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The Effect of ESG, Operational Capacity, Claim Ratio, and Liquidity on Financial Distress of Insurance Companies Moderated by Risk-Based Capital

Bhima Mahendra[1*], Indra Siswanti[2]
[12]University of Mercu Buana, Jakarta, Indonesia
*Corresponding Author: 55123110108@student.mercubuana.ac.id

Abstract *- This study investigates the influence of Environmental, Social, and Governance (ESG), operational capacity, claim ratio, and liquidity on financial distress in Indonesian insurance companies, with Risk-Based Capital (RBC) as a moderating variable. Using a quantitative approach with saturated sampling, the study analyzed 18 insurance companies listed on the Indonesia Stock Exchange. Panel regression with EViews 12 was applied to test the hypotheses. The results show that ESG and liquidity do not significantly affect financial distress, while operational capacity has a positive effect and claim ratio has a negative effect. Moreover, RBC does not moderate the relationship between ESG or liquidity and financial distress but significantly strengthens the effects of operational capacity and claim ratio. These findings highlight the importance of operational efficiency and claim management in reducing financial distress, while emphasizing the role of RBC as a financial safeguard in the insurance industry.*

Keywords*: ESG, Operational Capacity, Claim Ratio, Liquidity, Financial Distress, Risk-Based Capital.*

I. INTRODUCTION

The insurance industry in Indonesia plays a vital role in maintaining financial system stability and providing protection for society against various risks. However, the increasingly competitive market dynamics, coupled with the pressures of globalization and economic uncertainty, pose serious challenges to the sustainability of insurance companies. One of the most critical issues faced by the industry is the risk of *financial distress*, a condition in which a company experiences financial difficulties that may ultimately lead to bankruptcy.

Both internal and external factors can influence a company's vulnerability to *financial distress*. Among them, the implementation of *Environmental, Social, and Governance* (ESG) principles has gained significant global attention, as it reflects a company's commitment to sustainability and long-term value creation. Meanwhile, operational aspects such as operational capacity and claim ratio play a key role in determining the efficiency of insurance company performance. In addition, liquidity conditions remain crucial in ensuring the ability to meet short-term obligations, which is closely related to financial distress risk.

Although previous studies have examined the determinants of *financial distress*, the results remain inconsistent. Some scholars argue that ESG practices reduce the likelihood of distress, while others find no significant relationship. Similar inconsistencies are also observed in findings regarding liquidity and claim ratio, which vary depending on the research context. These contradictions highlight a research gap that requires further investigation, particularly within the Indonesian insurance industry.

To address this gap, the present study examines the effects of ESG, operational capacity, claim ratio, and liquidity on *financial distress*, while incorporating *Risk-Based Capital* (RBC) as a moderating variable. The inclusion of RBC is relevant since it serves as a primary

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regulatory indicator for measuring the financial health of insurance companies. Therefore, this study is expected to contribute both theoretically and practically by offering deeper insights for insurance company management, regulators, and investors in understanding the determinants of *financial distress* and strategies for its mitigation.

H1: ESG has a significant negative effect on financial distress.

The integration of Environmental, Social, and Governance (ESG) principles reflects a company's commitment to sustainability, which may enhance reputation and reduce financial risk. Firms with stronger ESG practices tend to attract investor confidence and lower the likelihood of financial distress (Velte, 2019; Buallay, 2020).

H2: Operational capacity has a significant negative effect on financial distress.

Operational efficiency demonstrates a company's ability to generate revenues relative to its resources. A higher operational capacity indicates effective utilization of assets, which reduces the probability of financial failure (Altman, 2013; Almilia & Kristijadi, 2003).

H3: Claim ratio has a significant effect on financial distress.

In the insurance industry, the claim ratio reflects the proportion of claims to earned premiums. A high claim ratio increases the financial burden and may lead to distress, whereas a lower ratio indicates stable risk management (Rahmawati & Puspitawati, 2021; OJK, 2022).

H4: Liquidity has a significant effect on financial distress.

Liquidity represents the company's ability to meet short-term obligations. Insufficient liquidity may cause difficulties in paying liabilities, thus increasing the potential for financial distress (Brigham & Houston, 2019; Almilia, 2006).

H5: RBC moderates the effect of ESG on financial distress.

Risk-Based Capital (RBC) is a regulatory measure of solvency in insurance companies. Adequate RBC may strengthen the positive impact of ESG practices by ensuring sufficient capital to manage sustainability risks (OJK, 2020; Lee & Lin, 2016).

H6: RBC moderates the effect of operational capacity on financial distress.

Companies with strong RBC are better equipped to absorb operational risks. This condition may amplify the effect of operational capacity in reducing financial distress (Ayu & Budiasih, 2020; OJK, 2021).

H7: RBC moderates the effect of claim ratio on financial distress.

When RBC levels are high, insurance firms can manage claim risks more effectively. Thus, RBC may strengthen the relationship between claim ratio and financial distress (Rahmawati & Puspitawati, 2021; Lee, 2017).

H8: RBC moderates the effect of liquidity on financial distress.

A sufficient RBC buffer allows companies to manage liquidity shortages more effectively, thereby reducing the probability of distress (OJK, 2022; Almilia, 2006).

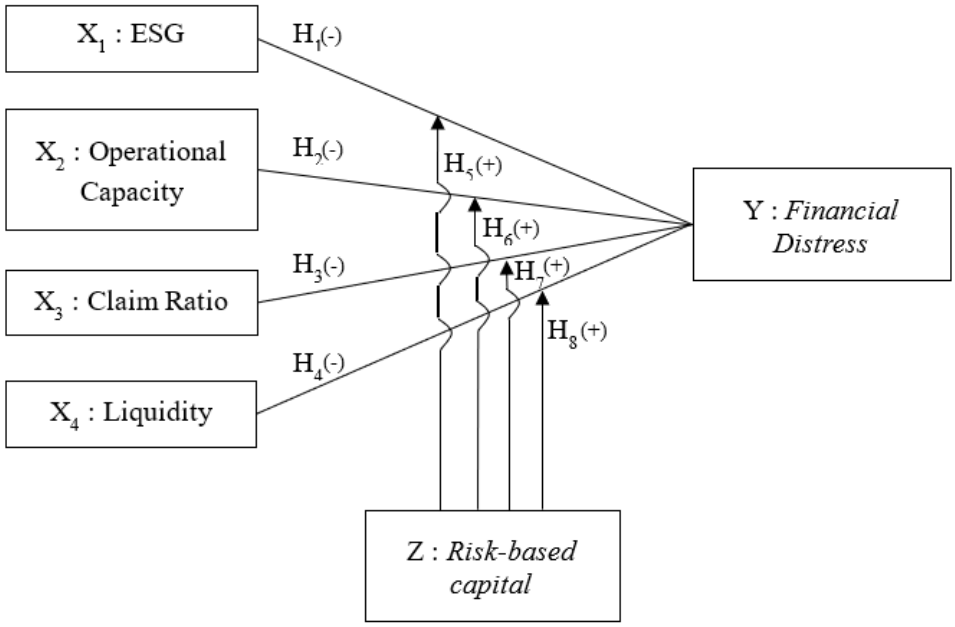

Figure 1. Research Model

II. METHOD

This study employed a quantitative research approach with an explanatory design, aiming to test the relationship between independent, dependent, and moderating variables through hypothesis testing. The population consisted of insurance companies listed on the Indonesia Stock Exchange (IDX), with a total of 18 firms selected using a saturated sampling technique, as all available firms were included in the analysis. The study examined *financial distress* as the dependent variable, measured using the Altman Z-Score modification for non-manufacturing firms, while the independent variables included Environmental, Social, and Governance (ESG), operational capacity, claim ratio, and liquidity. Risk-Based Capital (RBC) was introduced as the moderating variable, in accordance with regulations established by the Financial Services Authority (OJK) for the insurance industry. Secondary data were obtained from annual reports, financial statements, and sustainability disclosures published by the selected companies during the observation period. Data analysis was conducted using panel regression with the assistance of EViews 12 software, allowing for the examination of direct effects and interaction terms for moderation testing. This methodological approach was chosen to ensure objectivity, statistical validity, and generalizability of findings within the context of the Indonesian insurance sector.

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III. RESULT AND DISCUSSION

A. Result

Descriptive Statistics

Descriptive statistics provide a general overview of the data used for the research variables. The analysis produces information on the mean, median, maximum, and minimum values for each variable. Table 1 presents the descriptive statistics of this study.

Table 1. Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Observations
Financial Distress	–8.5186	–8.8734	89.0472	–36.8247	108
ESG	38.5802	36.6667	73.3333	16.6667	108
Operational Capacity	0.5631	0.0574	9.6954	0.0001	108
Claim Ratio	0.6312	0.6706	1.0747	0.0068	108
Liquidity	1.9235	1.4267	12.2754	0.0024	108
RBC	456.2212	282.7000	6714.700	1.6090	108

Source: Processed using EViews 12

Panel Regression

Panel regression analysis was conducted using three approaches: the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM). These approaches were applied to identify the most appropriate estimation method based on the characteristics of the data. A series of specification tests were then performed, including the Chow test to compare CEM and FEM, the Hausman test to compare FEM and REM, and the Lagrange Multiplier (LM) test to assess the suitability of CEM against REM. Based on the results, the Random Effect Model (REM) was selected as the most appropriate method, as it provided the best estimation aligned with the panel data structure.

Table 2. Specification Test Results

Test	Hypotheses	Prob. Value	Decision
Chow Test	H0: CEM is better than FEM H1: FEM is better	0.0000	FEM chosen
Hausman Test	H0: REM is better than FEM H1: FEM is better	0.9530	REM chosen
LM Test	H0: CEM is better than REM H1: REM is better	0.0000	REM chosen

Source: Processed using EViews 12

Table 3. Regression Results – Random Effect Model (REM)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-15.99328	26.33351	-0.607336	0.5450
ESG	-2.738031	2.286879	-1.197278	0.2341
Operational Capacity	97.29392	36.41495	2.671812	0.0088
Claim Ratio	-246.7311	102.2239	-2.413635	0.0176
Liquidity	-11.27739	11.99359	-0.940285	0.3494
ESG*RBC	-0.000398	0.000320	-1.245486	0.2159
Operational Capacity*RBC	0.013472	0.005241	2.570351	0.0116
Claim Ratio*RBC	-0.035857	0.014311	-2.505549	0.0139
Liquidity*RBC	-0.001824	0.001660	-1.098791	0.2745

Effects Specification	S.D.	Rho
Cross-section random	10.46655	0.4362
Idiosyncratic random	11.89925	0.5638

Weighted Statistics			
Root MSE	11.08217	R-squared	0.251997
Mean dependent var	-33.90219	Adjusted R-squared	0.191553
S.D. dependent var	12.87340	S.E. of regression	11.57495

Sum squared resid	13263.96	F-statistic	4.169061
Durbin-Watson stat	1.902568	Prob(F-statistic)	0.000250
Unweighted Statistics			
R-squared	0.253227	Mean dependent var	-80.52861
Sum squared resid	20279.04	Durbin-Watson stat	1.244417

Source: Processed using EViews 12

Overall, the results show that ESG has no significant effect on financial distress (coefficient –2.738; p = 0.2341), indicating that ESG practices in Indonesia's insurance industry have not yet contributed to reducing financial risks. Operational capacity has a positive and significant effect (coefficient 97.293; p = 0.0088), suggesting that greater operational activity may increase the likelihood of distress if not managed efficiently. In contrast, the claim ratio has a negative and significant effect (coefficient –246.731; p = 0.0176), indicating that effective claim management reduces financial distress. Liquidity shows no significant effect (coefficient –11.277; p = 0.3494), confirming that short-term liquidity is not a key determinant of distress in insurance firms. Moderation tests reveal that RBC does not strengthen the influence of ESG or liquidity on financial distress, but significantly moderates the effects of operational capacity (coefficient 0.013; p = 0.0116) and claim ratio (coefficient –0.036; p = 0.0139). The model's R^2 is 0.252 with an adjusted R^2 of 0.192, meaning that 25.2% of the variance in financial distress is explained by the model, while 74.8% is driven by other factors. The F-statistic of 4.169 with Prob(F) = 0.00025 (<0.05) confirms that the model is jointly significant and appropriate to explain financial distress in Indonesia's insurance companies.

B. Discussion

The first hypothesis (H1) is not supported, as ESG does not significantly affect financial distress. This finding suggests that while sustainability practices may enhance reputation, in the Indonesian insurance sector ESG implementation is still largely compliance-driven and has yet to be fully integrated into core business strategy. This result is consistent with Buallay (2020), who reported mixed evidence on ESG and firm performance, but differs from Velte (2019), who found that ESG reduces distress risk.

The second hypothesis (H2) reveals that operational capacity positively and significantly influences financial distress. Contrary to the expectation that efficiency would reduce risk, the result implies that increased operational activity may heighten financial pressure when not supported by effective cost and risk management. This aligns with Trade-off Theory, which posits that excessive operational expansion may lead to higher financial vulnerability. Almilia and Kristijadi (2003) similarly found that inefficient operational escalation worsens financial conditions.

The third hypothesis (H3) is supported, showing that the claim ratio has a significant negative effect on financial distress. Companies that manage claim ratios effectively demonstrate stronger financial resilience. This result supports Rahmawati and Puspitawati (2021), who emphasized that stable claim management helps maintain financial health in insurance firms. From a Signaling Theory perspective, efficient claim control provides a positive signal to investors about the reliability of risk management.

The fourth hypothesis (H4) is rejected, as liquidity does not significantly affect financial distress. This indicates that liquidity is not a dominant determinant in the insurance sector, likely because firms are already bound by OJK regulations on minimum capital adequacy. This finding corroborates Almilia (2006), who noted that liquidity is not always a primary predictor of distress in financial institutions.

The fifth hypothesis (H5) shows that RBC does not moderate the relationship between ESG and financial distress. This implies that capital adequacy does not enhance the effectiveness of ESG in reducing distress risk, reflecting that sustainability practices and solvency are still managed separately in insurance companies.

The sixth hypothesis (H6) is supported, as RBC significantly moderates the effect of operational capacity on financial distress. This indicates that strong capital buffers magnify the impact of operational activity, meaning that even well-capitalized companies face higher distress risk when operational expansion is inefficiently managed.

The seventh hypothesis (H7) is also supported, showing that RBC strengthens the negative effect of the claim ratio on financial distress. Adequate RBC allows companies to better absorb claim risks, thereby reinforcing the beneficial impact of effective claim management in reducing distress. This is consistent with risk-based capital regulation theory, which positions RBC as a core risk-mitigation instrument in the insurance industry.

Finally, the eighth hypothesis (H8) is rejected, as RBC does not moderate the relationship between liquidity and financial distress. This demonstrates that capital adequacy does not necessarily enhance the role of liquidity in lowering distress, highlighting that RBC is more relevant to operational and claim-related risks rather than short-term liquidity.

Overall, these findings indicate that the key determinants of financial distress in Indonesian insurance companies lie in operational capacity and claim ratio, with RBC serving as a significant moderating factor. This enriches the literature by showing that ESG and liquidity, although important in other industries, are not yet significant predictors of financial distress in the domestic insurance context.

IV. CONCLUSION

This study concludes that not all tested variables significantly influence financial distress in Indonesian insurance companies. ESG and liquidity are found to be insignificant, indicating that sustainability practices and short-term liquidity adequacy have not yet become primary determinants in reducing distress risk. In contrast, operational capacity shows a significant positive effect, suggesting that greater operational activity may increase financial pressure if not managed efficiently. The claim ratio demonstrates a significant negative effect, highlighting the importance of effective claim management as a strategy to mitigate financial vulnerability. Furthermore, Risk-Based Capital (RBC) is proven to strengthen the relationships between operational capacity and claim ratio with financial distress, but does not moderate the effects of ESG or liquidity. Overall, the findings emphasize that operational factors and claim management are the main determinants of financial distress in the insurance industry, with RBC serving as a crucial instrument in reinforcing firms' financial resilience.

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