ESG Disclosure And Investment Decisions Of State-Owned Enterprises (SOEs) Listed In Indonesia Stock Exchange

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Abstract. This study aimed to investigate the influence of Environmental, Social, and Governance (ESG) disclosure on investment in state-owned enterprises (SOEs) listed on the Indonesia Stock Exchange (IDX). The study was conducted using quantitative methods. Furthermore, the population included state-owned enterprises that were listed on the IDX. The data collection technique employed purposive sampling, with a total of 104 firm years of the sample meeting the specified criteria. The sample was selected for a duration of 7 years. Moreover, the data included corporations' annual and sustainability reports from 2016 to 2022, mostly retrieved from the ESGI dataset. In addition, the data analysis technique employed was panel regression using Eviews 12. The data analysis involved doing conventional assumption tests, including normality and multicollinearity. The findings indicated that neither FRQ nor ESG Disclosure significantly influences investment. We suspect that state-owned enterprise business strategy, including investment, depends on government assignment and national policy.

Keywords: ESG Disclosure; Financial Reporting Quality; Investment Decisions; State-Owned Enterprise

1. Introduction

Critics have denounced conventional performance reporting, which prioritizes earnings, for not adequately prioritizing long-term value creation and for promoting short-sightedness among managers and investors [1]. On the other hand, worldwide, there is a growing chorus of demands for investment strategies that prioritize climate awareness and the implementation of carbon limits. The demand for ethical treatment of employees, customers, and other stakeholders is increasing, as is the outrage towards poorly managed organizations. Companies must promptly evaluate ESG risks and opportunities for their businesses and ensure accurate ESG disclosures to effectively respond to evolving demands [2].

According to the PwC Global Investor Survey 2022 study, Environmental, Social, and

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Governance (ESG) has also been identified as a key focus for investors in the business sector. The primary objectives are to enhance corporate governance effectiveness by 49% and to decrease greenhouse gas emissions by 44% [3]. Sustainable investment growth is considered one of the most significant developments in the capital market, particularly in developed countries. This is due to increasing attention to environmental issues and a focus on monitoring developments in the market. Approximately 2,400 financial asset managers and owners have pledged their commitment to the UN Principle for Responsible Investment (PRI), together overseeing a total of 86 trillion US dollars in managed funds. According to the Global Sustainable Investment Alliance (GSIA), the value of sustainable investment assets in industrialized countries increased to 30.7 trillion US dollars [4].

Indonesia has demonstrated commendable progress in the application of Environmental, Social, and Governance (ESG) practices across several sectors. One notable example is the requirement for Financial Services Institutions, Issuers, and Public Companies to submit sustainability reports to the Otoritas Jasa Keuangan (OJK). In addition, the Minister of Finance, Sri Mulyani Indrawati, has also unveiled the Environmental, Social, and Governance (ESG) Framework and Manual [5]. This initiative is the first ESG implementation policy established by the Ministry of Finance in infrastructure financing. The Minister of Finance stated that this ESG policy will provide clear guidance for all infrastructure project stakeholders, especially regarding the roles and actions needed to ensure that infrastructure projects meet ESG aspects [6].

Various State-Owned Companies (BUMN) actively incorporate the ESG concept into different facets of their corporate operations [5]. Within the national economic system, state-owned enterprises (BUMN) have a crucial function in the production of commodities and services that are essential for achieving optimal societal prosperity. The significance of BUMN is perceived to be growing since they serve as pioneers and leaders in business sectors that have not yet attracted the attention of private enterprises. In addition, state-owned enterprises (BUMN) have a crucial role in executing public services, maintaining equilibrium in the dominant private sector, and fostering the growth of small businesses and cooperatives. BUMN (State-Owned Enterprises) also substantially contributes to the state's revenue through many forms of taxes, dividends, and earnings from privatization [7].

Regulators and practitioners strongly recommend that firms furnish comprehensive explanations of their company operations and strategies. This is predicated on the concept that such revelations foster a more comprehensive outlook among managers, resulting in strategic decision-making that prioritizes long-term outcomes rather than just fixating on financial gains and known real effects. The research [8] was employed by using the Johannesburg Stock Exchange (JSE)'s demand for integrated reports to provide initial evidence of a negative relationship between the quality of integrated reporting (IRQ) and investment inefficiency.

There is also growing awareness that environmental, social, and governance (ESG) challenges can significantly affect business value generation. In response to the necessity of identifying material ESG concerns, an ecosystem of standard-setting organizations, rating agencies, and index providers has emerged. The materiality framework and industry-specific disclosure rules established by the Sustainability Accounting Standard Board (SASB) are integral to this expanding ecosystem.

Given the important role of state-owned enterprises in economic growth and society, this study

examines whether financial reporting and ESG disclosure influence investment in state-owned enterprises, controlling size, age, and leverage. We use panel regression analysis to conclude. We find that both ESG disclosure and financial reporting quality do not significantly influence investment. We suggest the explanation from a business strategy perspective. They manage investment by government assignments that sometimes do not align to create advantages for public interests and limited liability company entities to create profits.

2.   Literature Review

Agency Theory
According to the conventional corporate finance literature, it is recommended for a company to continue investing until the point where the additional return on investment becomes negligible [9]. Various market inefficiencies can cause managers to stray from the intended level of investment [10]. Companies that have conflicts of interest within their organization have restrictions when it comes to obtaining funds from other sources. The agency problem arises when managers prioritize their personal consumption and expanding their own power rather than maximizing shareholder value. This can lead to excessive investment in the company rather than distributing extra wealth to shareholders [10].

Accounting information within an agency framework can impact investment decisions by altering the asymmetry of information between managers and shareholders, as well as other stakeholders such as debtholders. This influence occurs in two distinct ways. Financial reporting enhances investment decisions by mitigating information asymmetry among managers and investors, as well as among investors themselves. This reduction in information asymmetry helps to minimize adverse selection costs and, in turn, lowers the cost of obtaining external capital. Furthermore, accounting information has the potential to impact investment decisions by modifying the expenses associated with moral hazard costs that arise from conflicts of interest among different stakeholders inside the company. An important finding from our analysis is that financial reporting can enhance investment efficiency by mitigating moral hazard costs and decreasing investment [11].

ESG disclosure can be considered a governance strategy that helps reduce agency problems by enhancing transparency and accountability. By furnishing comprehensive details regarding a company's environmental, social, and governance activities, ESG disclosures can mitigate information asymmetry between management and shareholders.

ESG Disclosure, Financial Reporting Quality, and Investment Decisions
In the context of investment, a 2017 OECD report on investment governance and the incorporation of environmental, social, and governance (ESG) aspects significantly affected corporations' decision-making processes about investments. This report also spurred regulators and policymakers to take additional actions. The main point conveyed was that ESG considerations have become indispensable for the well-being and future prospects of any firm. Therefore, their consideration is directly aligned with the fiduciary duty of an investing institution [2]. Studies indicate that earnings alone do not provide enough information regarding the production of value over a lengthy period of time [1].

ESG disclosure and FRQ are instrumental in fostering investment efficiency by improving transparency, reducing information asymmetry, and guiding more informed and effective capital

allocation decisions [12]. There is a relationship between increased disclosure levels and improved capital investment efficiency within firms. It posits that higher levels of disclosure reduce information asymmetry between managers and investors. As a result, firms with enhanced disclosure practices tend to make more efficient capital investment decisions, as evidenced by lower levels of overinvestment and underinvestment. The robustness of these findings across different measures of investment inefficiency and disclosure types underscores the results' reliability. Ultimately, the implication is that increased transparency through better disclosure encourages managers to act in the best interests of shareholders, thereby enhancing overall investment efficiency and potentially benefiting both firms and investors alike [13].

Previous studies have examined the impact of accounting on minimizing information asymmetry and developing efficient contracts. However, it has not specifically explored the direct influence of accounting on a firm's investment choices. Therefore, a lingering inquiry arising from this area of research is whether financial reporting has an impact on managers' investment choices and, subsequently, the value of the firm [11].

We state this hypothesis as follows:

H1: There is a positive influence between ESG Disclosure and Investment
H2: There is a positive influence between Financial Reporting Quality and Investment
H3: There is a positive influence between Size and Investment
H4: There is a positive influence between Age and Investment
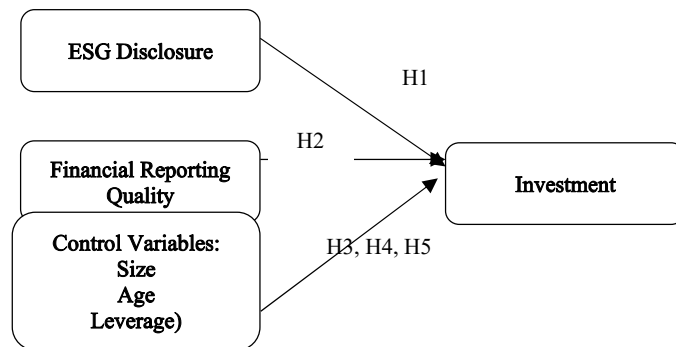H5: There is a positive influence between Leverage and Investment

Figure 1. Research framework

3.   Methodology

The analytical methods used in the research include descriptive analysis and inferential analysis. Descriptive analysis in this research aims to provide a general description of the variables involved. Meanwhile, inferential analysis was carried out using an unbalanced panel data regression model, which aims to examine the relationship factors that influence investment decisions, including ESG disclosure.

Sample and Data

The data used in this research is secondary data in the form of annual panel data from state-owned companies listed on the Indonesia Stock Exchange for the period 2016 to 2022. This data

was obtained through several sources: the ESGI dataset, published annual reports, and financial statements. After this screening process, our estimation of sample numbers is 104 firm-year observations. The total firm years screening process in this research are described in Table 1.

Table 1. Sample Construction

Criteria	Sample
State-owned enterprise years sample during 2016-2022	**308**
Financial institution years	**(56)**
Firms years with missing data	**(118)**
Outlier	**(30)**
Total firm years	**104**

Variables Definition

Table 2 describes the data used in this research.

Table 2. Variable Operationalization

Variable Name	Definition	Unit	Source
Inv (Y)	Sum of intangible expenditure scaled by total assets and tangible expenditure scaled by total assets	ratio	Proceeded from intangible and tangibe data from ESGI dataset
Size (X1)	Natural logarithm of total assets	nominal	ESGI dataset
Age (X2)	Firm's age	nominal	ESGI dataset
Lev(X3)	Ratio of total debt to total assets	ratio	ESGI dataset
CF (X4)	Net change of operating activities, scaled do total assets	ratio	Proceeded from Net cash flow from operating activities and total assets from ESGI dataset
FRQ (X5)	-1 x absolute value of the residual from a performance-adjusted discretionary accrual model	ratio	Kothari, Leon, Wasley (2005)
ESG (X6)	ESG Score	ratio	ESGI dataset

Note: Sources data are from ESGI Dataset, annual report, and financial statements.

Data Analysis

According to [14], there are 3 data used in empirical analysis, namely: cross-sectional data, time series data, and panel data. Cross-sectional data is data collected by researchers at one time. This is different from time series data, namely data collected by researchers at different times regularly, such as daily, monthly, yearly, etc. This combination of cross-section data and time series data is called panel data. There are several advantages of using panel data according to [15]:

1. Panel data provides more informative, varied data, smaller collinearity between variables, greater degrees of freedom, and is more efficient.
2. Panel data can be used to measure effects that are not detected by cross-section data and time series data.
3. Panel data can accommodate individual levels of heterogeneity. Panel data assumes that individuals are heterogeneous, while cross-section data and time series data do not control the level of individual heterogeneity, which risks getting biased results.
4. Panel data models make it possible to build more complex models than cross-section data and time series data.

In conclusion, panel data can maximize empirical analysis in a way that is not possible if only cross-section data or time series data are used.

Multiple regression analysis needs to be carried out to produce the most accurate estimates and ensure that there are no errors when applying multiple linear regression. This process includes the use of a panel data regression model consisting of three types of effects: common effects, fixed effects, and random effects. In addition, before evaluating a multiple regression model, several necessary tests are needed to determine the most appropriate model. These tests include the Hausman Test, which is used to compare fixed effects and random effects; the Lagrange Multiplier Test, which helps determine whether random effects are more suitable than common effects; and the Chow test, which is used to evaluate whether there is a significant difference between the common effect and the fixed effect. These three tests must be met to ensure the validity and reliability of the multiple regression model used in the analysis.

In the next stage, classical assumptions are tested on the selected model. The purpose of this test is to ensure that the estimator used is valid, unbiased, consistent, and precise. The classic assumptions tested in this research are:
1. Normality Test
   The purpose of the normality test is to prove that the errors from the model used are normally distributed. Normality can be checked through several tests, including the Jarque-Bera test. The following is the testing hypothesis used.
2. Multicollinearity Test
   The non-multicollinearity assumption assumes that the independent variables used in the regression model are not correlated. Generally, checking non-multicollinearity can use correlation values between variables. Large correlation values (which are usually above 0.8) will cause multicollinearity between variables.

4. Results And Discussion

4.1. Result
This descriptive analysis provides important insights into the distribution and data characteristics of each variable. Most variables showed a non-normal distribution characterized by significant skewness and kurtosis. For example, variables such as LOG_SIZE, LOG_AGE, and LOG_FRQ show highly skewed distributions and the presence of significant outliers, which can affect further analysis. Some variables, such as LOG_LEV and LOG_EGS, show a nearly normal distribution. What "fairly normal" means here is that their skewness and kurtosis values are close to 0 and 3, respectively, which is characteristic of a normal distribution. This fairly normal distribution indicates that the data is distributed symmetrically around the mean, without

many outliers.

Table 3. Variable Descriptive Statistics

	LOG_SIZE	LOG_AGE	LOG_LEV	CF	LOG_FRQ	LOG_EGS
Mean	1.488	1.487	-0.226	0.054	-0.535	-0.270
Median	1.491	1.623	-0.213	0.031	-0.430	-0.272
Maximum	1.522	1.857	0.150	0.372	0.529	0.000
Minimum	1.403	0.477	-0.530	-0.258	-2.716	-0.704
Std. Dev.	0.019	0.331	0.129	0.104	0.609	0.170
Skewness	-1.040	-1.186	-0.204	0.585	-1.339	-0.322
Kurtosis	5.982	3.689	3.001	4.542	5.220	2.895

Note: The sources are from data processed using Eviews 12

Selection of Panel Data Regression Models
Chow Test

Table 4. Chow Test Results

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.503507	(22,75)	0.0017
Cross-section Chi-square	57.266532	22	0.0001

Note: The sources are from data processed using Eviews 12

From the output above, a p-value smaller than 0.05 is obtained, which directs the decision to reject. So, with a significance level of 5% and with the amount of data used, there is enough evidence to state that there are individual effects in the model. Therefore, the model is suspected to be a Fixed-Error Model or Random Effects Model. Therefore, the procedure continues with the Hausman Test.
Hausman Test

Table 5. Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	20.615171	6	0.0022

Note: The sources are from data processed using Eviews 12

If a p-value is obtained that is smaller than 0.05, the Hausman Test decision is rejected, meaning that the individual effect is not random or has a correlation with the independent variable. So, the right model is the Fixed Effect Model. For the next procedure, a variance-covariance test will be carried out.
Lagrange Multiplier (LM) Test

Table 6. LM Test Results

	Test Hypothesis

	Cross-section	Time	Both
Breusch-Pagan	1.175177 **(0.2783)**	20.00320 (0.0000)	21.17838 (0.0000)

Note: The sources are from data processed using Eviews 12

A p-value greater than 0.05 was obtained. Thus, it can be concluded that the FEM model is a suitable model to describe this case.
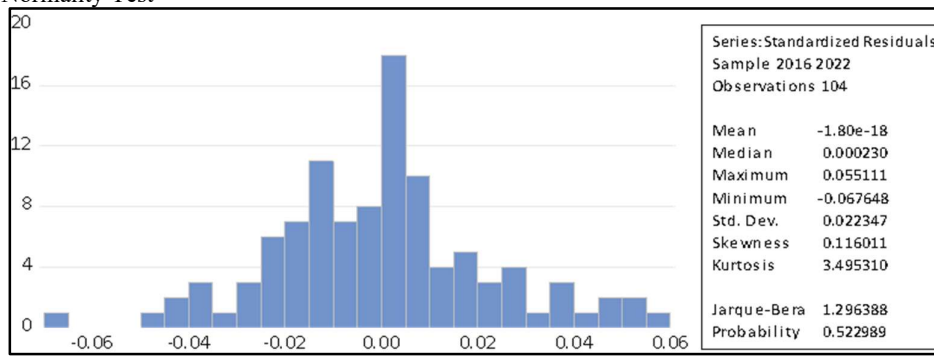
Classic assumption test

Normality Test

Figure 2. Residual distribution
Source: data processed using Eviews 12

Based on the results of the normality test, the standard residual distribution of the model shows characteristics that are close to a normal distribution. The residual histogram shows a symmetric distribution with most values converging around zero, indicating the absence of significant bias in the model. Descriptive statistics support this finding, with a mean residual that is nearly zero and a median that is very close to zero, indicating that half of the residuals are above and half are below zero. A skewness value that is close to zero and kurtosis that is slightly higher than the standard normal distribution indicates a symmetric and slightly leptokurtic distribution. In addition, the results of the Jarque-Bera test with a probability value greater than 0.05 indicate that there is no strong evidence to reject the null hypothesis that the residuals follow a normal distribution. Thus, it can be concluded that the residuals from the model follow a normal distribution, which is an important assumption in regression analysis so that the validity of the model is acceptable.

Multicollinearity Test

Table 7. Independent Variable Correlation Matrix

	LOG_SIZE	LOG_AGE	LOG_LEV	CF	LOG_FRQ	LOG_EGS
LOG_SIZE	1.000	0.368	-0.180	0.265	-0.025	0.076
LOG_AGE	0.368	1.000	-0.080	0.124	0.111	0.014

	LOG_SIZE	LOG_AGE	LOG_LEV	CF	LOG_FRQ	LOG_EGS
LOG_LEV	-0.180	-0.080	1.000	-0.528	-0.082	-0.148
CF	0.265	0.124	-0.528	1.000	0.152	0.057
LOG_FRQ	-0.025	0.111	-0.082	0.152	1.000	0.218
LOG_EGS	0.076	0.014	-0.148	0.057	0.218	1.000

Source: data processed using Eviews 12

Based on the results of the multicollinearity test using the correlation matrix between the independent variables (LOG_SIZE, LOG_AGE, LOG_LEV, CF, LOG_FRQ, and LOG_ESG), no serious indications of multicollinearity were found. Most of the correlations between variables show a weak to moderate relationship, with the highest correlation between LOG_LEV and CF of -0.528, which is still within acceptable limits. There is no correlation close to 1 or -1, which means the independent variables in this model are not significantly correlated with each other. Therefore, it can be concluded that the regression model built will not experience serious problems related to multicollinearity, and the independent variables used in the regression analysis can be considered valid and do not significantly interfere with each other.

Panel Data Regression Analysis (Fixed Effect Model)

Table 8. FEM Model Estimation Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_SIZE	1.092832	0.314967	3.469675	0.0009
LOG_AGE	-0.202370	0.057317	-3.530729	0.0007
LOG_LEV	-0.094541	0.046028	-2.053996	0.0435
CF	-0.067832	0.038761	-1.750005	0.0842
LOG_FRQ	-0.006705	0.005510	-1.217008	0.2274
LOG_EGS	0.001550	0.020579	0.075314	0.9402
C	-1.335492	0.460666	-2.899042	0.0049

Root MSE	0.022239	R-squared	0.562093
Mean dependent var	0.011017	Adjusted R-squared	0.398607
S.D. dependent var	0.033770	S.E. of regression	0.026188
Akaike info criterion	-4.216210	Sum squared resid	0.051437
Schwarz criterion	-3.478832	Log likelihood	248.2429
Hannan-Quinn criter.	-3.917477	F-statistic	3.438184
Durbin-Watson stat	2.198274	Prob(F-statistic)	0.000011

Source: data processed using Eviews 12

The equation obtained:

$$Y = -1.3354 + 1.0928 * LOGSIZE - 0.2023 * LOGAGE - 0.0945 * LOGLEV$$
$$- 0.0678 * CF - 0.0067 * LOGFRQ + 0.0015 * LOGEGS + e$$

The regression model used is quite good in explaining variations in the dependent variable, with an R-squared of 56.21% and an Adjusted R-squared of 39.86%. Root MSE and S.E values have a low level of regression, which indicates that the model is accurate in predictions. Information criteria (AIC, SC, HQC) indicate that the model is efficient and not too complex. The F-statistic and very small probability values indicate that the overall model is significant. In addition, a Durbin-Watson stat value close to 2 indicates no autocorrelation in the residuals, indicating a valid model.

Based on the regression results, the coefficient and probability values indicate the extent to which each independent variable influences the dependent variable and the statistical significance of this influence. The LOG_SIZE variable has a coefficient of 1.092832 with a probability value of 0.0009, indicating that every 1% increase in size results in an increase in the dependent variable of 1.092832 units, and this effect is very significant at the 5% significance level. The LOG_AGE variable has a coefficient of -0.202370 and a probability of 0.0007, which means that every 1% increase in age results in a decrease in the dependent variable of 0.202370 units, with an effect that is also very significant.

Furthermore, the LOG_LEV variable has a coefficient of -0.094541 and a probability value of 0.0435, indicating that every 1% increase in leverage (LEV) reduces the dependent variable by 0.094541 units, and this effect is significant at the 5% significance level. For the CF variable, the coefficient is -0.067832 with a probability value of 0.0842, indicating a negative effect approaching significance, where a one unit increase in cash flow (CF) reduces the dependent variable by 0.067832 units.

On the other hand, the LOG_FRQ variable has a coefficient of -0.006705 with a probability value of 0.2274, indicating that the effect of frequency (FRQ) on the dependent variable is not statistically significant. Likewise, the LOG_EGS variable has a coefficient of 0.001550 and a probability value of 0.9402, indicating that the effect of ESG on the dependent variable is also not significant. Finally, the model constant (intercept) has a coefficient of -1.335492 and a probability value of 0.0049, indicating that this constant is statistically significant.

Overall, the variables LOG_SIZE, LOG_AGE, and LOG_LEV significantly influence the dependent variable, while the CF variable shows a close-to-significant influence. The LOG_FRQ and LOG_ESG variables do not significantly influence the dependent variable in this model.

4.2. Discussion

Financial reporting quality and ESG disclosure do not significantly influence investment in the sample of state-owned enterprises. In this context, ESG reporting is purportedly a transformative factor in shaping a company reputation alleged as a "game-changer". Enterprises are effectively improving their corporate image and increasing their share value by implementing assurance services for their ESG reporting [16].

According to [17], the state of investment will be achieved when the additional benefit gained

from investing in capital equals the additional cost incurred. In this context, "marginal benefit" typically refers to how the market assesses the worth of a firm's performance. This concept has remained consistent from the neo-classical framework [18] to the present [19]. Therefore, it can be concluded that companies that invest effectively ensure that the operationalization process goes smoothly and that their investment is aligned with the interests of the shareholders. Even though they are publicly listed on the Indonesia Stock Exchange, SOEs are bound to comply with government policy and assignments.

Firms with high investment efficiency will prioritize ESG reporting if shareholders regard it as a favorable strategy. This argument supports the fundamental idea of voluntary disclosure, which includes reporting on environmental, social, and governance (ESG) factors. Furthermore, management will willingly provide information if the advantages of disclosure outweigh the associated expenses [20].

5. Conclusion

Based on descriptive analysis and panel data regression using the Fixed Effect Model (FEM), this research identified several variables that significantly influence the dependent variable. The variables LOG_SIZE, LOG_AGE, and LOG_LEV show a significant influence, with LOG_SIZE having a positive and significant influence at the 5% significance level, while LOG_AGE and LOG_LEV show a significant negative influence. The CF variable shows a negative effect that is close to significant, while the LOG_FRQ and LOG_EGS variables do not have a significant effect. The regression model used is quite good in explaining variations in the dependent variable, with an R-squared of 56.21% and an Adjusted R-squared of 39.86%. Normality and multicollinearity tests show that this model meets the basic assumptions of regression, so the validity of the model is acceptable.

Neither financial reporting quality nor ESG disclosure significantly influences investment in the sample of state-owned enterprises. It argues that they posit disclosure to improve their corporate image and that their investment is aligned with the interests of the shareholders, which are the government, which is not always for profit creation but for society's welfare.

For further research, it is recommended to strengthen data analysis by exploring the factors that influence company size, age, and leverage, considering that these variables have a significant influence. Additionally, data collection and processing methods need to be improved to reduce outliers and ensure a more normal distribution. Research can also add other independent variables that may significantly influence the dependent variable to enhance the quality of the model. Additionally, considering alternative methods other than the Fixed Effect Model can help test the consistency of results and overcome potential biases that may arise in this regression analysis.

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