

THE EFFECT OF ESG SCORE ON DEFAULT RISK WITH OWNERSHIP CONCENTRATION AS MODERATING VARIABLES



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Abstract

This study aims to examine the effect of Environmental, Social, and Governance (ESG) score on corporate default risk by incorporating ownership concentration—measured through cash flow rights, control rights, and family ownership—as moderating variables. Grounded in agency theory, the study hypothesizes that ownership structure may strengthen or weaken the effectiveness of ESG implementation in mitigating financial risk. The research sample comprises 304 observations of publicly listed companies in Indonesia that had an ESG score between 2020 and 2023. Data analysis is conducted using fixed effect panel regression with clustered robust standard errors. The findings reveal that ESG score has a positive and significant effect on Z-score, indicating that companies with higher ESG performance tend to exhibit lower default risk. The moderating effect of cash flow rights weakens the ESG impact on default risk, while control rights significantly enhance it. Meanwhile, family ownership is found to be insignificant both as a main variable and as a moderator in the ESG–default risk relationship. These results emphasize the critical role of ownership structure in determining the effectiveness of ESG as a risk mitigation tool and highlight the need for adaptive governance and regulatory frameworks to support sustainability practices in corporations. This study contributes to the growing literature on ESG, ownership structure, and risk management in emerging markets.

Keywords: ESG Score, Default Risk, Cash Flow Rights, Control Rights, Family Ownership

INTRODUCTION

In the past decade, attention to sustainability issues in the business world has increased significantly. This is reflected in the growing number of companies integrating Environmental, Social, and Governance (ESG) principles into their corporate strategies. ESG represents a company's efforts to maintain environmental responsibility, promote social welfare, and implement good governance practices. No longer viewed merely as a form of social responsibility, ESG is now considered an important indicator in assessing a company's long-term performance, including from the perspective of financial risk and business sustainability.

This trend has also developed in Indonesia. The Financial Services Authority (Otoritas Jasa Keuangan/OJK) has issued regulations related to sustainability reporting (POJK No. 51/POJK.03/2017), which require financial institutions, issuers, and public companies to publish sustainability reports. In addition, the Indonesia Stock Exchange (IDX) has begun assessing companies through the ESG Quality Score developed in collaboration with independent partners such as Sustainalytics. On the other hand, investors are also showing greater interest in sustainable investment. According to the Schrodgers Global Investor Study (2023), 74% of Indonesian retail investors stated that sustainability is one of the main considerations in their investment decisions.

However, uncertainty remains regarding the extent to which ESG contributes to reducing financial risk, particularly in the context of default risk. Default risk refers to a condition in which a company is unable to meet its financial obligations, including repayment of principal debt and interest payments. In Indonesia, default cases involving large companies such as Duniatex, Garuda Indonesia, and Waskita Karya demonstrate that this risk is real and has wide-ranging impacts. Data from S&P Global (2023) shows that Indonesia experienced a surge in corporate default cases during the 2020–2022 period, with most cases originating from sectors affected by the pandemic and weak governance.

In measuring default risk, one of the most widely used instruments is the Z-Score, which is considered capable of predicting financial distress with high accuracy and has been widely applied in the Indonesian context. However, the effectiveness of the Z-Score may be influenced by non-financial factors such as ESG. Several studies, including Albuquerque et al. (2019) and Giese et al. (2021), indicate that companies with strong ESG performance tend to have more stable financial structures, more controlled debt levels, and greater resilience to external shocks.

Nevertheless, the literature on the influence of ESG on default risk remains limited, fragmented, and insufficiently integrated, particularly in considering the role of ownership concentration in shaping ESG policies and financial risk. Previous studies have largely focused on the linear relationship between ESG and firm performance, without considering contextual variables such as ownership concentration. In fact, ownership concentration is an important element that determines how a company responds to external pressures and manages sustainability initiatives. Recent research by Maquieira et al. (2023) supports the importance of ownership context in assessing the impact of ESG on default risk.

A concentrated ownership structure, whether in the form of family ownership or dominant controlling shareholders, can influence the direction and effectiveness of ESG implementation. In many cases, dominant owners hold cash flow rights or control rights.

Family ownership is often associated with long-term objectives and strong strategic control over corporate policies (Anderson & Reeb, 2003).

This ownership configuration can affect the effectiveness of ESG implementation through two main mechanisms: the entrenchment effect and the alignment effect. The alignment effect arises when concentrated ownership promotes alignment between the interests of owners and managers, potentially strengthening ESG implementation as a long-term strategy (Jensen & Meckling, 1976). In contrast, the entrenchment effect occurs when controlling owners use their power to pursue personal interests, reduce monitoring effectiveness, and weaken commitment to ESG (Morck, Shleifer, & Vishny, 1988). In this context, ownership dominance may subordinate ESG, especially when it is perceived as limiting business flexibility or reducing short-term profits.

This study also draws on agency theory, which explains how conflicts of interest between owners and management, as well as among owners themselves, can influence strategic decisions such as ESG adoption. The variables of cash flow rights and control rights are used to capture the economic incentives and control power of owners over the firm, which in the literature have been shown to contribute to both alignment and entrenchment effects (Claessens et al., 2000; Morck et al., 1988). Meanwhile, family ownership is considered an additional factor influencing the tendency to support or hinder consistent ESG implementation.

Based on this background, this study is highly relevant. It aims to examine the effect of ESG on default risk as measured by the Z-Score, and to investigate whether this relationship is moderated by the firm's ownership structure, represented by cash flow rights (CFR), control rights (CR), and family ownership. By incorporating these three moderating variables, this study seeks to determine whether the impact of ESG is universal or highly dependent on internal firm characteristics.

Specifically, this research examines how ESG scores are correlated with default risk and how this relationship is influenced by different ownership structure configurations. By integrating moderating variables such as cash flow rights, control rights, and family ownership within the agency theory framework, this study aims to provide a more comprehensive understanding of the ESG mechanism in mitigating financial risk in public companies.

This study makes an important contribution to the ESG and financial risk management literature, particularly by integrating ownership structure as a moderating variable in the relationship between ESG scores and default risk. Previous studies generally focus on the direct effect of ESG on financial performance or aggregate firm risk, but tend to overlook ownership as a factor that may strengthen or weaken ESG effectiveness (Goss & Roberts, 2011; Benlemlih et al., 2018). Although some studies have begun to explore the role of ownership structure (e.g., Maquieira et al., 2023), they remain limited and have not simultaneously examined the moderating effects of cash flow rights, control rights, and family ownership in the context of default risk. Therefore, this study contributes to the development of agency and stakeholder theories by providing a more granular understanding of how ownership structure configurations can alter the direction and strength of the relationship between ESG and financial risk.

Methodologically, this study enriches quantitative approaches by testing a moderation model in the context of emerging markets, which have been relatively

underexplored. Practically, the findings of this study will be useful for investors seeking to understand how the combination of ESG and ownership structure influences a company's risk profile. For regulators, this study provides an empirical basis for designing policies that support ESG adoption while considering the influence of ownership structure on its implementation and effectiveness. Meanwhile, for companies, understanding the role of ownership in strengthening or weakening the impact of ESG on financial risk can serve as a reference in developing more adaptive and sustainable governance strategies.

RESEARCH METHOD

Research Framework

The research framework to be conducted is shown in Figure 1 as follows:

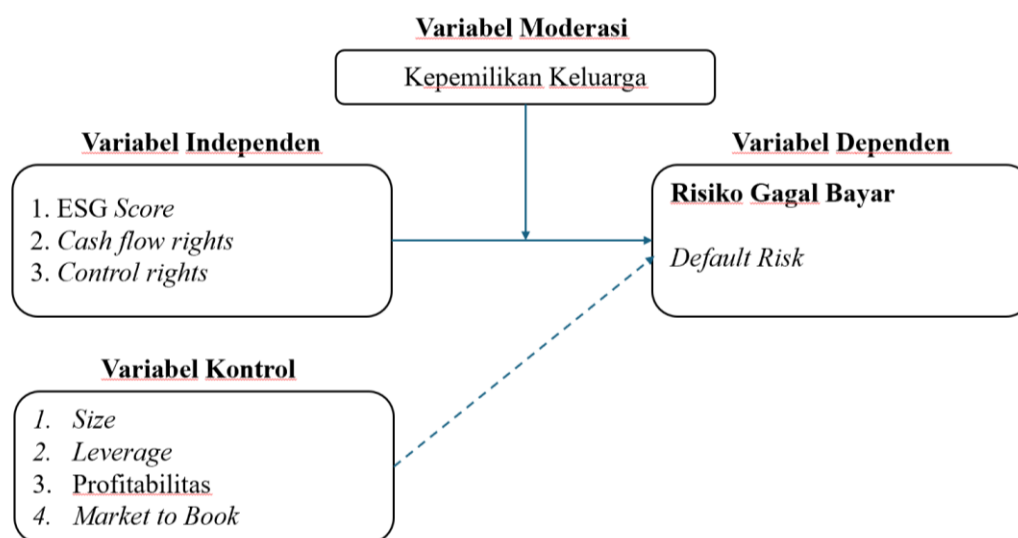


Figure 1.
Research Framework

This study extends the research of Maquieira et al. (2023) by examining the effect of ESG scores on default risk, with moderating variables including family ownership and ownership concentration through cash flow rights (CFR) and control rights (CR) of majority shareholders. The aim is to analyze the impact of ESG on corporate default risk in Indonesia and to determine whether family ownership, CFR, and CR strengthen or weaken this relationship. Compared to Maquieira et al. (2023), this study contributes by separating CFR and CR within ownership concentration to identify potential alignment and entrenchment motives, whereas the previous study focused on family ownership concentration and family members ratio.

Ownership concentration plays a crucial role in determining the effectiveness of ESG implementation on financial risk. CFR reflects the proportion of financial benefits received by owners, while CR represents their decision-making power. When CR significantly exceeds CFR (divergence), it may create misalignment between control and economic incentives, potentially weakening ESG effectiveness (Claessens et al., 2002). In contrast,

family ownership is often associated with long-term control, loyalty, and commitment to business sustainability. Therefore, these ownership structures are treated as moderating variables that may strengthen or weaken the relationship between ESG and default risk. This study uses a sample of companies listed on the Bursa Efek Indonesia (BEI) that already have ESG scores.

Sample and Data

The sample is collected using non-probability and purposive sampling methods based on specific criteria. The study focuses on publicly listed companies with ESG scores on the Bursa Efek Indonesia (BEI) from 2020 to 2023, with annual reports containing all required data, including ownership structure.

Although Otoritas Jasa Keuangan (OJK) has issued POJK No. 51/POJK.03/2017 requiring sustainability reporting for financial institutions, issuers, and public companies, its implementation remains uneven due to gradual enforcement across sectors and firm sizes. Therefore, this study uses ESG scores from Refinitiv, which adopt international standards and allow cross-sector comparison, although coverage is limited to firms with explicit ESG disclosures.

Data collection focuses on variables relevant to the study, including ownership structure (both direct and indirect holdings) and financial data obtained from annual reports, company websites, and the Refinitiv Eikon database.

Research Object

The following research sample was obtained based on the criteria determined for data processing needs:

Table 1.
Research Object

No	Criteria	Total
1	All Indonesian companies listed on the Refinitiv Eikon website (2020–2023)	963
	Research Period	4
	Total Observations	3852
2	Observations without ESG Score (not yet implementing ESG practices)	(3344)
3	Outlier Data	4
	Final Number of Observations	300

According to Table 1 above, the final number of observations in this study was 300, after going through the outlier detection stage. The method used to detect outliers in the data was to examine the 1% and 99% data, with the aid of visualization using box plots and scatter plots.

RESULT AND DISCUSSION

Panel Data Estimation Model Selection

Chow Test

The Chow test is used to evaluate the model fit between the Common Effect Model (CEM) and the Fixed Effect Model (FEM). This test is based on the probability value of the

cross-sectional F-statistic. If the probability value exceeds 0.05, there is no significant difference between units, so the CEM model is considered more appropriate. However, if the probability value is below 0.05, there is an indication of a significant individual effect, so the FEM model is more appropriate.

Table 2.
Chow Test Results

Probability	Compared Models	Conclusion
0.0000	CEM vs FEM	FEM selected

Source: data processing (2025)

Based on the results presented in Table 2, a probability value of 0.000 was obtained. Because this value is below the 5% significance threshold, it can be concluded that there is a significant individual effect, and thus the Fixed Effect Model (FEM) was selected as the most appropriate estimation model.

Hausman Test

After the Chow test was conducted, the analysis continued with the Hausman test to determine the most appropriate panel model between the Fixed Effect Model (FEM) and the Random Effect Model (REM). The Hausman test aims to identify the presence or absence of a correlation between the individual effects and the independent variables in the model. If the probability value (p-value) of the chi-square statistic exceeds 0.05, it is assumed that there is no correlation, and therefore the REM model is considered more appropriate. Conversely, if the p-value is below 0.05, there is an indication of a correlation, and the FEM model is the more appropriate choice.

Table 3.
Hausman Test Results

Probability	Compared Models	Conclusion
0.0074	REM vs FEM	FEM selected

Source: data processing (2025)

Referring to Table 3, the probability value obtained is 0.0074, indicating a significant correlation between the individual effect and the independent variable. Therefore, the Fixed Effect Model (FEM) is considered the most appropriate model for use in this study.

Lagrange Multiplier Test

The Lagrange Multiplier (LM) test is used to determine the most appropriate estimation model between the Common Effect Model (CEM) and the Random Effect Model (REM). This test is based on the probability value of the Chi-Square statistic. If the probability value exceeds 0.05, it is concluded that there is no significant individual effect, so the CEM model is more appropriate. Conversely, if the probability value is below 0.05, there is an indication of an individual effect, so the REM model is a more appropriate choice.

Table 4.
Lagrange Multiplier Test Results

Probability	Compared Models	Conclusion
0.0000	REM vs CEM	REM selected

Source: data processing (2025)

The test results presented in Table 4 indicate that the probability value of 0.0000 is below the 0.05 significance level. Therefore, it can be concluded that the Random Effects Model (REM) is an appropriate model for use in the context of this study.

Overall, the results of the panel regression model selection test based on the three tests are as follows:

Table 5.
Results of Estimation Model Selection

No	Test	Test Result	Conclusion	Selected Model
1	Chow Test	prob = 0.0000	Between CEM and FEM, FEM is selected	FEM (Fixed Effect Model)
2	Hausman Test	prob = 0.0074	Between REM and FEM, FEM is selected	FEM (Fixed Effect Model)
3	LM Test	prob = 0.0000	Between CEM and REM, REM is selected	REM (Random Effect Model)

Source: data processing (2025)

The Fixed Effect Model is the best model to choose based on the summary of the results of regression model selection tests using the Chow, Hausman, and Lagrange Multiplier tests.

Classical Assumption Testing

Normality

The normal distribution of residuals is an important prerequisite for developing a good regression model. To test for normality in panel data regression, the Skewness and Kurtosis tests are used. If the probability value of the test result exceeds 0.05, the residuals are considered normally distributed, thus meeting the normality assumption. Conversely, if the probability value is below 0.05, the normality assumption is not met.

The results of the normality test using the Skewness-Kurtosis test are presented in the following table:

Table 6.
Normality Test Results

Skewness-Kurtosis					
Variable	Obs (n)	prob (skewnesss)	prob (kurtosis)	Adj chi2	Prob > chi2
resid	300	0.0785	0.0816	6.04	0.0488

Source: data processing (2025)

The normality test for residuals was performed using the Skewness and Kurtosis Test, which yielded a Prob value > $\chi^2 = 0.0488$. This value is slightly below the 5% significance level, statistically indicating that the residuals are not perfectly normally distributed. However, given the large number of observations ($n = 300$) and the skewness and kurtosis results, which are still within the reasonable range (0.0785 and 0.0816, respectively), this deviation can be considered insignificant. Furthermore, the model was estimated using robust

standard errors (vce(robust)), so minor violations of the normality assumption do not affect the validity of the regression inferences. Therefore, the model can be analyzed further.

Multicollinearity

The multicollinearity test was conducted to ensure that there is no high correlation between the independent variables in the regression model. A good regression model should be free from indications of multicollinearity, as this condition can disrupt the stability of coefficient estimates. Evaluation is performed using the Variance Inflation Factor (VIF) value; if the VIF value is below or equal to 10, it can be concluded that there is no multicollinearity in the model.

Table 7.
Multicollinearity Test Results

Variable	VIF	1/VIF
CR	8.72	0.114685
CFR	8.60	0.116326
ESG	1.67	0.599168
SIZE	1.51	0.663136
Fam Dummy	1.16	0.862959
PROFIT	1.13	0.885764
LEV	1.09	0.914395
MTB	1.08	0.929950
Mean VIF	3.12	

Based on the results presented in Table 7, all Variance Inflation Factor (VIF) values were recorded below the threshold of 10, indicating no indication of multicollinearity among the independent variables in the regression model.

Heteroscedasticity

Heteroscedasticity testing was performed using the Wald test to detect inhomogeneity of residual variance in the regression model. If the probability value of the Chi-Square statistic is less than 0.05, there is an indication of heteroscedasticity. Conversely, if the probability value exceeds 0.05, the model is considered free of heteroscedasticity.

Table 8.
Heteroscedasticity Test Results

Wald Test	
Chi2	1,03
Prob > chi2	0,3108

Based on the test results in Table 8, the probability value of $0.3108 > 0.05$ indicates no heteroscedasticity.

Autocorrelation

Autocorrelation testing was conducted using the Wooldridge Test to detect the possibility that the dependent variable is influenced by the past (detecting the correlation between residuals in consecutive time periods, as residuals reflect information not explained by the current model). If the resulting probability value exceeds 0.05, the model is considered

free of autocorrelation. Conversely, if the probability value is less than 0.05, there is an indication of autocorrelation in the regression model.

Table 9.
Autocorrelation Test Results

Wooldridge Test	
F(1, 67)	0,455
Prob > F	0,5482

The Wooldridge Test results indicate the panel regression model is free from autocorrelation, as indicated by probability values above the 0.05 significance level. Therefore, it can be confirmed that the dependent variable is not influenced by its own past (no endogeneity).

Based on the results of the classical assumption test, the model used does not indicate any problems. Therefore, estimation was performed using the Fixed Effects Model (FEM) with the application of the clustered standard errors technique to obtain more accurate and reliable results.

Z-Score Validation

In this test, the Z-Score values previously obtained from the logistic model were converted to default probabilities using the logistic function approach. Next, a cut-off threshold of 0.01 (1%) was used to distinguish between companies predicted to default and those not. This cut-off was chosen based on the distribution of Z-Score values in the data, which indicated that the majority of observations fell within the very low range.

Table 10.
Results of the Z-Score Validity Test

Z-Score Validity Test	
Accuracy	98.67%

The validation results indicate that the model is capable of classifying companies with a very high degree of accuracy. Of the 300 observations, 296 companies were correctly classified as either default or non-default, resulting in an accuracy rate of 98.67%. These results provide confidence that the Z-Score model used in this study is sufficiently valid to describe default risk, particularly in the context of companies in Indonesia. Although these validation results are excellent, caution is still required in interpreting them. High validity in one sample does not necessarily guarantee model reliability across different samples or time periods.

Panel Model Test Results

Table 11 presents the results of the panel data regression analysis conducted using the Fixed Effects Model (FEM) approach in this study. Estimation was performed using the clustered standard errors technique to address potential autocorrelation and heteroscedasticity.

Table 11.
Test Results

	Model 1 (without moderation)		Model 2 (with moderation)	
Variable	Coefficient	P-value	Coefficient	P-value
ESG.P	0.0164671***	0.0000		
CFR	1.128167***	0.0005		
CR	-1.570009***	0.0015		
Fam_Dummy	0.1596837*	0.0985		
SIZE	-0.3799168***	0.0000		
LEV	0.3480171	0.1380		
PROFIT	0.692741*	0.0565		
MTB	0.0435098***	0.0065		
ESG_CFR			-0.2060333***	0.0000
ESG_CR			0.2382737***	0.0000
ESG_Family			-0.0035503	0.2900
cons	3.305119	0.0005	4.171481	0.0000

Source: data processing (2025)

*** Significant at the 1% level

** Significant at the 5% level

* Significant at the 10% level

Based on the F-test results, a probability value of 0.0000 was obtained, which is below the 0.05 significance level. Therefore, it can be concluded that the regression model is simultaneously significant. The coefficient of determination (R-squared) of 0.3175 indicates that approximately 31.75% of the variation in the dependent variable can be explained by the independent variables in the model.

The results of the partial significance test for each independent variable revealed the following findings:

1. The ESG variable showed a positive and significant effect on the Z-Score, with a p-value of 0.000 and a regression coefficient of 0.0164671. This finding indicates that the higher a company's ESG score, the higher its Z-Score and the lower its default risk.
2. The CFR variable shows a positive and significant effect, with a coefficient of 1.128167 and a p-value of 0.0005. This means that increased cash flow rights correlate with an increase in the ZScore, which can be interpreted as a reduced risk of default.
3. The CR variable shows a negative and significant effect, with a coefficient of -1.570009 and a p-value of 0.0015. This indicates that the greater the control rights held by the major shareholder, the lower the company's ZScore, thus increasing the risk of default.
4. The Fam_Dummy variable shows a less significant positive effect, with a coefficient of 0.15968 and a p-value of 0.0985. This indicates that family firms tend to have higher ZScores than non-family firms, meaning the risk of default in family firms is relatively lower.

5. The SIZE variable has a negative coefficient of -0.3799 and is highly significant at the 1% level (p-value = 0.000). This indicates that the larger the company size, the lower the Z-Score, meaning the company's default risk tends to increase with size.
6. The MTB (Market to Book) variable has a positive coefficient of 0.0435 and is highly significant at the 1% level (p-value = 0.0065). This indicates that companies with a higher market-to-book ratio tend to have a lower default risk.
7. The PROFIT variable has a positive coefficient of 0.6927 and is significant at the 10% level (p-value = 0.0565). This indicates that companies with higher profitability tend to have a higher Z-Score, or a lower default risk.
8. The LEV variable shows a positive coefficient of 0.3480 but is not statistically significant (p-value = 0.138). This indicates that the use of debt does not have a clear and significant effect on the company's default risk in this study.
9. The ESG_CFR variable shows a negative coefficient of -0.2060 and is statistically significant at the 1% level (p-value = 0.000). This result indicates that when cash flow rights (CFR) are high, the effect of ESG on the ZScore becomes increasingly negative. In other words, CFR weakens the positive effect of ESG on increasing the ZScore, making ESG less effective in reducing default risk for companies with high CFRs.
10. The ESG_CR variable shows a positive coefficient of 0.2383 and is statistically significant at the 1% level (p-value = 0.000). This result indicates that as control rights (CR) increase, the effect of ESG on the ZScore becomes increasingly positive. This means that CR strengthens the effect of ESG in increasing the ZScore, or in other words, ESG becomes more effective in reducing default risk when CR is high.
11. The ESG_Family variable does not show a significant effect on the ZScore, with a coefficient of -0.0036 and a p-value of 0.290. This indicates that the presence of ESG in the family ownership structure does not have a significant impact on the company's default risk.

Additional Divergence Analysis

Divergence analysis was conducted as a supplementary effort to broaden our understanding of the role of ownership structure, particularly the Control Rights (CR) variable, in influencing the relationship between ESG Score and default risk. Although CR has been analyzed as a key moderating variable in this study, it does not directly reflect governance quality unless compared to the portion of cash flow rights actually held by controlling shareholders.

In this context, divergence is defined as the difference between control rights (CR) and cash flow rights (CFR). A larger divergence value indicates ownership imbalance, where controllers possess power disproportionate to their economic ownership. This situation risks creating negative incentives, such as opportunistic decision-making or a disregard for sustainability principles, because the financial burden borne by controllers is relatively small compared to their control.

Table 12.
Divergence Test Results

Divergence	
Coefficient	-0.206***
P-Value	0.0115

The regression results show that divergence has a negative relationship with the Z-Score. This means that the greater the divergence, the lower the company's Z-Score, which means a higher risk of default. This finding indicates that an unequal ownership structure actually worsens a company's financial position, as controllers' incentives can lead to less prudent or even exploitative decision-making, given the low risk burden they bear directly.

This result is also consistent with previous findings regarding the Control Rights (CR) variable, which showed a negative relationship with the Z-Score. In other words, the greater the control rights held by controlling shareholders, the lower the company's Z-Score, meaning a higher risk of default. These two findings together strengthen the argument that the concentration of power within a company without being balanced by proportional economic ownership can weaken the effectiveness of governance and reduce the quality of strategic decision-making.

Overall, the results of the divergence analysis not only reinforce previous findings regarding the negative impact of control rights but also clarify that the imbalance between control and economic ownership is a crucial factor to consider in understanding the dynamics of default risk.

The Effect of ESG on Default Risk

The regression results in Model 1 indicate that the ESG variable has a positive and significant effect on the ZScore, with a p-value of 0.000. The positive coefficient of 0.0164671 indicates that an increase in a company's ESG score is correlated with an increase in the ZScore, meaning a lower default risk. This finding supports the view that implementing good environmental, social, and governance principles can increase investor confidence, strengthen risk management, and reduce exposure to financial crises. In this context, ESG serves as a risk mitigation tool that plays a crucial role in a company's long-term stability.

The Effect of Cash Flow Rights and ESG Moderation on Default Risk

The regression results indicate that the CFR variable has a positive and significant effect on the ZScore, with a coefficient of 1.128167 and a p-value of 0.0005. These findings indicate that the greater the proportion of cash flow rights held by controlling shareholders, the higher the company's Z-Score tends to be, reflecting a reduced risk of default. This finding aligns with research showing that controlling shareholders with substantial cash flow rights minimize the possibility of taking over company assets, thereby protecting the company from potential losses and reducing the risk of default (Claessens et al., 2002). This demonstrates the existence of alignment motivations among controlling shareholders, giving them an incentive to properly supervise the company.

In Model 2, when ESG is moderated by CFR (indicated by the interaction variable ESG_CFR), the effect becomes negative but remains significant (coefficient = -0.2060333; $p = 0.000$). This indicates that the positive effect of ESG on the Z-Score decreases as cash flow rights increase. In other words, in companies with high ownership concentration, ESG implementation becomes less effective as a risk mitigation tool.

The Effect of Control Rights and ESG Moderation on Default Risk

Control rights (CR) have a negative and significant effect on the ZScore ($p = 0.0015$), with a coefficient of -1.570009. This indicates that the greater the control rights held by the controlling shareholder, the lower the company's ZScore, which means a higher default risk. This finding aligns with research by Shleifer and Vishny (1997) and Yeh (2005), which states that at a certain ownership level, controlling shareholders obtain almost complete control

rights and tend to use them for personal gain. This can be detrimental to minority shareholders and endanger the company's survival. Therefore, this study supports the indication of entrenchment motivation from controlling shareholders.

In Model 2, when ESG is moderated by CR (variable ESG_CR), the effect is positive and significant (coefficient = 0.2382737; $p = 0.000$). This indicates that CR strengthens the positive relationship between ESG scores and reduced default risk. This indicates that the positive effect of ESG on reducing default risk is stronger in companies with a high degree of control by major shareholders.

The Effect of Family Ownership and ESG Moderation on Default Risk

The test results show that the Fam_Dummy variable has a positive and significant effect on the Z-Score at the 10% level ($p = 0.0985$). This means that family firms tend to have higher Z-Scores compared to non-family firms, meaning that the risk of default in family firms is relatively lower. This finding aligns with socioemotional wealth theory, which states that family firms are more focused on maintaining their reputation and business continuity across generations (Gómez-Mejía et al., 2007). Therefore, they tend to adopt a conservative approach to financing and avoid the risk of bankruptcy. Furthermore, concentrated family ownership provides a strong incentive for owners to ensure the financial health of the firm, as their wealth is closely tied to business continuity. Previous empirical studies, such as Anderson & Reeb (2003), also confirm that family firms generally exhibit more stable financial performance than non-family firms.

Meanwhile, the moderation effect of family ownership on ESG score on default risk (ESG_Family) was not significant ($p = 0.290$). This indicates that family ownership does not significantly moderate the relationship between ESG score and default risk. In other words, the presence of family firm values and characteristics does not strengthen or weaken the impact of ESG on default risk in the context of this study.

CONCLUSION

Based on the results of testing the collected empirical data, processing, and analysis, the following conclusions can be drawn:

1. The ESG Score has a positive and significant effect on the Z-Score. This indicates that companies with better implementation of ESG principles tend to have higher financial stability and a lower risk of default.
2. Cash Flow Rights (CFR) have a positive and significant effect on the Z-Score, indicating that the greater the controlling shareholder's cash flow rights, the lower the risk of default. This finding supports the alignment effect hypothesis, where controlling shareholders' economic incentives encourage oversight and strategic decisions that maintain corporate stability.

However, the interaction between CFR and ESG (ESG_CFR) shows a negative and significant effect, indicating that the effectiveness of ESG as a risk mitigation tool is weakened when controlling shareholders have dominant cash flow rights. This may be due to the tendency of companies to reduce their focus on ESG if the controlling shareholder perceives full control over cash flows, making ESG no longer an essential control instrument.

3. Control Rights (CR) exhibits a negative and significant effect on the Z-Score. However, these results require careful interpretation of the variables: a negative coefficient on the Z-Score indicates that the higher the control rights, the higher the risk of default. This finding supports the indication of entrenchment motivation from controlling shareholders. However, when moderated by CR (ESG_CR), it shows a positive and significant effect, indicating that control rights strengthen the positive influence of ESG on the Z-Score. In other words, the greater the control held by controlling shareholders, the stronger the effect of ESG in reducing the risk of default. This indicates that in the context of strong control, ESG becomes more effective as a risk mitigation tool, as controlling shareholders can actively ensure that sustainability principles are consistently and strategically adopted.
4. Family Ownership, represented by a dummy variable, does not show a significant effect on the risk of default, either directly or through its interaction with ESG (ESG_Family). These results indicate that the presence of family ownership in the ownership structure is not a primary determinant in reducing or increasing the risk of default. This aligns with the literature showing that the influence of family ownership is contextual—it can provide stability, but it can also lead to subjective decisions and a lack of transparency.

Overall, the results of this study emphasize the importance of implementing ESG principles in corporate strategy as a tool for mitigating financial risk, and demonstrate that the effectiveness of ESG is highly dependent on the context of a company's ownership structure.

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