000005	0.031045	0.157410	0.101595
Sum	10677.070000	397.890000	555.750000	701.350000	-262.930000
Sum Sq. Dev.	716105.888935	469.563218	206.284091	2470.843232	2387.601602
Observations	99	99	99	99	99

From the table, it can be seen that from 2011 to 2021, the mean DER of 9 SOEs was 107.84%, with a median of 94.21%. The maximum DER is 571.03% which is the DER of PT Waskita Karya (Persero) Tbk. in 2020, and the minimum DER is 3.32% which is the DER of PT Angkasa Pura II in 2014.

Furthermore, Inflation, with a mean of 4.01%, a median of 3.35%, and a maximum of 8.38%, is Inflation in 2013, and a minimum of 1.68% is Inflation in 2020. In line with Inflation, the BI Rate also experienced a maximum rate in 2014 of 7.75% and a minimum rate of 3.5% in 2021, with an average of 5.61% in 2011-2021 and a median of 5.75%.

In the dependent variable, ROIC, the mean is 7.08%, and the median is 7.21%. The maximum ROIC is 23.77% which is the ROIC of PT Adhi Karya (Persero) Tbk in 2011. Meanwhile, the minimum ROIC is the ROIC from PT Angkasa Pura I (Persero) in 2021 of -5.07%.

The average EVA variable was -2.65%, and the median was -2.41%. Similar to ROIC, the maximum EVA of 13.09% is also the EVA of PT Adhi Karya (Persero) Tbk in 2011, and the minimum EVA of PT Angkasa Pura I (Persero) in 2021 of -16.0%.

Regression Model Analysis

Panel data regression model analysis is carried out through several stages, including the selection of panel data regression model estimates, classical assumption tests, hypothesis tests, and interpretation of test results. The selection of panel data regression model estimates is carried out with statistical considerations through testing, with the aim of obtaining precise

and efficient guesses about the relationship between dependent and independent variables. A classical assumption test is performed to check whether the panel data regression model has satisfied the classical assumptions. The hypothesis test was performed to test the significance of the influence of the independent variable on the dependent variable. Finally, the test results are interpreted to provide conclusions regarding the relationship between dependent and independent variables and the strength and direction of the relationship. By conducting panel data regression model analysis, researchers can understand the relationship between variables in research and answer problem formulations more comprehensively.

1. Model Testing

Panel data were used in this study because it combines the use of *time series* data and *cross-section* data, which can provide a larger amount of data and increase the *degree of freedom*. The *time series* data in this study covers an 11-year period from 2011 to 2021, while the *cross-section* data involves 9 SOEs involved in the implementation of PSN. The selection of panel data regression model estimates was carried out using three approaches, namely the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). The CEM approach assumes that all units (SOEs) in the study have the same effect, while the FEM approach assumes a unique fixed effect on each unit (SOEs). Meanwhile, the REM approach assumes that the effect is random and unknown beforehand. By considering these three approaches, researchers can choose the most suitable and accurate model to perform panel data analysis in the study. Model testing was carried out twice, first testing the effect of the independent variable on the dependent variable ROIC and second testing the effect of the independent variable on the dependent variable EVA.

a. Model Testing for ROIC Variables

Table 4
Results of Panel Data Regression with CEM – ROIC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.015721	0.005612	-2.801337	0.0062
INFLASI	0.191340	0.311190	0.614866	0.5401
BIRATE	1.098862	0.490256	2.241404	0.0273
C	1.842174	2.367074	0.778249	0.4384

R-squared	0.315083	Mean dependent var	7.084343
Adjusted R-squared	0.293454	S.D. dependent var	5.021224
S.E. of regression	4.220656	Akaike info criterion	5.757423
Sum squared resid	1692.324	Schwarz criterion	5.862276
Log likelihood	-280.9924	Hannan-Quinn criter.	5.799847
F-statistic	14.56761	Durbin-Watson stat	0.844993
Prob(F-statistic)	0.000000		

Table 5
Results of Panel Data Regression with FEM – ROIC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.026616	0.006560	-4.057232	0.0001
INFLASI	0.175362	0.272316	0.643967	0.5213
BIRATE	0.823808	0.442739	1.860710	0.0662
C	4.625478	2.350272	1.968060	0.0522
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.519945	Mean dependent var		7.084343
Adjusted R-squared	0.459248	S.D. dependent var		5.021224
S.E. of regression	3.692399	Akaike info criterion		5.563643
Sum squared resid	1186.142	Schwarz criterion		5.878203
Log likelihood	-263.4003	Hannan-Quinn criter.		5.690914
F-statistic	8.566279	Durbin-Watson stat		1.184652
Prob(F-statistic)	0.000000			

Table 6
Results of Panel Data Regression with REM – ROIC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.022870	0.006044	-3.784145	0.0003
INFLASI	0.180855	0.272290	0.664200	0.5082
BIRATE	0.918367	0.438029	2.096590	0.0387
C	3.668623	2.359741	1.554672	0.1233
Effects Specification				
			S.D.	Rho
Cross-section random			2.055277	0.2365
Idiosyncratic random			3.692399	0.7635
Weighted Statistics				
R-squared	0.388805	Mean dependent var		3.374213
Adjusted R-squared	0.369504	S.D. dependent var		4.678353
S.E. of regression	3.714788	Sum squared resid		1310.967
F-statistic	20.14442	Durbin-Watson stat		1.072700
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.303380	Mean dependent var		7.084343
Sum squared resid	1721.238	Durbin-Watson stat		0.817013

After testing the model, the next step is to determine the estimated model to be used by conducting a Chow, Hausman, and Lagrange multiplier lag test.

1) F test (Chow Test)
   This test compares which model is best between CE and FE. If Prob > α, then the selected model is CE; otherwise, if Prob < α, then the selected model is FE.

Table 7
F - ROIC Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	4.640870	(8,87)	0.0001
Cross-section Chi-square	35.184281	8	0.0000

Based on the results of the F test, the probability value is 0.0001, or < 0.05, which means that the FE model is more appropriate to use than the CE model.

2) Hausman test
   The Hausman Test was conducted to compare the most appropriate model between FE and RE. If Prob > α, then the selected model is RE; otherwise, if Prob < α, then the selected model is FE.

Table 8
Hausman Test Results - ROIC

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	3	1.0000

Based on the results of the Hausman test, the probability value is 1.00, or > 0.05, which means that the RE model is more appropriate to use than the FE model.

3) Lagrange Multiplier Test
   LM-Test is conducted to compare which model is most appropriate between CE and RE. If LMcalculate > Chi Squared Table, then the RE model is selected, but if LMcalculate < Chi Squared Table, then the model chosen is CE. From the results of the Lagrangge multiplier test (Appendix 1), LMcalculate is 20.6373, which is greater than t = 0. 3518. This means that the RE model is more appropriate than the CE model.

Based on the test results of the above model, it was found that the RE model was selected twice in the Hausman test and the Lagrange test, while the FE model was only selected in the Chow test. The CE model was not selected at all. Therefore, it can be concluded that the ER model is better at explaining the relationship between the independent variable and the dependent variable ROIC in this study. The RE model can provide more accurate and consistent results in estimating the effect of independent variables on ROIC on SOE panel data involved in PSN implementation.

b. Model Testing for EVA Variables

Table 9
Panel Data Regression Results with CEM - EVA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.009872	0.005887	-1.676927	0.0968
INFLASI	0.357402	0.326437	1.094857	0.2763
BIRATE	0.781710	0.514278	1.520016	0.1318
C	-7.415873	2.483057	-2.986590	0.0036
R-squared	0.220042	Mean dependent var		-2.655859
Adjusted R-squared	0.195412	S.D. dependent var		4.935918
S.E. of regression	4.427460	Akaike info criterion		5.853094
Sum squared resid	1862.228	Schwarz criterion		5.957948
Log likelihood	-285.7282	Hannan-Quinn criter.		5.895518
F-statistic	8.933821	Durbin-Watson stat		0.848410
Prob(F-statistic)	0.000028			

Table 10
Panel Data Regression Results with FEM - EVA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.023451	0.006766	-3.465709	0.0008
INFLASI	0.337489	0.280884	1.201525	0.2328
BIRATE	0.438905	0.456668	0.961101	0.3392
C	-3.946973	2.424218	-1.628143	0.1071
Effects Specification				
Cross-section fixed (dummy variables)				
R-squared	0.471455	Mean dependent var		-2.655859
Adjusted R-squared	0.404628	S.D. dependent var		4.935918
S.E. of regression	3.808572	Akaike info criterion		5.625598
Sum squared resid	1261.954	Schwarz criterion		5.940158
Log likelihood	-266.4671	Hannan-Quinn criter.		5.752870
F-statistic	7.054807	Durbin-Watson stat		1.233313
Prob(F-statistic)	0.000000			

Table 11
Panel Data Regression Results with REM – EVA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.018952	0.006254	-3.030412	0.0031
INFLASI	0.344086	0.280858	1.225123	0.2236
BIRATE	0.552470	0.451988	1.222310	0.2246
C	-5.096154	2.443243	-2.085815	0.0397
Effects Specification				
			S.D.	Rho
Cross-section random			2.180050	0.2468
Idiosyncratic random			3.808572	0.7532
Weighted Statistics				
R-squared	0.300087	Mean dependent var		-1.237744
Adjusted R-squared	0.277985	S.D. dependent var		4.529875
S.E. of regression	3.849102	Sum squared resid		1407.480
F-statistic	13.57707	Durbin-Watson stat		1.103286
Prob(F-statistic)	0.000000			
Unweighted Statistics				
R-squared	0.200507	Mean dependent var		-2.655859
Sum squared resid	1908.870	Durbin-Watson stat		0.813494

1) F test (Chow Test)

Table 22
F test

Effects Test	Statistic	d.f.	Prob.
Cross-section F	5.172912	(8,87)	0.0000
Cross-section Chi-square	38.522106	8	0.0000

Based on the results of the F test, the probability value is 0.0001, or < 0.05, which means that the FE model is more appropriate to use than the CE model.

2) Hausman Test

Table 33
Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	3	1.0000

Based on the results of the Hausman test, the probability value is 1.00, or > 0.05, which means that the RE model is more appropriate to use than the FE model.

3) Lagrangge Multiplier Test

From the results of the Lagrangge multiplier test (Appendix 2), the LM calculation is 23.07083, which is greater than t = 0. 3518. This means that the RE model is more appropriate than the CE model.

Based on the test results of the above model, it was found that the RE model was selected twice, namely in the Hausman test and the Lagrange test. Meanwhile, the FE model was only selected on the Chow test, and the CE model was not selected at all. Thus, it can be concluded that the ER model is better at explaining the influence of the independent variable on the EVA dependent variable in this study. The RE model provides more accurate and reliable results in estimating the effect of independent variables on EVA on the panel data of SOEs involved in the implementation of PSN.

2. Classical Assumption Test

The classical assumption test is a statistical test performed to determine the relationship between variables. The classical assumption test in this study is only a multicollinearity test, which aims to see the correlation between independent variables. Studies using panel data should not use all classical assumption tests for the following reasons: linearity tests are hardly performed on every linear regression model because it is assumed that the model is already linear; normality tests provide results that are not actually intended for studies that use samples of more than one company, panel data, and secondary data; autocorrelation tests provide results that will be more meaningful to the study which only uses time series data, and heteroscedasticity tests provide results that are not intended for studies that use panel data because the data is assumed to already have heteroscedasticity (Arsal, 2021).

Based on these reasons, the classical assumption test used in this study is only a multicollinearity test. From Table 4.13, The results of the multicollinearity test show that the correlation value between independent variables does not exceed 0.90, so it is concluded that there is no multicollinearity between independent variables.

Table 44
Multicollinearity Test Result

	DER	INFLASI	BIRATE
DER	1.00000	-0.37165	-0.45776
INFLASI	-0.37165	1.00000	0.779724
BIRATE	-0.45776	0.779724	1.00000

3. Feasibility test model

Feasibility tests model are used to evaluate whether the data regression model formed is feasible or not feasible to be used as an explanation of the influence of the independent variable on the dependent variable. In this study, the next step is to conduct a model feasibility test after selecting a panel data regression estimation model using the Random Effect Model (REM) approach. The model feasibility test consists of a hypothesis test (partial test or F test, as well as a simultaneous test or t-test) and an R2 determination test. The purpose of the model feasibility test is to determine the extent to which the selected regression model can explain variations in the dependent variable based on the influence of the independent variable under study.

4. Hypothesis test

The hypothesis test is used to test the significance of the regression coefficients obtained in the regression model of the panel data. In hypothesis decision-making, the probability value is compared to the predetermined α significance level (usually 0.05). There are two types of hypothesis tests: partial tests (t-tests) and simultaneous tests (F tests).

a) Partial Test

Partial tests are used to test the significance individually of each independent variable. Suppose the probability value (p-value) resulting from the t-test is less than the established significance level (α). In that case, the null hypothesis is rejected, meaning that there is a significant influence between the partially independent variable and the dependent variable. Meanwhile, suppose the p-value is greater than α. In that case, the null hypothesis is accepted, meaning that there is no significant influence between the partially independent variable and the dependent variable.

Table 55
T- test – ROIC

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.022870	0.006044	-3.784145	0.0003
INFLASI	0.180855	0.272290	0.664200	0.5082
BIRATE	0.918367	0.438029	2.096590	0.0387
C	3.668623	2.359741	1.554672	0.1233

Based on the table, it can be seen that the DER variable has a regression coefficient of -0.02287 and a t-statistic value of -3.784145 with a probability of 0.0003, which is smaller than α=0.05, so it can be concluded that the DER, variable significantly and negatively affects ROIC. Meanwhile, the Inflation variable has a regression coefficient of 0.180855 with a t-statistic value of 0.6642 and a probability value of 0.5082 which is greater than α=0.05, so it can be concluded that the

Inflation variable does not significantly affect ROIC. Furthermore, the BI Rate variable has a regression coefficient of 0.918367 with a t-statistic value of 2.09659 and a probability value of 0.0387, which is smaller than α=0.05, so it can be concluded that the BI Rate variable significantly and positively affects ROIC.

Table 66
T- test – EVA

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.018952	0.006254	-3.030412	0.0031
INFLASI	0.344086	0.280858	1.225123	0.2236
BIRATE	0.552470	0.451988	1.222310	0.2246
C	-5.096154	2.443243	-2.085815	0.0397

From the table, it can be seen that the DER coefficient has a value of -0.018952 with a standard error value of 0.006254 and t-statistics of -3.030412. The probability value (Prob.) of 0.0031 is less than the significance level α = 0.05, so it can be concluded that DER partially has a negative and significant effect on EVA. The BI Rate coefficient has a value of 0.55247 with a standard error value of 0.451988 and t-statistics of 1.22231. The probability value (Prob.) of 0.2246 is greater than the significance level α = 0.05, so it can be concluded that partially the BI Rate does not have a significant effect on EVA.

b) Simultaneous Test

A simultaneous test (F test) is used to test whether together the independent variables significantly affect the dependent variable. In this test, the null hypothesis states that there is no simultaneous influence between the independent variable on the dependent variable, while the alternative hypothesis (Ha) states that there is a simultaneous influence between the independent variable on the dependent variable. The decision of the hypothesis in the simultaneous test (F test) is based on the probability value (p-value) obtained. If the p-value is less than α (significance level), then H0 is rejected, while if the p-value is greater than α, then H0 is accepted.

Table 77
F-test – ROIC

	Weighted Statistics		
R-squared	0.388805	Mean dependent var	3.374213
Adjusted R-squared	0.369504	S.D. dependent var	4.678353
S.E. of regression	3.714788	Sum squared resid	1310.967
F-statistic	20.14442	Durbin-Watson stat	1.072700
Prob(F-statistic)	0.000000		

Based on the table, the value of the F-statistic is 20.14442 with a probability value (Prob (F-statistic)) of 0 or less than α 0.05, meaning that simultaneously the independent variable has a significant effect on the dependent variable ROIC.

Table 88
F-test – EVA

——	Weighted Statistics		
R-squared	0.300087	Mean dependent var	-1.237744
Adjusted R-squared	0.277985	S.D. dependent var	4.529875
S.E. of regression	3.849102	Sum squared resid	1407.480
F-statistic	13.57707	Durbin-Watson stat	1.103286
Prob(F-statistic)	0.000000		

In the table, the F test is used to simultaneously test the significance of the effect of the independent variable (DER, INFLATION, BIRATE) on the dependent variable EVA. The F-statistic value obtained is 13.57707 with a probability value of 0, which shows that simultaneously the independent variable has a significant effect on the dependent variable.

c) Determination test

The coefficient of determination test (R2 test) is useful for evaluating how much influence the independent variable has on the dependent variable.

Table 99
Determination test – ROIC

——	Weighted Statistics		
R-squared	0.388805	Mean dependent var	3.374213
Adjusted R-squared	0.369504	S.D. dependent var	4.678353
S.E. of regression	3.714788	Sum squared resid	1310.967
F-statistic	20.14442	Durbin-Watson stat	1.072700
Prob(F-statistic)	0.000000		

In the table, an R-squared value of 0.388805 means that the independent variables (DER, Inflation, and BI rate) can explain 38.88% variation in the dependent variable (ROIC). This value also indicates that the regression model used is good at explaining the relationship between independent and dependent variables. And 61.12% were explained or illustrated by other variables that were not included in this study.

Table 20
Determination test – EVA

——	Weighted Statistics		
R-squared	0.300087	Mean dependent var	-1.237744
Adjusted R-squared	0.277985	S.D. dependent var	4.529875
S.E. of regression	3.849102	Sum squared resid	1407.480
F-statistic	13.57707	Durbin-Watson stat	1.103286
Prob(F-statistic)	0.000000		

Based on the table of the results of the coefficient of determination test (R2 test), it can be known that the R-squared value is 0.300087 or 30.00%. From the results of the coefficient of determination test (R2 test), it can be interpreted that the independent variables, namely DER, Inflation, and BI rate, can explain or describe the dependent variable, namely EVA of 30.00%. And 70.00% were explained or illustrated by other variables that were not included in this study.

5. Analysis

The test results showed that the DER variable significantly and negatively affected ROIC and EVA. These results are in line with the trade-off theory developed by Kraus and Litzenberger in 1973; and Myers, 1984, where ethical leverage is high enough, increasing debt ratios can decrease a company's performance because the benefits of debt are outweighed by the costs of debt, including financial losses and debt agency costs. This research is also in line with the results of (Le & Phan, 2017; Nasimi, 2016). In contrast to capital structure, testing results show that Inflation has no effect on ROIC and EVA. Although Inflation is often considered a factor that can affect a company's financial performance, the test results show that Inflation has no effect on ROIC and EVA in SOEs implementing PSN in Indonesia. This suggests that other factors may be more influential in determining the financial performance of these SOEs. One of the factors that can affect the test results is the business characteristics of the infrastructure sector, which tend to be more stable and less affected by fluctuations in Inflation. Infrastructure businesses tend to require large and long-term investments and be involved in projects with certain contracts and agreements. This makes inflation fluctuations not greatly affect the financial performance of infrastructure SOEs because these contracts and agreements allow SOEs to earn a fixed income for a set period of time.

The results showed that the BI rate positively and significantly affected ROIC in SOEs implementing PSN in Indonesia. However, the BI rate has no significant effect on EVA. This shows that the effect of the BI rate on ROIC and EVA has a significant difference. The BI rate is an interest rate set by Bank Indonesia to regulate borrowing costs and stabilize the rupiah exchange rate. The BI rate affects the company's cost of

capital and, in turn, can affect the company's financial performance. In the context of SOEs implementing PSN, the BI rate can affect ROIC. The difference in the effect of the BI rate on ROIC and EVA can be explained by the different concepts used in measuring financial performance. ROIC measures a company's efficiency in generating profits with its capital. In this case, an increased BI rate can affect the company's cost of capital and, in turn, can decrease efficiency in capital use, thus affecting ROIC.

Meanwhile, EVA measures the added value generated by a company after accounting for the cost of capital. In this case, the effect of the BI rate on EVA is more complex because it involves other factors, such as asset management and a more specific cost of capital. In addition, the difference in the effect of the BI rate on ROIC and EVA can also be influenced by other factors such as capital structure, business risk, and different market conditions. Different capital structures can affect a company's cost of capital and affect the effect of the BI rate on EVA. For example, if a company has a capital structure that uses more debt, then an increased BI rate can affect the interest costs that the company must pay and, in turn, affect the EVA.

In addition, the effect of the BI rate on EVA can also be influenced by business risks faced by the company. Higher business risk can make an increased BI rate significantly affect the company's financial performance. In addition, keep in mind that the results of the study may only apply to SOEs implementing PSN in Indonesia and cannot be generalized to other companies. Market conditions and regulations applicable in other countries can affect the effect of the BI rate on the company's financial performance. Therefore, SOEs need to conduct a more in-depth analysis to understand the effect of the BI rate on financial performance.

Conclusion

In conclusion, this study found that in the context of Indonesian State-Owned Enterprises (SOEs) implementing PSN, the Debt-to-Equity Ratio (DER) has a significant and negative effect on both the Return on Invested Capital (ROIC) and the Economic Value Added (EVA). The BI rate, set by Bank Indonesia, was shown to positively and significantly affect ROIC, but it did not significantly impact EVA. This disparity may be due to the distinct financial performance metrics used in determining ROIC and EVA. Contrarily, Inflation was found to have no impact on either ROIC or EVA. This outcome suggests that the unique characteristics of infrastructure businesses, which are more stable and less susceptible to inflation fluctuations, play a role in their financial performance. These findings stress the importance of SOEs conducting in-depth analyses to comprehend the impacts of factors such as DER and the BI rate on their financial performance. However, it should be noted that these findings may be specific to Indonesian SOEs implementing PSN and may not be generalizable to other contexts owing to different market conditions and regulations.

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