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The Impact of Debt Rating Mediation on ESG Scores and Corporate Debt Costs in Indonesia for the Period 2018 - 2023

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Abstract: This study aims to determine the impact of Debt Rating Mediation on ESG Score and Cost of Corporate Debt in Indonesia for the 2018-2023 Period. This research is included in quantitative research with data collection in the form of secondary data from those available to the public (Indonesia Stock Exchange) and refinitiv. The type of data used is cross section data. The sample in this study amounted to 235 bond data from 22 companies on the IDX issued in 2018-2023. The type of data used is cross section data. The results of the study showed that the performance of ESG scores, debt ratings, status of SOEs, and decarbonization acceleration regulations have an influence on the cost of corporate debt. Then debt ratings fully mediate the relationship between ESG scores and corporate debt costs

Keywords: ESG Performance, Rating, SOE Status, Decarbonization

INTRODUCTION

Sustainability practices have shown significant progress and become an important element in the global economy. The United Nations ("UN") in 2015 committed to achieving a better and sustainable life for all people in the world through the Sustainable Development Goals ("SDGs") which consist of 4 main pillars of the SDGs namely social, economic, environmental, legal & governance development (Matos, 2020)

According to , the main goal of the company is to maximize shareholder value ("MSV"). This theory holds the view that other stakeholders in the company such as employees, suppliers, customers, society and others are not the main focus of the company. , revealed, the company has no other moral responsibility other than to increase the company's profits to be given to shareholders. The theory put forward is known as Shareholder Theory. The development of sustainability practices that break the focus of companies to pay attention to social, environmental, and legal aspects & governance is contrary to the view of Shareholder Theory that the main thing for companies is MSV. The origin of MVS is the change in business structure and financialization of the market. Friedman (1962) Friedman (1962) Friedman (1962) (O'Connell & Ward, 2020).

Governments in each country that are members of the SDG commitment play an active role in encouraging the achievement of the SDGs by 2030. The governments of these countries, including Indonesia, have established various regulations that must be followed by every business, both private sector and State-Owned Enterprises ("SOEs") operating in their territories or jurisdictions. This regulation is designed to ensure that companies not only focus on profits, but also on sustainability and social responsibility.

Governments that are committed to encouraging the achievement of the SDGs force company management to adapt in their business operations. This means that companies must consider and follow the 4 pillars of the SDGs in their business operations, namely social, environmental, economic, and legal and governance aspects.

The company's commitment to realizing the SDGs is expressed in the concept of Environmental, Social, and Governance ("ESG"). stated that ESG is a concept used to assess a company's sustainability performance. In his book, he discusses three aspects that ESG focuses on, namely environmental aspect, social aspect, and governance aspect. The environmental aspect measures the impact of a company's operations on the natural ecosystem. This includes greenhouse gas emissions, efficient use of raw materials, pollution and waste control, and innovation in creating environmentally friendly products. The social aspect measures the company's relationship with employees, customers, and society. This includes the company's efforts to retain loyal employees, satisfy customers, and contribute to the well-being of the surrounding community. The governance aspect evaluates the system used by management to act in accordance with the long-term interests of shareholders. This includes protecting shareholder rights, establishing a functional board of directors and commissioners, implementing a fair compensation policy for leaders, and avoiding illegal activities such as fraud and bribery. The more a company considers ESG aspects in its business operations, the higher the company's ESG performance achievements. Zumente & Bistrova (2021) Matos (2020)

In Indonesia, ESG disclosure itself has been regulated and packaged in the form of a sustainability report. The Financial Services Authority ("OJK") issued OJK Regulation ("POJK") No.51/POJK.03/2017 which regulates the implementation of sustainable finance for financial services institutions, issuers, and public companies. POJK No.51/POJK.03/2017 aims to encourage transparency and accountability in ESG reporting, thereby supporting sustainable investment growth in Indonesia.

The Indonesia Stock Exchange ("IDX") also supports this initiative by providing incentives in the form of the formation of 4 ESG-based indices. These indices not only consider financial metrics but also ESG factors. The four indices are IDXESGLEADERS, SRI-KEHATI, ESG SECTOR LEADER IDX KEHATI, ESG QUALITY 45 IDX KEHATI.

In the implementation of ESG reports, supervision and evaluation are important elements. In addition to the IDX and OJK as the main supervisors in Indonesia, there are independent institutions such as Bloomberg, *Refinitiv* (Reuters Eikon), and Morningstar Sustainalytics that conduct ESG assessments on companies that have released sustainability reports. Each institution has its own assessment method. This study uses ESG Scores provided by Refinitiv.

Studies conducted show that companies that have high ESG scores not only show good performance towards environmental and social aspects, but also provide higher profits to their owners. These findings support the view that doing good will give good results as well or "it pays off to do good". Margolis et al. (2009)

The study concluded that ESG disclosures from companies in ASEAN have a negative and significant relationship to corporate debt costs. Meanwhile, in their study of companies in 15 European Union ("EU") countries, it was concluded that companies benefit from ESG disclosure and performance in the form of lower borrowing/debt costs from creditors. Grace

& Siregar (2021) Eliwa et al. (2021), Another study conducted by concluded that in addition to ESG performance, other variables such as the size of the company, the amount of debt issuance issued, as well as the rating of bonds have a negative relationship with the cost of corporate debt. These findings show that bond rating factors and company size also affect the cost of corporate debt in addition to ESG performance. Apergis et al. (2022),

In practice, the cost of a company's debt will also be affected by creditworthiness or *creditworthiness* company and the debt tenor issued. The creditworthiness of the company will be measured using *Rating* Debt determined by rating agencies uses various quantitative factors such as the company's performance, the ability to pay debts from its cash flow, and qualitative factors. *Rating* High debt indicates a good company's ability to pay its debts. So, the cost of a company's debt will be lower when the company has a high rating. This is because creditors or lenders have the perception that companies with *Rating* High debt will have a low risk of default, so creditors will receive low interest rates from the company that owes it. Then, the longer the debt tenor, the higher the cost of debt issued by the company. In this study *Rating* used are *Rating* bonds issued by the company.

Although previous research has found that ESG scores and company ratings have a negative relationship, in Indonesia's capital market anomalies have been found. In addition, Indonesia's very distinctive characteristics, namely using SOEs as the driving force of the domestic economy, are also interesting to observe. This research will also investigate the impact of SOE status on a company's debt costs.

Then, this study also aims to investigate the impact of government regulations that require several industries to decarbonize. The Government of Indonesia has regulated 9 industrial sectors that are obliged to switch to green energy or green energy, namely having environmentally friendly and renewable energy sources. The nine industries are the cement, steel, pulp and paper, textile, ceramics, fertilizer, petrochemical, food and beverage, and transportation industries. The acceleration of the use of green energy is expected to increase the performance risks of companies in these sectors. This is due to the fact that in addition to fulfilling corporate social responsibility in the form of *Corporate Social Responsibility* ("CSR"), as well as regularly reporting on governance & legal, companies must also consider capital expenditure to achieve *net zero carbon* by transforming green energy.

The interest in researching the impact of ESG scores on debt costs is because currently research related to ESG scores is still dominated by the relationship between ESG scores and corporate financial performance, not corporate debt. Then, the selection of Indonesia's region is due to the research on the impact of ESG scores on debt costs, geographically there are still many that use specific data on a continent, organizations (EU, ASEAN), not many specific in a country. In addition, the existence of anomalies in Indonesia, the characteristics of the use of SOEs in Indonesia as a driving force for the domestic economy, and the impact of government decarbonization regulations related to ESG scores are also the motivation for conducting this research.

It is hoped that this research can be an additional consideration for implementing ESG practices and disclosures as one of the ways for companies to reduce corporate debt costs while achieving sustainable economic growth. Meanwhile, from the regulator's side, it is hoped that this research can be used as supporting data to constantly increase the credibility and relevance of sustainability reports in Indonesia.

METHOD

This research is included in quantitative research with data collection in the form of secondary data from those available to the public (Indonesia Stock Exchange) and refinitiv. The type of data used is cross section data.

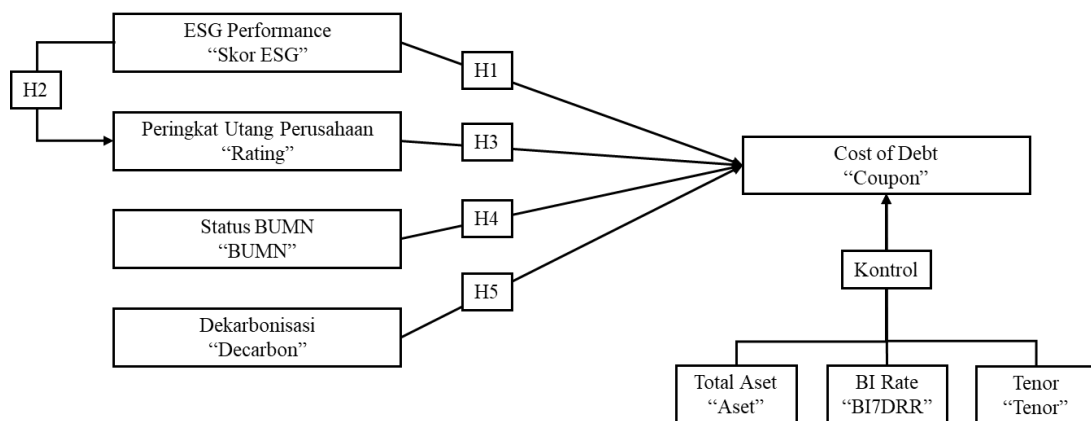
The determination of the number of samples is based on the research of David et al., (2020) , which suggests a minimum sample of 25 data ($N \geq 25$). ESG Score variables are taken through the Refinitiv application. Other variable data such as Coupon, Tenor, Rating, and Assets are taken from data released by the IDX. Finally, SOE Status data is taken from the company's website.

The bond sample in this study amounted to 235 data from 22 companies on the IDX. For the record, the bonds that are sampled are bonds issued in 2018 – 2023 by companies that already have ESG value from 2017 – 2022, one year back from the year of bond issuance.

The research model used in this study is a development of the model used by Gracia & Siregar (2021). The main model of the research of Gracia & Siregar (2021) is to investigate the relationship between ESG Performance and Cost of Debt. However, in this study, the model by adding a company's debt rating to investigate its mediating effect on the effect of ESG Performance on the company's debt cost. If there is a mediation effect, then the addition of the Corporate Debt Rating will affect the relationship between ESG scores and debt costs. Then another addition is the SOE status variable and decarbonization.

The research models used in this study are:

$$Coupon = \lambda + \beta_1 Skor\ ESG + \beta_2 Rating + \beta_3 BUMN + \beta_4 Decarbon + \beta_5 Aset + \beta_6 Tenor$$



Picture 1. Research Model Framework

RESULTS AND DISCUSSION

Variable Descriptive Statistics

Table 1. Sample Descriptive Statistics

	Range	Minimum	Maximum	Average	Standard Deviation
Coupon	8,50%	3,50%	12,00%	8,25%	1,77%
ESG Score	0,71	0,14	0,84	0,43	0,18
Rating	0,33	0,67	1	0,89	0,89
Tenor	11	1	12	3,79	2,25
BI7DRR	2,50%	3,50%	6,00%	4,61%	1,00%
Assets	7,88	13,53	21,41	18,23	1,23

Descriptive statistics show that bond coupons ("**Coupons**") as a *Cost of Debt* variable have a minimum value of 3.50% and a maximum of 12.0%. The ESG Score value has a minimum score of 0.14 and a maximum score of 0.84. Then the variable of the company's debt rating ("**Rating**") has a minimum value of 0.67 and a maximum value of 1.00. The maximum

value of 1 on the *Rating* shows that there are bonds with AAA ratings which is the highest rating.

Then descriptive statistics for the *kotnrol* variable show that the bond tenor has the shortest period of 1 year with a maximum of 12 years. Then, during the period 2018 to 2023, *BI7DRR* has a minimum value of 2.50% and a maximum value of 3.50%. Finally, the total assets that have been converted to natural logarithms have a minimum value of 13.53 with a maximum value of 21.41.

Classical Assumption Test

Each multiple linear model must meet the assumption of normality, no multicollinearity, and no heteroskedasticity. To test these three things, it is necessary to conduct a classical assumption test.

Normality Test

The first classical assumption test is the normality test. The normality test was carried out by performing the Kolmogorov Smirnov test on *the unstandardized residual* of the regression model. The decision of the Kolmogorov Smirnov test is as follows:

- Asymp Value. Sig. (2-tailed) $> \alpha = 0.05$, then the data is normally distributed.
- Asymp Value. Sig. (2-tailed) $< \alpha = 0.05$, then the data is not normally distributed.

Table 2. Normality Test Results

N		227
Normal Parameter	Mean	0,000
	Standard Deviation	1,263
Most Extreme Differences	Absolute	0,057
	Positive	0,047
	Negative	-0,057
Test Statistic		0,057
Asymp. Sig. (2-tailed)		0,067

The results of the normality test using the Kolmogorov Smirnov test on the unstandardized residual regression model showed the Asymp value. Sig. (2-tailed) of $0.067 > \alpha = 0.05$. Therefore, from the results of Kolmogorov Smirnov's test, it was decided that the data had been distributed normally. Thus, the regression capital has met the assumption of normality.

Multicollinearity Test

Then the next assumption test is the multicollinearity test. The multicollinearity test is used to determine whether there is a relationship or correlation between variables that is high or perfect. The way to see if there is multicollinearity in the model is to do a correlation test. The correlation test in this study uses the Spearman correlation test, this is because the Spearman test does not require the assumption of linearity and normality of the research variables.

Table 3. Spearman Correlation Test Results

Spearman Rho		Coupon	SkorESG	Rating	SOEs	Decarbon	Tenor	BI7DRR	Assets
Coupon	Correlation Coefficient	1							
	Sig. (2-tailed)								
SkorESG	Correlation Coefficient	-0,248	1						
	Sig. (2-tailed)	<0,001	.						
Rating	Correlation Coefficient	-0,462	0,533	1					
	Sig. (2-tailed)								

	Spearman Rho	Coupon	SkorESG	Rating	SOEs	Decarbon	Tenor	BI7DRR	Assets
	<i>Sig. (2-tailed)</i>	<0,001	<0,001	.					
SOEs	Correlation Coefficient	-0,213	0,507	0,222	1				
	<i>Sig. (2-tailed)</i>	0,001	<0,001	<0,001	.				
Decarbon	Correlation Coefficient	0,258	-0,223	-0,372	-0,278	1			
	<i>Sig. (2-tailed)</i>	<0,001	<0,001	<0,001	<0,001	.			
Tenor	Correlation Coefficient	0,389	0,328	0,125	0,182	0,039	1		
	<i>Sig. (2-tailed)</i>	<0,001	<0,001	0,061	0,006	0,559	.		
BI7DRR	Correlation Coefficient	0,035	0,147	0,242	-0,025	-0,017	0,031	1	
	<i>Sig. (2-tailed)</i>	0,599	0,027	<0,001	0,713	0,803	0,648	.	
Assets	Correlation Coefficient	-0,106	0,392	0,183	0,485	0,386	0,071	0,068	1
	<i>Sig. (2-tailed)</i>	0,113	<0,001	0,006	<0,001	<0,001	0,288	0,305	.

From the results of the correlation test, the variables SkorESG, Rating, SOEs, and Assets have a negative correlation with Coupons. This means that the four variables will move in reverse with the Coupon. The higher the SkorESG variable, the lower the Coupon. The better the Rating, the lower the Coupon. When the company has the status of a state-owned enterprise, the Coupon is lower. Then the larger the company's assets, the lower the Coupon.

Meanwhile, the variables Decarbon, Tenor, and BI7DRR had a positive correlation with coupons. This means that all three variables move in the same direction as the Coupon variable. When companies are included in the government's decarbonization focus, the Coupon will be higher. Then, the longer the bond tenor, the higher the coupon. When BI7DRR increases, the Coupon is higher. The data also shows that ESGScore has a moderate correlation with Rating and SOEs. From the results of the correlation test, no correlation value between variables was found to be high (above 0.7) and perfect (1). So it can be concluded that there is no multicollinearity.

Heteroscedasticity Test

Heteroscedasticity is a condition when the error variance of the model is not the same between one observation and another. In regression, the model is said to be good if heteroscedasticity does not occur. To find out whether there is heteroscedasticity in the model, it can be done by conducting the Glacier test. The Glesjer test was carried out by regressing independent variables with residual absolute values from the model. The basis for the decision of the Glacier Test is as follows:

- When the significance value > 0.05, then heteroscedasticity does not occur.
- When the significance value > 0.05, heteroscedasticity occurs.

Table 4. Glesjer Test Results

Model	Unstandardized Coefficient		Standardized Coefficient	t	Mr.
	B	Std. Error	Beta		
(Constant)	3,088	1,018		3,034	0,003
SkorESG	-0,633	0,394	-0,16	-1,607	0,109
Rating	0,377	0,677	0,047	0,557	0,578
SOEs	0,262	0,165	0,16	1,592	0,113
Decarbon	-0,159	0,132	-0,106	-1,201	0,231
Tenor	-0,039	0,023	-0,125	-1,733	0,084
BI7DRR	-0,009	0,046	-0,013	-0,193	0,847

Assets	-0,105	0,06	-0,188	-1,756	0,081
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The results of the Glacier test show that the significance value of each independent variable (except constant) has a significance value of more than 0.05. Therefore, according to the decision making from the Glejser test, it can be concluded that there are no heterokedasticity symptoms in the model.

Regression Model Analysis

The regression model is said to be able to provide a conclusion when a model is determined to be significant from the results of the F test. In addition to the F test, a model will also have an R-Squared value. R-Squared is a measure or calculation of how well an independent variable can explain the variability of its dependent variables in the model. In this study, the dependent variable is Coupon, while the independent variables are ESG Score, Rating, SOEs, Decarbon, Tenor, Assets, and BI7DRR.

F – Test

The F Test or Simultaneous Test is a test that is carried out to find out whether independent variables simultaneously affect dependent variables. The test can be done by looking at the Sig value. The decision making of the F test is as follows:

- If, the Significance value $F < \alpha = 0.05$ then H_0 is rejected, H_1 is accepted. This means that all independent variables have a significant influence on the dependent variables.
- If, the Significance value $F > \alpha = 0.05$ then H_0 is accepted, H_1 is rejected. This means that all independent variables do not have a significant influence on the dependent variables.

Table 5. ANOVA Table

	ANOVA	df	Mean Square	F	Mr.
Regression	315,449	7	45,064	27,397	<0,001
Residual	360,224	219	1,645		
Total	675,673	226			

In the regression model, the F value is 27.397 with a significance value of <0.001. In accordance with the decision-making of Test F, because the Significance value is $< \alpha$, it is decided that all independent variables have a significant influence on the dependent variables simultaneously.

Adjusted R-Squared

Table 6. R-Squared Table

R	R Square	Adjusted R Square	Std. Error of the Estimate
0,683	0,467	0,450	1,28252%

The R Squared value or determination coefficient explains how far the change of the dependent variable can be explained from the research model. In other words, knowing how well the regression value predicts the actual data. An R Squared value of 0.467 suggests that 46.7% of the dependent variables can be explained by independent variables, while the rest are explained by other variables outside the model.

T – Test

If the F test measures the influence of each independent variable on the dependent variable simultaneously, then in the t test the influence of each independent variable on the dependent variable (Coupon) will be measured. The regression results in the SPSS will show

the significance of the t-value for each coefficient. The decision making of the t-test is as follows:

- The independent variable is said to be statistically significant if the Significance is less than 0.05.
- The independent variable is said to be not statistically significant if the Significance is greater than 0.05.

Table 7. T Test Results

Model	Unstandardized Coefficients		Standardized Coefficients	t	Mr.
	B	Std. Error	Beta		
(Constant)	11,628	1,945		5,978	<0,001
SkorESG	-1,774	0,753	-0,180	-2,356	0,019
Rating	-10,145	1,293	-0,510	-7,844	<0,001
SOEs	-0,649	0,314	-0,159	-2,063	0,040
Decarbon	-0,246	0,252	-0,066	-0,973	0,332
Tenor	0,404	0,043	0,519	9,372	<0,001
BI7DRR	0,269	0,088	0,156	3,037	0,003
Assets	0,217	0,114	0,155	1,894	0,060

From the results of the T test above, the variables that have a statistically significant influence on the dependent variables of Coupon are Constant, SkorESG, Rating, SOEs, Tenor, BI7DRR. Meanwhile, the Decarbon and Asset variables affect Coupons but are not statistically significant.

Discussion and Discussion

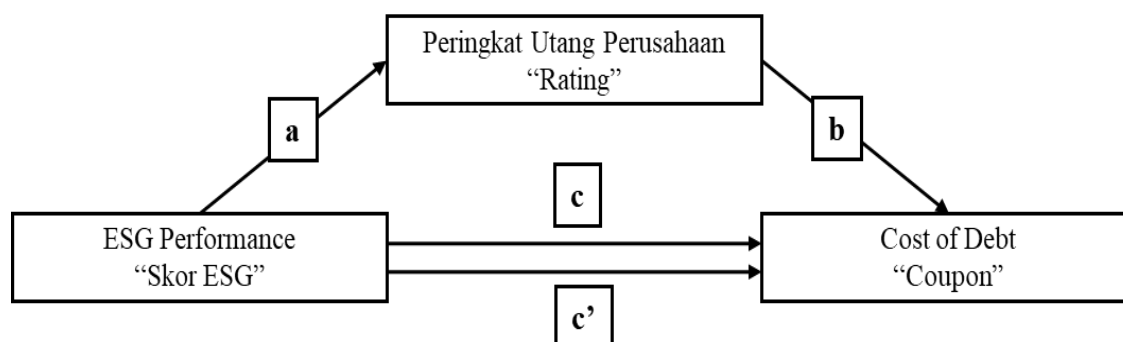
The Effect of ESG Score on Corporate Debt Costs

The results of **multiple linear regression** show an ESG Score coefficient of -0.649. This means, an increase in ESG score of 1 point will reduce the Coupon by 0.649. From this value, it can be concluded that the higher the ESG Score, the lower the Coupon on the bonds issued by the company. Thus, management can improve or increase the ESG Score as one way to reduce the cost of new debt of the company in the future.

Analysis of the Effect of Rating Mediation

To see the impact of Rating mediation on the influence of ESG Score on the cost of corporate debt, it is necessary to carry out 3 regressions with significance provisions (Baron & Kenny, 1986) for each variable coefficient as follows:

1. Regression of ESG Score to Coupon, where the coefficient c must be significant.
2. Regression of ESG Score to Rating where the coefficient a in ESG Score must be significant.
3. Multiple Linear Regression of the independent variables ESG Score and Rating against the dependent variable Coupon, coefficient b must be significant whereas:
 - a. If the coefficient c' is significant, then partial mediation occurs.
 - b. If the coefficient c' is not significant, then full mediation occurs.



Picture 1. Mediation Variables Section

The results of the 3 regressions in this study are obtained as shown in the following table.

Table 8. Results of ESG to Coupon Score Regression

Regression	Model		Std. Error	Standardized Coefficients Beta	t	Mr.
Score ESG to Coupon	(Constant)	9,356	0,299		31,311	0,000
	SkorESG	-2,384	0,637	-0,242	-3,743	0,000
Score ESG to Rating	(Constant)	0,781	0,013		58,687	<0,001
	SkorESG	0,253	0,028	0,511	8,922	<0,001
ESG Score and Rating to Coupon	(Constant)	16,476	1,105		14,908	<0,001
	SkorESG	-0,076	0,679	-0,008	-0,113	0,910
	Rating	-9,116	1,371	-0,458	-6,650	<0,001

Based on the table, the first Regression is a regression from the independent variable ESG Score to the dependent variable Coupon. This regression results in a Coefficient of ESG Score = $c = -2.384$, the t-test produces significance. The second regression is the regression of the independent variable ESG Score to the Rating variable. This regression shows a coefficient of ESG score = $a = 0.253$, with the results of the t-test showing statistically significant. The last regression is a linear regression using the independent variables ScoreESG and Rating to the dependent variable Coupon. The results of this regression provide:

- The coefficient value of the variable Rating = $b = -9.116$ with the results of the t-test is significant.
- The coefficient value of the ESG score = $c' = -0.076$, with the results of the t test is not significant.

Based on the results of this regression, the addition of the Rating variable to predict Coupon changed the significance of the ESG Score variable to insignificant. Thus, it can be decided that the Rating variable fully mediates the ESG Score variable.

The Effect of SOE Status on the Cost of Corporate Debt

The results of the multiple linear regression show that the coefficient of SOEs is -1.774. This means, if a company has the status of a state-owned enterprise, then the bond coupon issued by the company will be lower by 1,774 compared to non-state-owned enterprises.

This value opens up new research opportunities to uncover whether creditors really provide discounts for SOEs. There are several hypotheses why SOE status can reduce the cost of corporate debt:

1. There is a perception that the possibility of default of SOEs is smaller than that of non-SOEs. Because SOEs are state-owned companies and will be assisted by the state if they experience financial difficulties.

2. State ownership in SOEs improves corporate governance. So that agency costs in SOEs are smaller than in private companies.

Analysis of the Effect of Decarbonization Acceleration Regulations on Corporate Debt Costs

The results of the multiple linear regression show a Decarbon coefficient of -0.246. This means that 1 point on the Decarbonization variable will reduce the coupon by -0.246. The results of this regression model are quite surprising because they are different from the initial hypothesis of the study seen from the perception of Shareholder Theory.

It should be noted that the t-test of the decarbonization variable showed that the independent Decarbon variable was not significant. This is not to say that the Decarbon variable has no effect, but it could be due to the lack of samples used to produce statistically significant tests.

CONCLUSION

From the results of this study, the study successfully answered the questions from the study with the following conclusions:

1. ESG performance has an influence on a company's debt costs. Multiple linear regression results in negative ESG performance coefficients that are statistically significant. This means that the higher the ESG performance, the lower the company's debt costs.
2. Debt ratings mediate the influence of ESG performance on a company's debt costs. Debt rating mediates the full relationship between ESG performance and a company's debt cost. This means that the relationship between ESG performance and debt costs can be fully explained by debt ratings.
3. The status of SOEs affects the cost of corporate debt. The status coefficient of SOEs from the regression results shows a negative value. This means that companies with state-owned status will have lower debt costs. Although the coefficient of SOE status is not significant, it does not mean that the relationship does not exist. To better examine the relationship, it can be done by increasing the observed samples.
4. Regulations on accelerating decarbonization affect the cost of corporate debt. The regression results show that the regulatory coefficient of accelerating decarbonization has a negative value. This means that companies affected by this regulation will have lower debt costs. Although the coefficient of decarbonization acceleration regulation is not significant, it does not mean that the relationship does not exist. To better examine the relationship, it can be done by increasing the observed samples.

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