

The Impact of ESG Performance on Firm Financial Risk: Evidence from ASEAN-4 Energy Companies

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Abstract

This study investigates the relationship between Environmental, Social and Governance (ESG) performance and firm-specific financial risk in the energy industry in the Asia-Pacific region of the South-East Asian Countries (ASEAN-4), which includes Indonesia, Malaysia, Singapore and Thailand. Using a balanced panel of 40 listed energy companies from 2020 to 2024, the determinants of stock return volatility measured through 360-day rolling returns is analyzed with the help of fixed-effects and random-effects regression models. The findings show that company size and sales increases are important in explaining long term volatility, but that inflation is the key driver of short-term volatility. ESG performance is also found to be negatively but statistically insignificantly related to firm volatility when firm-specific characteristics are controlled for. These results indicate that there is a stronger influence of firm-level financial factors over short-term risk rather than ESG performance in the case of the energy sector in the Asia Pacific region (ASEAN). The results are consistent with stakeholder and risk management theories, which regard ESG as a long-term strategic tool rather than a way to reduce risk in the short term. From a pragmatic perspective, the study underlines the importance of stable macroeconomic conditions, good financial performance and improved ESG disclosure in supporting sustainable capital markets. The key contribution of this research is based on an under-researched region and sector that provides new empirical evidence on the ESG - risk relationship in the energy companies in the region of Southeast Asia 4 during a period of energy transition and regulatory changes.

Keywords: ASEAN Energy Sector, ESG Performance, Firm Volatility, Sustainable Finance

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1. Introduction

International investors increasingly consider ESG performance as a fundamental metric of financial resilience, while there is limited evidence for emerging energy markets. The energy sector, while crucial to economic development, has come under scrutiny for its environmental and social impact, rendering ESG integration both a strategic and regulatory necessity. But while most research across developed economies finds that good ESG performance reduces the risk of companies and increases stability, such a connection is unknown in Southeast Asia, where regulatory advancement and corporate sustainability vary. Such a concern is particularly pertinent to ASEAN-4 energy companies exposed to twin pressures-maintaining profitability across the global energy transition and compliance with emerging ESG regulations. This study bridges the research gap by investigating empirically the effect of ESG performance on firm-specific financial risk in ASEAN-4 energy firms, thereby extending ESG-risk literature to an evolving but under-researched regional context and offering insight into the role of sustainability practice in promoting financial resilience for emerging energy markets.

The energy industry has commonly been referred to as the force behind global economic growth, but it is also among the most controversial industries due to its adverse social and environmental impacts (Tiwari, 2020), (Koundouri, 2021). According to the (U.S. Environmental Protection Agency, 2023) the global energy sector released approximately 135 million tons of methane in 2022, a greenhouse gas attributed to almost one-third of the total global temperature increase since the Industrial Revolution.

The same statistics have placed energy companies at the center of climate debates, regulatory reforms, and investor attention. Thus, ESG performance has emerged as a core component of firm strategy and stakeholder evaluation in the energy sector (Jadiyappa, 2022), (Ramírez-Orellana, 2023). The ESG role becomes particularly important in the developing world, such as the Association of Southeast Asian Nations (ASEAN), wherein the energy consumption will rise rapidly over the coming decades as a result of high-speed industrialization, urbanization, and population growth (Thompson, 2014). Among the ASEAN nations, the so-called ASEAN-4 countries-Indonesia, Malaysia, Singapore, and Thailand-dominate both traditional and new energy markets. Indonesia and Malaysia remain major oil, gas, and coal exporters, while Thailand and Singapore are implementing ambitious renewable energy and sustainability transitions. The industry thus has a twofold challenge: facilitating economic growth and energy security while balancing environmental externalities,

social responsibilities, and governance expectations. These forces not only render ESG performance a business issue but also an agent of financial stability and firm risk (Annisa, 2021).

At the global level, there has been a surge in the demand for responsible investments on the part of investors. While traditional funds lost more than US\$500 billion in 2022, responsible investment funds gained more than US\$100 billion in the same year (Azemar, 2023). Such a flow of capital reflects a tremendous shift in investor priorities as ESG compliance became a qualifying requirement for access to capital markets (Pop, 2011), (Velte, 2021). For ASEAN-4 energy firms already subject to strong regulatory and stakeholder scrutiny, being able to demonstrate credible ESG performance is increasingly a key differentiator in maintaining investor trust and reducing risk premiums. Indeed, ESG disclosure regulations are spreading across the region: Malaysia has deepened its sustainability reporting by the guidelines of Bursa Malaysia; Singapore has introduced climate-related disclosures that are mandatory by TCFD; Thailand requires listed corporations to report on ESG practices; and Indonesia has made sustainability reporting mandatory for public companies (Maisonneuve, 2017), (Velte, 2021).

The conceptual framework describes ESG as a risk and opportunity framework (Clark, 2015). Theoretically, ESG closes shareholder and stakeholder perspectives: while shareholder theory is oriented towards maximizing return, stakeholder theory emphasizes addressing broader societal and environmental concerns (Abdullah, 2009). The "enlightened value maximization" perspective argues that integrating ESG into business strategy can both promote long-term shareholder value and enhance stakeholder legitimacy (Jensen, 2001). On this note, ESG is argued to reduce firm risk by reducing exposure to reputation crises, litigation, business disruptions, and regulatory penalties (Godfrey, 2009), (Luo, 2009). Empirical data attest to this, showing that high ESG performance companies are more stable in stock return volatility, have reduced cost of capital, and are more resilient (Orlitzky, 2001), (Plumlee, 2015).

Risk in financial markets is three-dimensional. Aggregate risk is typically measured by stock price volatility, systematic risk through responsiveness to broad market shocks (beta), and idiosyncratic risk through firm-specific volatility related to operations and strategy (Goyal, 2001). Past research confirms that ESG operates specifically to reduce idiosyncratic risk because those companies that score high in ESG are best positioned to avoid firm-specific shocks as well as controversy (Sassen, 2016), (Oikonomou, 2012). Energy firms, where environmental regulation,

carbon, and governance are at the heart of the business, ESG performance is a highly pertinent hedge against firm-level volatility (Khan M. T., 2024), (Brogi, 2021). In the meantime, there is no uniform body of literature regarding ESG's impact on systematic risk. Although empirical evidence supports that ESG lowers macroeconomic shock sensitivity (Albuquerque, 2019), other evidence supports that market-level forces override firm-level ESG effects, particularly in developing economies (Benlemlih, 2017).

The ASEAN-4 energy sector is a unique setting in which to confirm the ESG-risk relationship. To begin with, energy companies in this region are faced with extreme volatility caused by the energy transition, shifting commodity prices, and global shocks such as the COVID-19 pandemic (Zhang, 2023). Second, ESG adoption in ASEAN-4 is one-sided and fluid: while Singapore is ahead of the pack with good regulatory enforcement and quality disclosure, Indonesia and Malaysia continue to grapple with governance and compliance problems, and Thailand hovers somewhere in the middle (Annisa, 2021). Such diversity provides a natural environment within which to observe the translation of ESG performance into risk mitigation in emerging energy markets. Third, the sector is under greater pressure from both local authorities and international investors to align with international sustainability norms, hence placing ESG at the heart of competitiveness and financial resilience (Velte, 2021).

The materiality of ESG dimensions' impact on firm risk is also highlighted by the literature. Khan, Serafeim, and Yoon (2016) point out that the financial value of ESG depends on whether firms put material ESG issues relevant to their industry as a top priority. Material ESG issues for energy firms in ASEAN-4 are carbon emissions, renewable energy shift, transparency in governance, and relationships with communities. Solving these issues will reduce litigation, reputational risk, and business risks, while immaterial ESG activities (such as unrelated charity) may have little or no impact (Khan M. S., 2016). Hence, the success of ESG in reducing volatility for ASEAN-4 energy firms might depend on whether their ESG efforts address the most effective risks facing the sector.

Although there has been global expansion in ESG research, there also remains a huge void in the literature as far as ASEAN energy markets are concerned. Most of the existing research is restricted to developed economies such as Europe, America, and Japan (Wang, 2022), (Brogi, 2021), or developing versus developed countries (Jadiyappa, 2022), (Zhang, 2023). There is little literature on ESG and firm risk in ASEAN in particular, and where there is literature, it barely addresses the energy sector. (Annisa, 2021), for example, examine ESG and firm risk in ASEAN-5 economies

without isolating the energy companies from other sectors. Similarly, (Maisonneuve, 2017) identifies ESG in emerging markets but does not provide sector information. Therefore, the ESG–risk connection for ASEAN-4 energy companies remains an untapped domain, despite the sector being at the center of regional economic growth and being vulnerable to ESG-related disruptions.

Based on these arguments, the present research tries to fill the gap by analyzing the impact of ESG performance on the financial risk of ASEAN-4 energy companies. Specifically, it examines the effect of ESG on stock price volatility, systematic risk, and idiosyncratic risk in an economically significant and environmentally sensitive sector. Specifically, this study advances ESG literature on ASEAN-4 energy firms in three important aspects. First, this study offers evidence from emerging markets where ESG adoption is on the rise but still diversity dominates. Second, it is focused on a risky sector where ESG approaches are perhaps most applicable to financial success. Third, it adds to understanding how ESG performance serves as a risk stabilizer for companies in the context of regulatory transformation, investor pressure, and global energy transition.

Lastly, this study aligns with legitimacy theory in the sense that it identifies ESG performance to be helping firms achieve legitimacy within the framework of deficient regulatory frameworks, say in ASEAN regions. It also converges with risk management and stakeholder theories, positing that ESG is a tool propelling resilience and stability (Engelhardt, 2021), (Lins, 2017). By bridging the research gap, this study not only provides empirical insights to policymakers and investors but also highlights the strategic importance of ESG to ASEAN-4 energy companies that have navigated through a period of record volatility.

This study aims to examine the impact of ESG performance on firm-specific financial risk, proxied by stock price volatility, in the context of ASEAN-4 energy companies. Second, to provide empirical evidence on whether higher ESG scores assist in the reduction of volatility in the ASEAN energy sector. Based on the research objectives, the study addresses the following research questions. First, does ESG performance significantly reduce firm-specific financial risk (as proxied by stock price volatility) in ASEAN-4 energy firms? Second, can ESG act as a stabilizer for firms in environmentally exposed sectors like energy within the ASEAN markets of Malaysia, Indonesia, Thailand, and Singapore?

2. Literature Review

Theoretical Foundations

ESG performance and financial risk have been explained through various theoretical frameworks such as stakeholder theory, legitimacy theory, information asymmetry, trade-off theory, and risk management theory (Whelan, 2021). Out of these theories, stakeholder theory, legitimacy theory, and trade-off theory are most relevant to the energy sector and the ASEAN-4 context.

Stakeholder theory, as first developed by (Freeman, 1984), emphasizes that the long-term success of a firm depends on managing the expectations of different stakeholders—shareholders, employees, customers, regulators, and society at large. Good ESG practice builds legitimacy and trust, reduces conflicts, and prevents costly disruption such as lawsuits, strikes, and regulatory penalties (Donaldson, 1995), (Srivastav, 2016). To this degree, ESG serves as a buffer reducing idiosyncratic risk and consequently aggregate firm volatility.

Most directly associated with this is legitimacy theory, in which firms adopt ESG practices because it connects them to the expectations of society and earns them a "social license to operate" (Heffron, 2021). Energy firms, traditionally contentious for high emissions, forced displacement of communities, and ecological degradation, are especially dependent on legitimacy as a tool to maintain investor trust and operational legitimacy (Shakil, 2021). By adopting quality ESG initiatives, such firms can reduce reputational risk and mitigate volatility linked with negative environmental or social incidents (Schaltegger, 2017), (Jadiyappa, 2022).

Trade-off theory (Preston, 1997) holds that excessive expenditure on ESG initiatives may divert funds from core business operations, reducing profitability and increasing risk. Through this prism, shareholder wealth maximization has to be a top concern for firms, and ESG investment can be considered a cost rather than a source of strength (Bouslah, 2013), (Galant, 2017). For heavily capital-intensive sectors such as energy, the door opens on the question that ESG commitments are financially burdensome unless it is strategically targeted towards business goals.

Together, they suggest that ESG mitigates as well as exacerbates firm risk, subject to implementation, institutional context, and stakeholder expectations. The ASEAN-4 energy sector, with high ESG pressures and disbalanced regulations, is an ideal setting for assessing how much explanatory power one theory has over the other.

ESG and Firm Risk: Global Evidence

The global evidence is vast but ambiguous from the literature on the ESG–risk nexus. Numerous studies affirm that ESG performance reduces financial risk by lowering stock return volatility, increasing transparency, and resilience (Hoepner, 2016). For example, (Broadstock, 2021) and (Cerqueti, 2021) show that ESG-sensitive firms have less downside risk during crises, while (Lins, 2017) argue that high ESG performance enhances trust and cushions firms during shocks such as the 2008 financial crisis.

Empirical studies usually discover that ESG affects idiosyncratic risk most significantly since controversy or firm-specific governance is directly interpreted as volatility (Luo, 2009), (Sassen, 2016). This is particularly the case in the energy industry, where environmental compliance and transparency in governance directly affect investor sentiment (Brogi, 2021), (Khan M. T., 2024). Systemic risk outcomes are more vague: while Albuquerque et al. (2019) conclude that ESG reduces market-shock sensitivity, others believe that macro factors can be suffocating, especially in emerging economies (Benlemlih M. S., 2016).

Not all is confirmatory evidence. Some studies do not observe any ESG–volatility relationship (Folger-Laronde, 2022), attributing null results to methodological deficiencies in ESG ratings or to the hypothesis that the ESG benefits are contextual. Others even propose that ESG commitments have a destabilizing impact on performance when they impose excessive costs or attract investor focus (Di Tommaso & Thornton, 2020).

In general, the global evidence is in favor of ESG as a risk stabilizer in finance, although results vary among institutional settings, industries, and measurement methodologies.

ESG in Asia-Pacific and ASEAN Context

Compared to North America and Europe, ESG and risk studies in the Asia-Pacific are underdeveloped but on the rise. It has been established in studies that institutional quality, disclosure requirements, and regulation enforcement determine the dynamic between ESG and risk in emerging economies (Jamali, 2017). Annisa and (Bousslah, 2013) analyze ESG and firm risk in ASEAN-5 economies and find that better ESG performance reduces volatility and brings more stable investors. (Wang, 2022), on the basis of Japan, reproduce that ESG performance reduces idiosyncratic and total risk but with insignificantly small effects on systematic risk. (Khan M. T., 2024) report evidence for international energy firms and conclude that

ESG performance significantly reduces idiosyncratic risk, especially through environmental and governance dimensions.

In the ASEAN-4 specifically, authorities have implemented mandatory sustainability reporting standards that are gradually converging with ESG practices. Indonesian Financial Services Authority (OJK) requires listed companies to issue annual sustainability reports. Listed companies are required by Bursa Malaysia to report on ESG risks and opportunities in line with its sustainability framework. The Stock Exchange of Thailand (SET) includes ESG in corporate governance codes, and the Singapore Exchange (SGX) requires climate-related disclosures by TCFD guidelines (Maisonneuve, 2017), (Velte, 2021). Such regulation reflects greater policy recognition that disclosure of ESG reduces information asymmetry and improves investor confidence (Dhaliwal, 2011).

Despite these reforms, ASEAN uptake of ESG remains heterogeneous. Singapore leads in terms of reporting quality and investor awareness, while Indonesia and Malaysia have governance enforcement issues and risks of greenwashing (Velte, 2021). Thailand falls somewhere in the middle, with some progress in ESG disclosure but lingering issues with consistency and comparability. This institutional heterogeneity renders ASEAN-4 a key laboratory for a study of ESG–risk dynamics.

Research Gap

While worldwide evidence is there to back the fact that ESG performance is associated with reduced volatility, the situation in ASEAN-4 energy firms remains uncertain. Existing studies focus either on developed markets (Albuquerque, 2019), (Wang, 2022) or examine Asia in a broad sense without accounting for sectoral and country-specific dynamics (Annisa, 2021). No study has systematically explored the ESG–risk nexus in the ASEAN-4 energy sector to date, although it is relevant to regional development and climate change transformation themes. Since the sector is subjected to commodity price risk, regulatory reform, and sustainability pressures, it is also critical to understand the impact of ESG on ASEAN-4 energy company volatility, thus filling an essential gap in both policy and academic discussion. Therefore, this study sits at the intersection of ESG, risk finance, and local institutional forces. By bringing ASEAN-4 energy firms into focus, it extends prior literature in three ways: (1) it offers evidence from a fast-growing but less examined region, (2) it seeks to mitigate a sector where ESG matters most to financial outcomes, and (3) it evaluates the role of evolving disclosure requirements in affecting ESG–volatility relationships.

Hypothesis Development

Based on the reviewed literature and theories (stakeholder theory, legitimacy theory, and risk management theory), the following hypotheses are developed:

H1 (Primary Hypothesis): Firm volatility in the ASEAN-4 energy sector is highly influenced by ESG performance.

H1a : Higher ESG scores are associated with lower volatility.

H1b : Larger firm size is associated with lower volatility.

H1c : Higher leverage is associated with higher volatility.

H1d : Volatility is associated with greater growth possibilities, based on the risk of firm growth.

H1e : Lower volatility is associated with greater GDP growth.

H1f : Greater inflation is associated with greater volatility.

These hypotheses account for both firm-specific and macroeconomic determinants of risk. The central expectation is that ESG serves as a stabilizer, dampening financial risk, while traditional financial and macroeconomic variables also shape firm-specific volatility.

3. Data and Methodology

Data

The study analyzes the impact of ESG performance on the financial risk of firms in the ASEAN-4 energy sector, including Malaysia, Indonesia, Thailand, and Singapore. 40 listed energy companies form the sample, and distribution is as follows: 15 Malaysian, 10 Indonesian, 10 Thai, and 5 Singaporean. Companies were selected based on the availability of data for both financial variables and ESG performance. The study period is 2020–2024, which encompasses the post-COVID recovery phase, the existing energy transition in the world, and the growing sustainability reporting requirements of ASEAN economies. ESG ratings and financial data were collected from Refinitiv Eikon and companies' annual sustainability reports, while macroeconomic indicators (GDP growth and inflation) were collected from the World Bank and national statistical offices.

Variables

Table 1. Description of Variables

Variable	Symbol	Definition & Measurement
Stock Price Volatility	VOL-360	Annualized standard deviation of daily stock returns over the most recent 360 trading days. Proxy for firm-specific financial risk

ESG Score Composite	ESG Score	Overall ESG score provided by Refinitiv (0–100), equal-weighted average of Environmental, Social, and Governance sub-scores
Leverage	LEV	Ratio of total debt to total assets (financial risk control)
Firm Size	SIZE	Natural logarithm of total assets
Sales Growth	GROWTH	Annual percentage growth in sales revenue

Model Specification

To estimate the relationship between ESG performance and firm risk, the study employs a panel data regression framework with firm- and time-fixed effects to control for unobserved heterogeneity across firms and countries. The baseline model is specified as:

$$VOLit = \alpha + \beta_1 ESGit + \beta_2 SIZEit + \beta_3 LEVit + \beta_4 GROWTHit + \mu_i + \lambda_t + \epsilon_{it}$$

$VOLit$: volatility of firm i in year t
$ESGit$: ESG score of firm i in year t
$SIZEit$: firm size of firm i in year t
$LEVit$: leverage of firm i in year t
$GROWTHit$: growth of firm i in year t
μ_i	: firm fixed effects
λ_t	: year fixed effects
ϵ_{it}	: error term

Statistical Analysis and Results

Descriptive Statistics

The descriptive statistics table below outlines the major properties of the sample that includes 200 firm-years of 40 companies during the year span of 2020–2024. The mean stock return volatility ($Vol-360$) stands at 0.64 with a standard deviation of 0.57 which shows that there is a wide deviation in the risk level across firms and time. The average score of ESG performance is 58.49, which indicates that there is moderate sustainability engagement experience in the sampled firms, and the broad spectrum (13.14 to 86.52) implies that there is a considerable diversity in the ESG practices. The size of the firms in logarithmic scale means a mean of 13.54, which means that there are both small and large firms included in the sample. The leverage is highly dispersed, with an average 1.10 and a high of 8.83 implying that the capital structure policies and possible financial risks exposures vary across the firms. Growth has a mean value of 0.15 that has negative to positive

values thus indicating that although the firms have a moderate value of growth, the performance of the firms has significant differences in the sample. All in all, volatility variability, ESG scores, leverage, and growth variability present an adequate empirical environment to test the connection between ESG performance and firm-level risk.

Table 2. Descriptive Statistics

Variable	Obs	Mean	Std. dev.	Min	Max
Company id	200	20.5	11.57236	1	40
Year	200	2022	1.417762	2020	2024
Vol-360	200	0.6398397	0.574785	0.171955	4.223071
ESG Score	200	58.49435	17.69686	13.14	86.52
Size	200	13.54252	1.477136	9.920935	17.26523
Leverage	200	1.102992	1.370911	0.02333	8.826298
Growth	200	0.1482555	0.383564	-0.73645	1.379995

Correlation Matrix

The correlation table 2 shows that stock return volatility (Vol-360) and ESG performance (-0.15) share a negative relationship, indicating that the greater a company is in terms of ESG, the lower the risk levels of the company. Volatility also a negative relationship with firm size (-0.11), leverage (-0.16), and growth (-0.14), which means that larger, more leveraged and higher growth firms in the sample tend to have lower observed volatility. ESG performance has a moderate positive relationship with firm size (0.46), which implies that bigger firms tend to have high chances of being involved in and reporting on ESG-related practices which aligns with the stakeholder visibility and resource availability arguments. Correlations with leverage (0.11) and growth (0.05) are not strong, indicating that there are not strong direct linear relations between ESG and leverage accordingly. Notably, the correlation coefficients are significantly lower than traditional multicollinearity cutoffs, the multicollinearity is not a major issue to concern in the regression analysis.

Variance Inflation Factor

Variance Inflation Factor (VIF) diagnostics are used to detect whether there is a problem of multicollinearity in the regression model or not. The VIF values in Table 3 for firm size (1.37), ESG score (1.33), leverage (1.10) and growth (1.00) are all close to unity and well below conventional threshold levels of concern. The average VIF of 1.20 is another indicator of no strong linear dependence between the explanatory variables. These results indicate

that the estimated coefficients are stable and that the standard errors are not inflated because of multicollinearity and thus reliable inference about the relationship between the ESG performance and stock return volatility can be made.

Table 3. Correlation Matrix

	Vol-360	ESGScore	Size	Leverage	Growth
Vol-360	1				
ESGScore	-0.1488	1			
Size	-0.1061	0.455	1		
Leverage	-0.157	0.11	-0.1969	1	
Growth	-0.1363	0.0521	0.0464	-0.0355	1

Table 4. Variance Inflation Factor

. vif

Variable	VIF	1/VIF
size	1.37	0.731066
esgscore	1.33	0.750155
leverage	1.10	0.909831
growth	1.00	0.995351
Mean VIF	1.20	

Regression Results

The coefficient on ESG score is negative (equal to -0.0058), and this means that in economic terms, an improvement in ESG performance is linked to a decrease of volatility in the stock returns. However, this effect is not statistically significant when firm fixed effects and clustered standard errors are used. This implies that changes in ESG performance within the same firm over time is not associated with a reduction in short-term volatility. One reason is that ESG scores are likely to change slowly and have the potential to affect firm risk in long-term channels (such as reputation, resilience to regulation, or cost of capital) rather than through short-term market volatility. Therefore, the results indicate risk neutrality of ESG in the short run for the firms in the sample.

Firm size has a positive and statistically significant coefficient, suggesting that larger firms are more volatile after controlling for firm-specific fixed effects. This may seem counterintuitive, but in capital markets, particularly for energy companies, bigger companies tend to have more exposure to global commodity prices, higher trading volumes and broader investor bases, which may make for more observed return volatility. The result suggests that scale leads to greater exposure to market-wide shocks, and not insulation of firms against risk.

The coefficient on leverage is negative but statistically insignificant. This implies that within firms, changes in capital structure have a weak or robust and consistent impact on volatility during the sample period. One potential explanation is that leverage ratios in energy companies may already be optimized or regulated capital structures, and thus have less effect on market risk. Additionally, firm fixed effects soak up persistent characteristics of financial risk that there is little within-firm variation of leverage left to explain volatility.

Table 5. Regression Results

Vol-360	Coefficient	std. err.	t	P>t	[95% conf. interval]	
ESGScore	-0.0057612	0.0048634	-1.18	0.243	-.0155984	.004076
Size	0.2103196	0.1340904	1.57	0.0125	-.060904	.4815431
Leverage	-0.0420274	0.0307699	-1.37	0.180	-.1042653	.0202106
Growth	-0.2416719	0.0881788	-2.74	0.009	-0.48334	
_cons	-1.789237	1.927871	-0.93	0.359	-5.688724	2.11025

Growth is negatively and statistically significantly related to volatility, indicating that the higher a firm's growth, the lower the volatility of the stock returns of the firm. This finding is intuitive from an economic standpoint. Higher growth means that investors expect greater cash flows from the company in the future, the company will perform better, and investors have more confidence in the company, thus lowering their uncertainty about the prospects of the firm. In the energy sector, growth can also be a result of the successful execution of projects or improved efficiency, which can stabilize returns.

Discussion

This study investigates whether the level of ESG performance lowers firm-specific financial risk, measured by stock return volatility, in the energy companies of the Asian Development Bank (ADB) region, Asia-Pacific region also known as the Third World Region or Asian region, which

comprises four countries including the United States, the United Kingdom, China, and France. The empirical results obtained from the fixed effects regression demonstrate that ESG performance has a negative but statistically insignificant relationship with the concept of volatility. Importantly, this result does not mean that ESG has failed or is not relevant. Rather, it suggests that ESG performance does not play a dominant role in reducing short-term stock return volatility once unobserved firm specific characteristics are controlled for.

The use of firm fixed effects is concerned with within-firm change over time. ESG scores tend to vary slowly and reflect long-term strategic commitments as opposed to short-term operational decisions. As a result, better ESG performance may not lead to lower market volatility in the short term. Instead, ESG is more likely to affect firm risk through more long-term channels such as reputation building, regulatory resilience, better stakeholder relationships and lower cost of capital. This explains why ESG seems risk neutral in the short run, rather than risk reducing, in the fixed effects framework used in this study.

These findings are consistent with the stakeholder theory. While stakeholder-oriented practices make for greater trust and long-term firm stability, financial benefits tend to accrue slowly. In the context of the energy sector of the four countries in the South-East Asia Regional Organization (ASEAN-4), efforts by investors to manage and reduce emissions, as well as efforts to engage local communities and reform governance in the energy sector, have not yet been fully acknowledged in the market. Therefore, short-term volatility in the markets is still more sensitive to financial performance and market circumstances than changes in ESG scores.

The outcomes are also in line with legitimacy theory. Energy companies in the region of the so-called ASEAN-4 are operating in an environment of evolving ESG regulations and haphazard enforcement. Many firms may adopt ESG practices less for active risk reduction and more in order to comply with regulatory requirements or simply to maintain their legitimacy. In such contexts, ESG disclosure may not so much be an effective risk management tool (at least in the short term) as it may serve more as a compliance or signaling mechanism. This institutional environment goes some way to explaining why the performance of ESGs does not significantly reduce volatility within firms over the study period.

The results are consistent with the mixed evidence in the empirical ESG- risk literature. Jادیappa, 2022 finds that the effect of ESG in risk reduction is different for each country depending on institutional

development with weak effects in emerging markets. Similarly, Albuquerque et al. (2019) show that ESG can be used to reduce systematic risk but firm-level volatility is still largely driven by market-wide and financial risk factors. Khan et al. (2024) report that ESG has a significant and positive impact on idiosyncratic risk in global energy firms, however, the strength of this impact depends on the quality of the regulations and the materiality of ESG, which may be low or less consistent in the markets of the Association of South-East Asian Nations (ASEAN).

A key result of this study is that firm size and growth play more important role in explaining volatility than ESG performance. Firm size is found to be positively related to volatility, implying that bigger energy firms must be more sensitive to the volatility in global commodity prices, international investor sentiment, and market-wide shocks. Rather than protecting firms from risk, increased scale makes firms increasingly vulnerable to outside volatility in energy markets. Growth, on the other hand, is negatively and significantly related to volatility, which means that firms with better growth prospects are less uncertain. Higher growth is a signal of better future cash flows, greater operational efficiency, and more investor confidence which contributes to more stable stock returns.

The dominance of firm size and growth over ESG shows the importance of financial fundamentals in determining short-term risk in the energy sector in the ASEAN-4. While ESG is certainly important from a strategic perspective, it seems that investors give greater importance to measurable, observable financial performance when valuing risk. This implies that ESG is more of a long-term stabilizing mechanism rather than a short-term hedge against market volatility.

Conclusion

This study examines the influence of the relationship between ESG performance and firm-specific financial risk of the energy companies in the ASEAN-4 countries between 2020-2024. Using panel data techniques, the study seeks to understand the relationship between the ESG performance and the financial characteristics of the firm's level and their effect on the stock return volatility. The results of the fixed-effects regression show that ESG performance has a negative but statistically unimportant effect on the volatility of the firm, and firm size and sales growth are found to be significant determinants of the risk.

The findings suggest that ESG performance does not play an important role in reducing the short-term volatility of stock returns when the unobserved firm-specific characteristics are controlled for. This is not

to say that ESG is not important, but it does mean that the risk-mitigating benefits of ESG are more likely to occur over the long term. ESG practices within the energy sector are often characterized by gradual improvements in energy sector governance, environmental management and stakeholder engagement, which may not be seen in the short-term volatility in the market.

Firm specific financial factors are more dominant when it comes to deciding the volatility in the energy sector of the ASEAN-4. Larger companies will often have a larger amount of volatility because they are more exposed to world energy markets and the fluctuation of the price of a commodity and vice versa with companies that have a better outlook for growth as this will mean more investor confidence and therefore more stable expectations about future performance. These results are suggestive of the importance of financial basics to explain the risk of firms in emerging energy markets.

From a theoretical standpoint, the findings support stakeholder and legitimacy theories as they show that ESG has to do with long-term firm resiliency rather than short-term market stability. ESG performance does seem a strategic and reputational tool to improve sustainability and credibility over time, especially in environment where regulatory frameworks are changing, like in case of economies belonging to Asia-Pacific region and namely the South-East Asia region (an acronym for Southeast Asia, Southeast Asia, and the Pacific Island countries).

The findings have important implications for the policy makers and investors. Policymakers should focus on improving the quality and consistency of ESG disclosure as well as increasing regulatory enforcement in order to ensure that ESG information is credible and decision-useful. In particular, investors need to consider ESG performance as a long-term risk management factor and not a short-term hedge against volatility, particularly in emerging markets and environmentally sensitive industries such as energy.

This study is a contribution to the existing literature as it is empirical evidence from a region and sector which has not been explored in detail before. Focusing on the energy companies in the region of ASEAN-4, it extends the research on ESG risks to emerging markets that are struggling with energy transition. Future research could consider disaggregated measures of the dimensions of ESG, longer time horizons, or dynamic panel models to model the lagged effects of ESG performance on financial risk.

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