Jambura Equilibrium Journal, 8(1) 2026

Volume 8. Issue 1. January 2026
P-ISSN 2655-9110
E-ISSN 2656-0445
http://ejurnal.ung.ac.id/index.php/equij

ESG Reputation Risk under Climate Risk and Global Uncertainty in ASEAN Manufacturing

Fajar Meiyanti[1], Desi Adhariani[2]

[1]Program Pascasarjana Ilmu Akuntansi, Fakultas Ekonomi dan Bisnis, Universitas Indonesia, Jawa Barat, Indonesia
[2]Departemen Akuntansi, Fakultas Ekonomi dan Bisnis, Universitas Indonesia, Jawa Barat, Indonesia

Email: fajarmeiyanti1@gmail.com

Abstract: *As the manufacturing sector expands, it faces growing scrutiny regarding its sustainability practices, with Environmental, Social, and Governance (ESG) reputation risk becoming an increasingly critical concern. This study investigates the relationship between climate risk, global uncertainty, and ESG-related reputational risk, using 465 observations from manufacturing companies listed in ASEAN countries between 2021 and 2023. Regression analysis indicates that climate risk has a positive effect on the Reputation Risk Index (RRI). This suggests that firms in regions with greater climate vulnerability are more exposed to ESG reputational challenges. Similarly, global uncertainty is positively and statistically significantly associated with RRI, implying that unpredictable policy and economic conditions can exacerbate reputational risks. These findings underscore the importance of integrating ESG considerations into corporate risk management, particularly in emerging economies with pronounced environmental and institutional risks. Firms are urged to strategically allocate resources toward sustainability initiatives to safeguard their reputation and operational resilience. Additionally, policymakers are encouraged to establish supportive regulatory environments that foster corporate transparency, ESG accountability, and adaptive capacity.*

Keywords: ESG Reputation Risk; Climate Risk; Global Uncertainty; ASEAN Manufacturing

Article History:

Received on 21 May 2025
Revised on 19 Aug 2025
Accepted on 22 Nov 2025

Doi: 10.37479

Indexing:
Google Scholar; Portal Garuda; Crossref; SINTA 3 (Science And Technology Index)

INTRODUCTION

The Association of Southeast Asian Nations (ASEAN) is increasingly recognized as an emerging hub in global manufacturing. Comprising ten diverse member states, the region benefits from competitive labor costs, favorable trade agreements, and expanding infrastructure, which attract multinational companies across sectors such as technology, automotive, consumer goods, and food production. Supportive government policies, a skilled labor force, and ASEAN's proximity to major Asian markets further strengthen its position as a potential rival (Source of Asia, 2024).

The manufacturing sector is a cornerstone of ASEAN's economic structure, contributing an average of 20.83% to the GDP across seven Southeast Asian countries as of August 2024 (Statista, S&P Global, 2024). This substantial contribution underscores the deep integration of manufacturing into national economies and reflects the sector's critical role in fostering economic growth and regional development.

As the manufacturing sector evolves, it faces increasing scrutiny of its sustainability practices, with reputational risk emerging as a key concern. Reputational risk, particularly related to Environmental, Social, and Governance (ESG) issues, has gained prominence as stakeholders demand higher standards of corporate responsibility. A

Deloitte (2014) survey found that 87% of executives view reputational risk as a significant strategic concern. It is often linked to failures to meet stakeholder expectations regarding sustainability, which can severely affect public and stakeholder perceptions.

Climate change poses significant challenges to ESG performance, as physical risks (e.g., extreme weather events) and transition risks (e.g., evolving climate policies) impose financial and operational constraints on firms (He & Ma, 2021; Bouri et al., 2022). In regions with high climate vulnerability, such as ASEAN, these constraints often disrupt sustainability initiatives, undermining ESG outcomes and heightening reputational risks. Firms may face revenue volatility and unstable cash flows, limiting their capacity to effectively address these risks (Chen et al., 2024).

In parallel, global uncertainty, including economic policy uncertainty, also exacerbates ESG reputation risk. High levels of uncertainty can delay or disrupt corporate sustainability initiatives, leading to inconsistencies that fail to meet stakeholder expectations (Baker et al., 2016; Lee et al., 2020). This misalignment between corporate actions and stakeholder demands amplifies reputational challenges, especially in dynamic and unpredictable global contexts.

This study addresses the limited research on ESG reputation risk by focusing on five ASEAN countries, which share similar economic profiles as developing nations reliant on manufacturing and highly exposed to climate risks. By examining the interplay among climate risk, global uncertainty, and ESG reputation risk, this research provides valuable empirical insights for firms, regulators, and investors to enhance ESG risk mitigation strategies. Furthermore, the study integrates resource-constrained theory, highlighting how limited financial and organizational resources in high-risk climate regions impede sustainability efforts and increase reputational risk.

METHODOLOGY

This study investigates manufacturing companies listed in five ASEAN countries, Indonesia, Malaysia, the Philippines, Thailand, and Vietnam, from 2021 to 2023. These countries were selected because they share characteristics as developing economies that are heavily reliant on manufacturing and highly exposed to climate-related risks. The final sample consists of 465 firm-year observations, selected based on the availability of comprehensive data on climate risk, global uncertainty, ESG reputation risk, and relevant control variables.

To assess ESG reputation risk, this study utilizes data from RepRisk, a global research and analytics platform that evaluates ESG-related business conduct risks. RepRisk aggregates information from over 150,000 sources daily, including print and digital media, social media, blogs, and official government and regulatory reports, across 23 languages. This approach ensures a robust, multidimensional assessment of reputational risk and is consistent with methodologies used in prior research, such as Asante-Appiah and Lambert (2023) and Zhu et al. (2024).

Climate risk is measured using the World Risk Index (WRI), a metric developed to capture a country's vulnerability to natural disasters and extreme weather events. The WRI ranges from 0 to 100. This index has been previously applied in studies such as Yebenes (2023), and the data were obtained from the Welt Risiko Bericht report.

Meanwhile, global uncertainty is quantified using the World Uncertainty Index (WUI), constructed from textual data in country reports published by the Economist Intelligence Unit (EIU). The WUI employs text-mining techniques to quantify the frequency of uncertainty-related terms in these reports, providing a comprehensive measure of global uncertainty. The use of this index is well established in the economic and management literature due to its rigor and global coverage.

This study employs panel data regression analysis to test the proposed hypotheses. The model is specified as follows:

$$RRI_{i,t} = \beta_0 + \beta_1 CRI_{i,t} + \beta_2 WRI_{i,t} + \beta_3 GDP_{i,t} + \beta_4 LEV_{i,t} + Year\ Effect + Country\ Effect + e$$

RRI represents the Reputation Risk Index, the dependent variable in this model. CRI denotes Climate Risk, while WRI denotes Global Uncertainty; both are independent variables. Two control variables are included: GDP, which reflects Gross Domestic Product, and LEV, which represents the leverage ratio.

RESULTS

Descriptive Statistics Analysis

Table 1 presents the descriptive statistics for the variables utilized in this study's empirical analysis. The statistics include the total number of observations and the mean, standard deviation, minimum, and maximum values for the dependent, independent, and control variables.

Table 1. Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max

RRI	464	8.054	9.995	0	48
ClimateRisk	464	25.974	12.564	14.50	47.51
Uncertainty	464	0.192	0.092	0.042	0.384
LN_GDP	464	26.986	0.429	26.627	27.947
LEV	464	0.234	0.145	0.001	0.812

Source: Data processed by the author

Based on the descriptive statistics, the RRI variable has a mean of 8.054 and a standard deviation of 9.995, indicating relatively high dispersion. The minimum value is zero, and the maximum is 48, indicating substantial variation in reputational risk across firms. The highest value was recorded by a company operating in Malaysia in 2022.

The ClimateRisk variable, representing climate-related risk, has a mean of 25.974 and a standard deviation of 12.564. The values range from 14.5 to 47.51, indicating substantial variation across countries and entities. The maximum value of 47.51 was observed in the Philippines in 2021, likely driven by extreme climate events or severe environmental pressures during that period. This aligns with the Asian Development Bank (2021) report, which highlighted that the Philippines' extremely high disaster risk is expected to intensify due to climate change, particularly from tropical cyclones, floods, and landslides. The frequency and intensity of landfalling typhoons have been increasing, while sea level rise in several regions of the Philippines is occurring faster than the global average. This poses a flooding threat to up to one million people between 2070 and 2100, although investment in adaptation measures could mitigate these impacts.

Meanwhile, the Uncertainty variable shows a mean of 0.192 and a standard deviation of 0.092, indicating a moderate variation in uncertainty across observations. The GDP variable, represented as the natural logarithm of Gross Domestic Product, has a mean of 26.986 and a relatively low standard deviation of 0.429, suggesting that GDP levels among countries in the sample are relatively homogeneous.

Finally, the Leverage (LEV) variable has a mean of 0.234 and a standard deviation of 0.145, with values ranging from 0.001 to 0.812. This indicates considerable variation in capital structure across firms in the sample, reflecting varying reliance on debt financing.

Multicollinearity Test

The results in Table 2 detail the multicollinearity assessment, which is critical to ensuring that the independent variables do not exhibit high intercorrelations that could bias the regression coefficients.

Table 2. VIF Result

Variable	VIF	1/VIF
ClimateRisk	4.27	0.234
Uncertainty	3.93	0.254
LEV	3.00	0.333
LN_GDP	1.47	0.678
Mean VIF	3.17	

Source: Data processed by the author

The results of the multicollinearity test indicate that all independent variables in the model have Variance Inflation Factor (VIF) values below the commonly accepted threshold of 10, with an average VIF of 3.17. Specifically, the ClimateRisk variable had the highest VIF (4.27), followed by Uncertainty (3.93), LEV (3.00), and GDP, which had the lowest VIF (1.47). According to widely accepted guidelines in the literature, VIF values below 10, or, more conservatively, below 5, are considered acceptable and do not indicate serious multicollinearity concerns. Therefore, there is no firm evidence of a high linear correlation among the independent variables, and the regression model is deemed suitable for further analysis.

Correlation Analysis

The correlation coefficients in Table 3 illustrate the strength and direction of associations between the independent, dependent, and control variables.

Table 3. Correlation Result

Variables	(1)	(2)	(3)	(4)	(5)

(1) RRI	1.000				
(2) ClimateRisk	0.097	1.000			
(3) Uncertainty	0.103	-0.185	1.000		
(4) LN_GDP	0.081	0.565	-0.282	1.000	
(5) LEV	0.056	-0.044	0.038	-0.058	1.000

Source: Data processed by the author

Based on the Pearson correlation analysis results, the RRI exhibits a positive but weak relationship with all independent variables in the model. The correlation between RRI and ClimateRisk is 0.097; with Uncertainty, 0.103; and with LN_GDP, 0.081. Although all values are positive, they indicate weak associations and do not suggest strong correlations. The correlation between RRI and Leverage (LEV) is also weak, with a value of 0.056. However, this correlation analysis is not intended to measure direct associations or causal relationships; these will be examined further using regression analysis.

Regression Result

Table 4 presents the regression analysis results, summarizing the relationship between the independent variables and the dependent variable, Reputation Risk Index (RRI). The model includes key predictors such as Uncertainty and Climate Risk, along with control variables:

Table 4. Regression Result

RRI	Coef.	St.Err.	t-value	p-value	[95% Conf	Interval]	Sig
ClimateRisk	2.429	1.802	1.35	0.089	-1.102	5.961	*
Uncertainty	26.395	9.412	2.80	0.005	7.947	44.843	***
LN_GDP	-18.865	17.118	-1.10	0.270	-52.415	14.685	
LEV	3.998	3.742	1.07	0.285	-3.336	11.332	
Constant	-83.075	86.266	-0.96	.336	-252.154	86.003	

Mean dependent var	8.054	SD dependent var	9.995
Overall r-squared	0.047	Number of obs	464
Chi-square	26.401	Prob > chi2	0.003
R-squared within	0.067	R-squared between	0.039
Year Effect	Yes		
Country Effect	Yes		

**** p<.01, ** p<.05, * p<.1*

The regression analysis results for this model indicate that Uncertainty has a positive and significant effect on RRI at the 1% significance level (p=0.005). A coefficient of 26.395 suggests that a one-unit increase in Uncertainty is associated with a 26.395-point increase in RRI, implying that firms operating under higher levels of Uncertainty are more likely to face greater ESG reputation risk. Meanwhile, the ClimateRisk variable also exhibits a positive coefficient of 2.429 and is significant at the 10% level (p=0.089). This indicates that climate risk tends to elevate ESG reputation risk, although its statistical impact remains relatively weak.

On the other hand, the LN_GDP variable shows a negative coefficient of -18.865. However, the association is not statistically significant (p=0.270), indicating that differences in GDP across countries do not have a meaningful effect on RRI in this model after controlling for averages. Similarly, the LEV (leverage) variable has a positive coefficient of 3.998 but is not statistically significant (p=0.285), suggesting that corporate leverage levels do not statistically influence ESG reputation risk. Overall, the model is significant at the 1% level, with a p-value < 0.001 and a chi-square statistic of 26.401.

DISCUSSION

The regression results indicate that Climate Risk has a positive and marginally significant effect on the Reputation Risk Index (RRI), with a coefficient of 2.429 and a p-value of 0.089, indicating significance at the 10% level. Although the statistical strength is relatively modest, the positive relationship suggests that firms operating in regions with greater climate vulnerability are more likely to face heightened ESG reputational risks.

This finding supports the hypothesis that exposure to climate-related threats increases a company's susceptibility to reputational damage. As measured by a country's exposure to extreme weather events such as floods, droughts, and typhoons, climate risk can directly disrupt business operations, damage infrastructure, impair supply chains, and ultimately reduce profitability (Huang et al., 2018). These operational disruptions often lead to financial instability, undermining a firm's ability to maintain and implement consistent sustainability practices (Chen et al., 2024).

As a result, firms may face heightened scrutiny from stakeholders, particularly if their ESG efforts are perceived as insufficient or reactive rather than proactive. In such cases, climate risk manifests not only as a physical or operational concern but also as a reputational one. Stakeholders—including investors, regulators, and the public—are increasingly attentive to how firms respond to climate-related challenges, and any perceived failure may damage a firm's credibility and trustworthiness.

Furthermore, Yin et al. (2024) provide evidence that firms under substantial climate pressure intensify ESG activities as a strategic means of reputation management. This is consistent with Resource-Constraint Theory, which posits that firms facing external pressures must strategically allocate limited resources. In this context, firms may prioritize ESG investments to safeguard stakeholder trust and reputational standing. However, in resource-constrained environments, these efforts may be limited in scale and effectiveness, leaving firms vulnerable to reputational risks even when their intentions align with stakeholder expectations.

These dynamics are particularly evident in the ASEAN context, where countries are highly exposed to climate-related hazards and often constrained by limited institutional and financial resources. The modest but positive relationship between Climate Risk and RRI reflects a structural challenge many regional firms face: navigating the dual burden of physical climate threats and the reputational implications of perceived ESG underperformance. This underscores the importance of building resilience and transparency in sustainability strategies to mitigate the long-term reputational risks associated with climate vulnerability.

In addition to climate-related risks, the regression analysis reveals a statistically significant positive association between Global Uncertainty and the Reputation Risk Index (RRI), with a coefficient of 26.395 and a p-value of 0.005, indicating a statistically significant association at the 1% threshold. This result implies that a one-unit increase in uncertainty corresponds to an approximately 26.395-point increase in RRI, suggesting that firms operating under greater economic policy volatility are more likely to face ESG reputational risks.

This finding further supports the hypothesis that uncertainty is pivotal in shaping corporate ESG outcomes. Specifically, Global Uncertainty can disrupt strategic decision-making processes, particularly those related to sustainability commitments and reputation management. Prior studies have shown that in the face of policy unpredictability, firms may struggle to interpret regulatory signals, adapt to shifting market conditions, and align with evolving stakeholder expectations (Baker et al., 2016; Lee et al., 2020; Jin & Wu, 2021). These conditions increase the likelihood of ESG performance gaps that may trigger reputational concerns.

Theoretically, this reinforces the role of uncertainty as a structural determinant of reputational exposure, especially in emerging economies where regulatory institutions may lack stability or consistency. Firms often defer or reduce ESG-related investments in such environments to maintain strategic flexibility and contain costs. However, this reactive posture may be interpreted as a lack of commitment to sustainability, inviting criticism from external stakeholders and intensifying reputational risks.

Moreover, as with climate risk, this relationship can be further contextualized by Resource Constraint Theory, which emphasizes the difficult trade-offs firms face when operating under resource scarcity. During heightened uncertainty, firms may reallocate limited financial and managerial resources toward short-term survival strategies rather than long-term ESG investments. While economically rational, this reallocation may compromise stakeholder trust and undermine corporate reputation, particularly in industries that are closely scrutinized for ESG performance.

In the context of ASEAN economies, where firms often operate in environments characterized by high climate exposure and institutional uncertainty, this result underscores the dual pressures that amplify ESG reputational risks. It highlights the importance of embedding resilience and flexibility into ESG strategies through proactive risk management, transparent disclosure practices, and stakeholder engagement. Firms navigating uncertainty without compromising ESG integrity may gain reputational advantages and strengthen their long-term competitive positioning.

CONCLUSION

This study analyzes the impact of climate risk and global uncertainty on the ESG Reputation Risk Index (RRI) among manufacturing firms in ASEAN countries. The findings show that climate risk has a positive but marginal effect on RRI. This suggests that firms operating in regions with greater climate vulnerability may face heightened ESG reputation risks. This reflects the growing expectations for companies to respond proactively to environmental challenges, particularly in resource-constrained settings.

Moreover, global uncertainty exhibits a statistically significant positive association with RRI, indicating that heightened economic and policy unpredictability amplifies reputational exposure. Firms navigating uncertain environments may struggle to maintain consistent ESG performance, which attracts greater stakeholder scrutiny.

These results underscore the importance of integrating climate and uncertainty considerations into ESG risk management frameworks. While climate risk may not always trigger immediate reputational consequences, its long-term implications remain critical, especially when coupled with operational or financial instability. Uncertainty's greater effect on reputation highlights the sensitivity of stakeholder perceptions to external volatility and the need for transparent, resilient corporate governance.

This study contributes to the growing literature on ESG risks by focusing on the ASEAN manufacturing context, where environmental and institutional vulnerabilities intersect. It offers valuable insights for corporate leaders and policymakers aiming to strengthen sustainability strategies and reputation risk management. Future research could examine firm-level responses over time and assess the mediating role of governance quality in ESG outcomes.

REFERENCES

Asante-Appiah, B., & Lambert, T. A. (2023). The role of the external auditor in managing environmental, social, and governance (ESG) reputation risk. Review of Accounting Studies, 28(4), 2589–2641. https://doi.org/10.1007/s11142-022-09706-z

ASEAN Briefing. (n.d.). Southeast Asia manufacturing tracker. Retrieved from https://www.aseanbriefing.com/news/southeast-asia-manufacturing-tracker/

Asian Development Bank. (2021). PHILIPPINES CLIMATE RISK COUNTRY PROFILE. www.worldbank.org

Baker, S. R., Bloom, N., & Davis, S. J. (2016). Measuring economic policy uncertainty. The Quarterly Journal of Economics, 131(4), 1593–1636.

Bouri, E., Iqbal, N., & Klein, T. (2022). Climate policy uncertainty and the price dynamics of green and brown energy stocks. Financ. Res. Lett., 47, Article 102740.

Chen, Y., Ren, Y. S., Narayan, S., & Huynh, N. Q. A. (2024). Does climate risk impact firms' ESG performance? Evidence from China. Economic Analysis and Policy, 81, 683–695. https://doi.org/10.1016/j.eap.2023.12.028

Deloitte. (2014). Global survey on reputation risk. Retrieved from https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Governance-Risk-Compliance/gx_grc_Reputation@Risk%20survey%20report_FINAL.pdf

He Huang, H., Kerstein, J., & Wang, C. (n.d.). The impact of climate risk on firm performance and financing choices: An international comparison.

He, J., & Ma, X. (2021). Extreme temperatures and firm-level stock returns. Int. J. Environ. Res. Public Health, 18(4), 2004.

Kammoun, M., Tandja, M. D. C., & Essaddam, N. (2024). Do policy uncertainty and ESG sentiment drive ESG commitment of green funds? Journal of Climate Finance, 8, 100044. https://doi.org/10.1016/j.jclimf.2024.100044

Lee, W.-J., Pittman, J., Saffar, W., Boubaker, S., Callen, J., Agnes Cheng, C., Mian, M., Park, K. C., Ronen, J., & Ming Wan, K. (2015). Political Uncertainty and Cost Stickiness: Evidence from National Elections around the World.

Refinitiv Eikon. (2025). Refinitiv Eikon. Retrieved from https://eikon.refinitiv.com/

RepRisk. (2025). RepRisk. Retrieved from https://www.reprisk.com/

S&P Global. (2024). Capital IQ. Retrieved from https://www.capitaliq.spglobal.com/

S&P Global. (2025). Capital IQ. Retrieved from https://www.capitaliq.spglobal.com/

Source of Asia. (2024). Manufacturing industry in Southeast Asia 2024-2025. Retrieved from https://www.sourceofasia.com/manufacturing-industry-in-southeast-asia-2024-2025/

Source of Asia. (2024). Why Southeast Asia is the next big manufacturing hub in the manufacturing industry. Retrieved from https://www.sourceofasia.com/why-southeast-asia-is-the-next-big-manufacturing-hub-in-manufacturing-industry/

Statista. (2024). Statista. Retrieved from https://www.statista.com/

Vőneki, Z. T., & Lamanda, G. (n.d.). GDP INFLUENCE ON THE ESG RISK FRAMEWORK DISCLOSURE OF THE VISEGRAD FOUR BANKS.

World Bank. (2025). Philippines: Vulnerability. Retrieved from https://climateknowledgeportal.worldbank.org/country/philippines/vulnerability

World Risk Report. (2025). Welt risiko bericht. https://weltrisikobericht.de/worldriskreport/

World Uncertainty Index. (2025). Data. https://worlduncertaintyindex.com/data/

Wu, Y., Guo, Q., Song, J., & Ma, H. (2024). Economic Policy Uncertainty and Firm ESG Performance. Sustainability (Switzerland), 16(14). https://doi.org/10.3390/su16145963

Yébenes, M.O. (2024). Climate change, ESG criteria, and recent regulation: challenges and opportunities. Eurasian Economic Review, 14(1), 87–120. https://doi.org/10.1007/s40822-023-00251-x

Yin, Z., Deng, R., Xia, J., & Zhao, L. (2024). Climate risk and corporate ESG performance: Evidence from China. North American Journal of Economics and Finance, 74. https://doi.org/10.1016/j.najef.2024.102245

Zhu, N., Yang, J., & Rahman, A. (2024). The impact of managerial myopia on corporate ESG reputation risk: moderating role of digitization. Environment, Development and Sustainability. https://doi.org/10.1007/s10668-024-05607-0