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ESG Performance and Corporate Market Value: A Study Based on Indonesian Listed Companies

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ABSTRACT: Under the dual pressures of global sustainability and emerging market transformation, the impact of ESG performance on corporate value has become a key academic and practical concern. Using panel data of 339 Indonesian listed firms (3,381 observations) from 2016 to 2025, this study employs two-way fixed-effects models, instrumental variables, and mediation analysis to investigate the effect, heterogeneity, and mechanisms of ESG on market value. The results show that: (1) ESG performance has a significant and robust positive effect on market value. This finding holds after multiple robustness checks and remains significant after addressing endogeneity. (2) This effect is heterogeneous. It is stronger for SMEs and high-profitability firms, positive for non-polluting firms, but negative for polluting firms. (3) Mechanism tests reveal that ESG enhances market value indirectly by improving corporate liquidity (current ratio) and core profitability (operating margin). By providing micro-level evidence from Indonesia, this study enriches the literature on ESG's heterogeneous effects in emerging markets. The findings offer empirical guidance for firms' differentiated ESG strategies, investors' portfolio construction, and regulators' policy design.

KEYWORDS: ESG Performance; Corporate Market Value; Indonesian Listed Companies

I. INTRODUCTION

Amid the prevailing global wave of sustainable development and responsible investment, environmental, social, and governance (ESG) performance has transcended traditional financial metrics to become a critical dimension for assessing corporate long-term value and investment risk. Capital markets are increasingly interpreting superior ESG performance as a key signal of a firm's ability to withstand risks, secure sustainable competitive advantages, and obtain its future "license to operate" in a complex environment. This dynamic is profoundly reshaping the logic of global capital allocation and the foundational framework of corporate valuation. Concurrently, Indonesia, as the largest emerging economy in Southeast Asia, finds its capital market at a critical juncture of transitioning from a traditionally resource-driven model towards sustainable, high-quality growth. Recent studies on Indonesian listed companies have continuously explored the impact of ESG on Tobin's Q, yet the findings exhibit complexity, underscoring the necessity for further investigation into its heterogeneous effects. Regulatory bodies such as Indonesia's Financial Services Authority (OJK) are actively guiding and standardizing the sustainable development practices of listed companies by, for example, introducing mandatory ESG reporting roadmaps (Prasetyo et al., 2025). The latest market observations indicate that ESG factors are playing an increasingly pivotal role in mitigating corporate reputational risk and maintaining market legitimacy. Consequently, ESG's influence within the Indonesian stock market is growing, establishing it as an indispensable endogenous variable shaping market value formation.

However, despite the global consensus on the importance of ESG, context-specific research focusing on Indonesia—a key emerging market—remains disproportionately scarce. Existing literature on the value relevance of ESG in Indonesia has overwhelmingly concentrated on verifying the "average" correlation between ESG and financial performance or market value, generally implying an assumption of firm homogeneity. Although recent studies continue to explore this relationship, their conclusions are inconsistent, with some even uncovering negative or insignificant associations (Aziizah et al., 2025). The inherent limitation of this research perspective is its failure to reveal that the creation of ESG value may exhibit systematic variations across different types of firms. In reality, subject to multiple heterogeneous factors—such as industry attributes (e.g., high-pollution emission industries versus clean service industries), ownership structures (e.g., state-owned enterprises versus family firms), company size, and governance maturity—the mechanisms, efficiency, and even the direction of the transmission from ESG performance to market value may differ markedly. For instance, within the energy sector, the value effect of environmental

disclosure may differ significantly from that of social and governance disclosures (Rahmaniati et al., 2024). At the overall market level, weak ESG infrastructure and investor awareness may also impede this value transmission (Saputro et al., 2025). This critical research gap significantly constrains a profound understanding of the specific application scenarios for ESG investment within the Indonesian market.

Building on this premise, this study aims to systematically investigate the heterogeneous impact of ESG performance on the market value of Indonesian listed companies. The research employs Tobin's Q as the core proxy variable for corporate market value, given its forward-looking capacity to reflect market assessments of a firm's future growth opportunities and intangible asset value. This study will not only empirically test the overall effect of comprehensive ESG scores on market value but will also focus on analyzing how key heterogeneity dimensions—such as firm size, profitability, and industry classification—moderate this value relevance. By conducting rigorous panel data analysis on the Indonesian stock market, this research aspires to transcend the general assertion of "whether ESG matters," and instead address the more practically instructive question of "for whom and under what circumstances ESG matters more." The findings aim to provide Indonesian policymakers with evidence for differentiated regulatory approaches, offer international and domestic investors refined references for portfolio strategies, and furnish local enterprises with empirical support for formulating prioritized ESG improvement pathways.

II. THEORETICAL HYPOTHESES

A. The Impact of Esg Performance on Corporate Market Value

ESG performance is an evaluation system that measures a firm’s comprehensive practice level across three dimensions: environmental protection, social responsibility fulfillment, and corporate governance structure. In the context of Indonesia as an emerging market, where capital markets are characterized by high information asymmetry, investors increasingly rely on corporate non-financial information. Corporate market value (measured by Tobin’s Q or the price-to-book ratio) not only reflects the profitability of a firm’s existing assets but also embodies market expectations regarding its future growth opportunities and sustainable competitive advantages. ESG performance exerts systematic effects on market value through the following mechanisms.

First, the signaling mechanism. In the Indonesian capital market, where information transparency is limited, firms that proactively improve their ESG performance send positive signals to external investors regarding management quality, risk control capability, and long-term operational stability. Superior ESG performance helps mitigate information asymmetry between the firm and its external stakeholders, reducing investor concerns about the uncertainty of future cash flows, thereby enhancing firm valuation. For small and medium-sized enterprises (SMEs) in particular, ESG disclosure can serve as an effective tool to compensate for size disadvantages and build market reputation (Surya et al., 2026).

Second, the stakeholder trust mechanism. ESG practices strengthen the symbiotic relationship between a firm and its external environment by responding to the diverse demands of employees, customers, suppliers, communities, and regulatory agencies. Strong social responsibility performance (e.g., employee rights protection, community engagement) helps accumulate social capital; transparent governance structures (e.g., board independence, anti-corruption measures) enhance the credibility of decision-making. In Indonesia, an economy that places great emphasis on social relationships and trust networks, enhanced stakeholder support directly translates into a more stable operating environment and lower conflict costs, thereby sustaining continuous growth in market value (Mu et al., 2022).

Third, the risk mitigation mechanism. Compliance management in the environmental dimension reduces the risk of regulatory penalties and litigation arising from pollution incidents and resource shortages; investments in the social dimension decrease the likelihood of labor disputes and supply chain disruptions; improvements in the governance dimension curb agency problems such as insider control and financial fraud. Under Indonesia’s rapidly evolving legal and regulatory framework (e.g., the sustainable finance roadmap promoted by the Financial Services Authority of Indonesia, OJK), effective ESG management significantly reduces the compliance and reputational risks faced by firms, enhances the sustainability and predictability of profitability, and consequently commands a higher valuation premium in the capital market (Sharfina et al., 2026).

Fourth, the resource allocation and innovation-driven mechanism. ESG-oriented practices of energy conservation, consumption reduction, and circular economy can lower operating costs and improve resource utilization efficiency. Concurrently, investments in green technologies and social innovation projects can open up new market opportunities and enhance a firm’s dynamic capabilities. These ESG-driven efficiency improvements and innovation activities ultimately manifest as increased returns on assets and the accumulation of long-term competitive advantages, providing endogenous growth momentum for market value (Baroto et al., 2026).

Synthesizing the above theoretical logic, in the context of Indonesia's emerging market, ESG performance exerts a positive promoting effect on corporate market value through multiple channels, including signaling, stakeholder trust, risk mitigation, and resource allocation optimization. Based on this, this study proposes the following hypothesis:

H1: ESG performance has a significant positive enhancing effect on corporate market value.

B. The Mediating Role of Current Ratio

As a core indicator measuring a firm's short-term solvency and financial flexibility, the current ratio may play an important mediating role between ESG performance and corporate market value. In the context of Indonesia's emerging market, where firms generally face high financing constraints and liquidity management pressures, sound ESG practices can improve corporate liquidity conditions through the following mechanisms, thereby enhancing market valuation.

First, ESG performance enhances liquidity by optimizing working capital management. Specifically, good social responsibility practices (e.g., fair supplier payment policies, stable customer relationships) help shorten the days of accounts receivable outstanding and reduce the risk of inventory overstock, thereby improving the quality of current assets. Well-established governance mechanisms (e.g., internal control systems, risk management frameworks) can reduce capital occupation and resource wastage, increasing cash conversion efficiency. These ESG-driven improvements in operational efficiency are directly reflected in an increased current ratio, strengthening the firm's ability to meet short-term payment obligations (Rosmayanti, 2026).

Second, ESG performance helps broaden external financing channels and improve the structure of current liabilities. In the Indonesian capital market, firms with superior ESG performance are more likely to obtain support in the form of short-term bank credit, trade credit, and green financial products. The rationale lies in the fact that a strong environmental compliance record and social reputation reduce creditors' concerns about default risk, enabling the firm to secure trade credit and short-term loans on more favorable terms, thereby optimizing the maturity structure and cost of current liabilities. This enhanced financing accessibility strengthens the firm's liquidity safety margin without significantly increasing financial risk (Rahim et al., 2026).

Third, ESG practices stabilize cash flow expectations by reducing the risk of sudden cash outflows. Compliance management in the environmental dimension reduces expenditures on fines and litigation arising from pollution incidents; investments in the social dimension related to employee relations lower losses from work stoppages caused by strikes or labor disputes; anti-corruption measures in the governance dimension prevent misappropriation of funds and financial fraud. These risk mitigation effects resulting from ESG investments make corporate cash flows more stable and predictable, allowing the firm to maintain a healthy current ratio without holding excessive precautionary cash reserves (Nabila et al., 2026).

Based on the above logic, ESG performance indirectly drives the enhancement of corporate market value through the mediating pathway of improving the current ratio: enhanced liquidity implies greater financial flexibility and crisis-response capability, enabling the firm to seize investment opportunities and withstand external shocks more effectively. This is interpreted by the capital market as a signal of low risk and high resilience, thereby granting the firm a higher valuation premium. Accordingly, this study proposes the following hypothesis:

H2: The current ratio plays a significant mediating role in the process through which ESG performance influences corporate market value.

C. The Mediating Role of Operating Margin

As a key indicator measuring the profitability efficiency of a firm's core business, operating margin reflects the firm's ability to generate profits from its primary operations before interest and taxes. In the context of Indonesia's emerging market, where firms face multiple pressures such as cost fluctuations, intensifying competition, and regulatory changes, ESG performance can enhance operating margin through the following mechanisms, thereby transmitting to growth in corporate market value.

First, ESG practices directly improve operating margin by reducing operating costs. Energy conservation, consumption reduction, resource recycling, and clean production technologies in the environmental dimension can lower variable costs such as water, electricity, and raw materials. Investments in employee health and safety, as well as training and development programs in the social dimension, help reduce workplace accident rates and employee turnover, thereby lowering recruitment and retraining costs. Internal control optimization and anti-corruption mechanisms in the governance dimension reduce efficiency losses caused by waste, fraud, or managerial errors. These ESG-driven cost-saving effects are directly reflected as an increased share of retained profits within operating revenue, thereby enhancing operating margin (Sharfina et al., 2026).

Second, ESG performance helps strengthen the differentiated pricing power of products and services, increasing unit revenue. In the Indonesian capital market, consumer and business customer willingness to pay for sustainable products is gradually rising. A strong environmental and social reputation can build a brand moat for the firm, enabling its products to command a green premium or a social recognition premium. At the same time, firms with superior ESG performance are more likely to enter multinational procurement networks that emphasize supply chain sustainability, securing more stable orders with higher profit

margins. This revenue-side advantage brought by ESG expands profit margins without significantly increasing costs, thereby enhancing operating margin (Wulanningrat et al., 2025).

Third, ESG practices protect profit margins by reducing non-recurring losses. Fines, legal litigation expenses arising from environmental violations, and production stoppage losses caused by safety incidents directly erode operating profits. Robust social responsibility fulfillment and governance mechanisms can effectively reduce the probability and severity of the above risk events, thereby decreasing non-recurring loss items in the income statement. This risk protection function reduces the volatility of operating margin and enhances its sustainability, which is perceived by the capital market as an important signal of management quality and financial soundness (Ernawati et al., 2025).

Based on the above logic, ESG performance indirectly drives the enhancement of corporate market value through the mediating pathway of improving operating margin: a higher operating margin implies stronger cost control capability, pricing power, and earnings stability. This sends positive signals to investors regarding competitive advantages and growth potential, thereby securing higher valuation recognition in the capital market. Accordingly, this study proposes the following hypothesis:

H3: Operating margin plays a significant mediating role in the process through which ESG performance influences corporate market value.

III. DATA SOURCES AND VARIABLE MEASUREMENT

A. Estimation Model

$$Tobin's\ Q_{it} = \alpha_0 + \alpha_1 Esg_{it} + \alpha_2 Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (1)$$

In Equation (1), *i* denotes the firm, and *t* denotes the time period. The dependent variable $Tobin's\ Q_{it}$, is defined as the ratio of a firm's market value to the replacement cost of its assets, serving as a measure of its market valuation level. The independent variable Esg_{it}, represents the firm's ESG performance, with data derived from the comprehensive scores provided by the Bloomberg database. $Control_{it}$ signifies a vector of control variables. δ_i represents the individual firm fixed effects, μ_t represents the year fixed effects, and ε_{it} denotes the random disturbance term.

B. Data Sources

Based on data from companies listed on the Indonesia Stock Exchange from 2016 to 2025, integrated with information from the Bloomberg database, this study formed the final sample after a three-step purification process. First, firms with abnormal trading were excluded. Second, observations with missing values for key variables for three consecutive years were removed. Third, all continuous variables were winsorized at the 1st and 99th percentiles. This process yielded a final effective sample comprising 339 firms and 3,381 firm-year observations.

C. Variable Definition

a. Dependent Variable

Drawing on the research methodology of Sari et al. (2025), this study measures corporate market value using the ratio of (Total Market Value + Total Liabilities) to Total Assets. Generally, a firm's Tobin's Q serves as a key metric for assessing the relationship between its market value and intrinsic value. It directly reflects the capital market's recognition of the firm's resource allocation efficiency, intangible asset value, and future growth opportunities—essentially capturing the premium or discount of market valuation relative to the replacement cost of its assets. A higher Tobin's Q typically suggests that the market believes the firm possesses superior management capabilities, strong brand value, technological innovation advantages, or sustainable competitive edges. This enables the firm to attract capital at a lower cost, incentivizes expanded reinvestment, and allows it to achieve better economies of scale through mergers and acquisitions. Conversely, a lower Tobin's Q often indicates market caution or pessimism regarding the firm's asset utilization efficiency or future development prospects, potentially leading to heightened financing constraints, investment contraction, and pressure from being undervalued or even becoming an acquisition target.

In subsequent analyses, this paper, following the approach of Wang et al. (2025), adopts the Price-to-Book Ratio (P/B) as a proxy variable for corporate market value. This indicator is calculated as "Market Price per Share / Book Value per Share." Its value directly reflects the extent of the premium or discount of the firm's market valuation relative to its book net assets. A higher ratio indicates that the firm's market value significantly exceeds its net asset book value, and also reflects investors' willingness to pay a higher price for each unit of net assets. This premium usually stems from positive expectations regarding the firm's exceptional profitability, strong brand value, advanced technology, efficient governance structure, or promising growth prospects. Conversely, a lower Price-to-Book Ratio often suggests that the market holds reservations about the quality of the firm's assets, its future earnings growth, or its operational risks. In such cases, the market value approaches or even falls below the book value of net assets, potentially reflecting a market perception that the firm possesses only basic asset value and lacks significant future value-creation potential.

b. Independent Variable

Following the methodology of Daulay et al. (2026), this study obtains comprehensive Environmental, Social, and Governance (ESG) scoring indicators from the Bloomberg and Indonesia Stock Exchange databases to measure ESG performance. This metric reflects a firm's holistic practice level across environmental management, social responsibility fulfillment, and internal governance mechanisms, thereby exerting a systematic influence on its sustainable operational capacity and long-term value creation potential. From a causal logic perspective, strong ESG performance helps firms reduce operational risks, optimize resource allocation, enhance brand reputation, and strengthen stakeholder trust, consequently enabling them to secure higher valuation premiums and lower financing costs in capital markets. Therefore, a higher score typically indicates that a firm possesses relatively robust institutional arrangements and implementation effectiveness across all ESG dimensions, demonstrating stronger sustainable development resilience. Conversely, a lower score suggests weaknesses in environmental compliance, social responsiveness, or governance structures, potentially exposing the firm to heightened regulatory, litigation, or reputational risks, thereby suppressing its market value performance.

In subsequent analyses, this study further decomposes the comprehensive ESG indicator into three dimensional variables—Environmental (E), Social (S), and Governance (G)—to separately examine the differential impacts of each dimension on corporate market value. These indicators reflect a firm's independent performance levels in environmental achievements, social responsibility investments, and governance mechanism sophistication. This decomposition helps reveal the specific pathways and heterogeneous characteristics through which each ESG dimension contributes to the market value formation process of Indonesian listed companies.

c. Control Variables

Following the methodological precedent of Azemi & Khairunnisa (2025), this study incorporates a range of firm-level attributes as control variables. Firm size (Size) is calculated as the natural logarithm of total assets. Leverage (Lev) is defined as the ratio of total liabilities to total assets. Cash holdings (Cash) are measured by the proportion of cash and cash equivalents relative to total assets. Fixed asset intensity (Fix) is proxied by net fixed assets divided by total assets. Asset turnover efficiency (TTA) is gauged by the ratio of total operating revenue to total assets. Profitability (ROA) is computed as net profit scaled by total assets. Age is calculated as the natural logarithm of years since establishment.Asset growth (Growth) is represented by the annual growth rate of total assets.

Table 1 Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Tobin's Q	3381	0.733	0.528	0.106	1.728
Esg	3381	2.882	0.892	1.240	5.820
Size	3381	28.985	1.883	24.63	33.55
Lev	3381	0.490	0.248	0.014	0.934
Cash	3381	0.162	0.266	-0.512	0.920
Fix	3381	0.494	0.281	0.012	0.973
TTA	3381	0.336	0.261	0.004	0.969
Roa	3381	0.024	0.093	-0.343	0.356
Age	3381	3.105	0.244	2.303	3.526
Growth	3381	0.117	0.372	-0.624	2.527

IV. RESULT AND ANALAYSIS

A. Benchmark Regression

The baseline regression results are presented in Table 2. This study systematically examines the impact of ESG performance on corporate market value by constructing progressive regression models. Column (1) of Table 2 reports the baseline model without the inclusion of any control variables or fixed effects. The estimated coefficient for the comprehensive ESG score is positive and statistically significant at the 1% level, providing preliminary evidence of a positive association between ESG performance and corporate market value. Building upon Column (1), Column (2) further incorporates year fixed effects. The regression coefficient for the ESG score remains significant at the 1% level, indicating that this positive relationship is not confounded by unobservable time-varying factors. Column (3) presents the full model, which includes two-way fixed effects for both year and firm, as well as a full set of firm-level control variables. The estimation results reveal that the regression coefficient for ESG performance is 0.087, remaining highly significant at the 1% level. Regarding model fit, the R^2increases progressively from

0.014 in Column (1) to 0.635 in Column (3), demonstrating that the inclusion of control variables and the adjustment of fixed effects substantially enhance the model's explanatory power regarding the variation in market value. These progressive regression results consistently indicate that ESG performance exerts a robust and significantly positive effect on corporate market value. This conclusion holds across different model specifications and control conditions, thereby providing solid and consistent empirical evidence supporting Hypothesis 1 of this study.

Table 2 Baseline Regression Result

Variables	Tobin's Q (1)	Tobin's Q (2)	Tobin's Q (3)
Esg	0.035***	0.036***	0.032***
	(0.010)	(0.008)	(0.008)
Size			0.023
			(0.016)
Lev			0.917***
			(0.049)
Cash			-0.080***
			(0.030)
Fix			-0.043
			(0.049)
TTA			0.021
			(0.030)
Roa			0.512***
			(0.093)
Age			-0.028
			(0.032)
Growth			0.036**
			(0.018)
Constant	0.631***	0.629***	-0.439
	(0.031)	(0.024)	(0.462)
Firm & Year	No	Yes	Yes
Observations	3,381	3,381	3,381
R-squared	0.014	0.581	0.635

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

B. **Robustness Test**

a. Replace the dependent variable

In the baseline analysis, this study employs Tobin's Q, constructed as the ratio of the sum of market value and total liabilities to total assets, as the metric for corporate market value. Its primary purpose is to capture the extent to which market valuation exceeds the replacement cost of assets, thereby reflecting the value embedded in a firm's intangible assets and growth opportunities. However, the calculation of Tobin's Q relies on precise estimates of replacement cost—a variable that is often difficult to observe directly in practice and susceptible to distortions arising from accounting policies and industry characteristics, potentially compromising the reliability of the results. To conduct a more comprehensive assessment of the relationship between ESG performance and market value, this study further introduces the Price-to-Book Ratio (P/B) as an alternative dependent variable for robustness testing. The P/B ratio, expressed as the ratio of market price per share to book value per share, directly reflects the market's premium valuation of a firm's book value and provides a clearer indication of investor recognition of the firm's long-term value creation capacity. As reported in Column (1) of Table 3, the regression coefficient for the ESG score remains significantly positive at the 1% statistical level. This finding is highly consistent with the baseline regression results, further strengthening the empirical evidence supporting Hypothesis 1 and demonstrating that the positive effect of ESG performance on corporate market value remains robust across different metric specifications.

Table 3 Roboustness Test Result

Variables	Pricebook (1)	Tobin's Q (2)	Tobin's Q (3)	Tobin's Q (4)	Tobin's Q (5)
Esg	0.019***				
	(0.006)				
E		0.735***			
		(0.209)			
E			0.113***		
			(0.031)		
G				0.105***	
				(0.031)	
Esg					0.032***
					(0.009)
Constant	0.437	-0.740	-0.620	-0.429	-0.439
	(0.332)	(0.472)	(0.466)	(0.462)	(0.758)
Firm & Year	Yes	Yes	Yes	Yes	Yes
Controls Var	Yes	Yes	Yes	Yes	Yes
Observations	3,381	3,381	3,381	3,381	3,381
R-squared	0.517	0.634	0.634	0.634	0.635

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

b. Replace the independent variable

In the baseline analysis, the comprehensive Environmental, Social, and Governance (ESG) scores obtained from the Bloomberg and Indonesia Stock Exchange databases were employed as a measure of ESG performance. This approach primarily aimed to capture the firm's holistic level of practice across sustainability dimensions, thereby assessing the overall impact of composite ESG performance on corporate market value. However, while this aggregated indicator can reflect the total effect of ESG, it may obscure the heterogeneous influences among its distinct dimensions. The mechanisms, transmission pathways, and magnitude of impact may differ significantly across the Environmental (E), Social (S), and Governance (G) pillars. Relying solely on a composite measure makes it difficult to reveal the independent contribution of each dimension. Therefore, to conduct a more incisive analysis of the internal structure of ESG performance, this study further decomposes the comprehensive ESG indicator into three dimensional variables—Environmental (E), Social (S), and Governance (G)—to separately examine the differential effects of each dimension on corporate market value. These disaggregated metrics enable a more nuanced characterization of firm performance across distinct sustainability dimensions, thereby providing deeper insights into the pathways through which each ESG pillar influences market value. The robustness test results are presented in Table 3. In the regressions shown in Columns (2) through (4), the coefficients for the E, S, and G performance indicators are all significantly positive at the 1% level. This indicates that each of the three dimensions exerts a significant positive influence on corporate market value, which is highly consistent with the findings from the baseline regressions using the comprehensive ESG score. This further corroborates the positive effect of performance across individual ESG dimensions on enhancing firm valuation.

c. Adding High-Dimensional Effects

To mitigate concerns regarding endogeneity arising from potential omitted variables and to enhance the robustness of the estimation results to model specifications, this study introduces high-dimensional fixed effects models during the robustness testing phase. Specifically, by simultaneously incorporating industry, firm, and year fixed effects into the regression equation, and by clustering standard errors at the firm level, this approach effectively controls for the combined influence of inherent industry characteristics, firm-specific heterogeneity, and macroeconomic time trends, while also correcting for potential within-group correlation and heteroskedasticity issues. As shown in the estimation results from Column (5) of Table 3, after controlling for these multidimensional fixed effects, the regression coefficient for the comprehensive ESG score is 0.032 and passes the significance test at the 1% level. This result is highly consistent with the sign and significance of the ESG coefficient in the baseline regression, robustly confirming that the positive driving effect of ESG performance on corporate market value remains stable across different econometric strategies. This provides more solid empirical support for the core hypothesis.

C. Endogeneity Test

Considering the potential bidirectional causal relationship between ESG performance and corporate valuation, as well as the interference from unobservable factors, this study employs an instrumental variable approach to mitigate endogeneity bias. Specifically, following the classical approach of Bartik (1991), we construct the instrumental variable for a firm's ESG performance as the average ESG score of other firms operating in the same industry and year. The rationale for this choice is twofold: First, firms within the same industry exhibit high similarity in terms of institutional environment, market competitive pressure, and social norms, and their ESG decisions often demonstrate industry-level clustering characteristics. Consequently, the industry-average ESG level is significantly positively correlated with the firm's own ESG performance, satisfying the relevance condition for a valid instrument. Second, as an aggregated variable at the industry level, the industry-average ESG is unlikely to directly influence individual firm valuation through channels other than the firm's own ESG performance. Theoretically, it possesses strong exogeneity properties, thereby satisfying the exclusion restriction.

Table 4, Columns (1) and (2), report the regression results of the endogeneity test. The first-stage regression in Column (1) shows that the estimated coefficient of the instrumental variable (the average ESG score of other firms in the same industry and year) is 1.013, passing the significance test at the 1% level. This confirms a strong correlation between the instrument and the endogenous explanatory variable. The second-stage results in Column (2) reveal that the regression coefficient of the fitted ESG value is 0.162 and remains statistically significant at the 1% level, once again validating the positive driving effect of ESG performance on firm valuation. Regarding the validity diagnostics for the instrumental variable, the Cragg-Donald Wald F-statistic is 84.899, substantially exceeding the Stock-Yogo 10% critical value of 16.38, thereby ruling out the potential risk of weak instruments. Furthermore, the Anderson LM statistic is 92.329, significant at the 1% level, strongly rejecting the null hypothesis of under-identification. These findings demonstrate that, after fully accounting for endogeneity bias, the positive effect of ESG performance on corporate market value remains robust, providing further empirical support for the core findings revealed in the preceding baseline regression.

Table 4 Endogeniety Test Result

Variables	First Stage Esg (1)	Second Stage Tobin's Q (2)
IV	1.013*** (0.110)	
Esg		0.162*** (0.049)
Cragg-Donald		84.899
Anderson Statistic		92.329***
Stock-Yogo 10%		16.38
Firm & Year	Yes	Yes
Controls Var	Yes	Yes
Observations	3,381	3,381
R-squared		0.251

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

D. Heterogeneity Test

a. Firm Size

To investigate the firm size heterogeneity of the ESG effect, this study follows the grouping approach of Azemi & Khairunnisa (2025) and divides the full sample into two groups—large firms and small and medium-sized enterprises (SMEs)—based on the median of total assets for regression analysis. The estimation results presented in Columns (1) and (2) of Table 5 show that in the large firm group, the coefficient for the ESG score is 0.020, significant at the 5% level. In contrast, in the SME group, the ESG coefficient is 0.044, with significance level improving to 1%. This finding indicates that the enhancing effect of ESG performance on market value is more pronounced for SMEs. The observed differential effect may stem from structural divergences across firms of different sizes in terms of resource base, information environment, and stakeholder attention. Specifically, large firms typically have already established relatively comprehensive information disclosure mechanisms and internal governance systems. Their market value, to some extent, has already partially internalized the long-term benefits of ESG practices, leaving relatively limited marginal room for enhancement through ESG performance. By comparison, SMEs generally face higher degrees of information

asymmetry and greater financing constraints. Proactively implementing ESG practices helps signal credible commitments to compliant operations and sustainable development to the capital market, thereby more substantially repairing investor expectations, reducing financing costs, and enhancing firm valuation. This finding suggests that ESG practices play a more significant value-enhancing role in SMEs, providing heterogeneous evidence for the effectiveness of corporate sustainable development strategies in the context of emerging markets.

Table 5 Heterogeniety Test Result

	Big-Firm	Small-Firm	High-Profitability	Low-Profitability	Pollution	Non-Pollution
Variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
Esg	0.020**	0.044***	0.045***	0.018	-0.037***	0.028***
	(0.010)	(0.012)	(0.011)	(0.011)	(-0.012)	(0.010)
Constant	-0.022	0.342	-0.121	-0.403	0.114	-0.689
	(1.047)	(0.649)	(0.630)	(0.913)	(0.657)	(0.685)
Firm & Year	Yes	Yes	Yes	Yes	Yes	Yes
Controls Var	Yes	Yes	Yes	Yes	Yes	Yes
Boostrap test	0.084		0.058		0.029	
Observations	1,887	1,494	1,691	1,638	1,439	1,942
R-squared	0.705	0.577	0.664	0.665	0.613	0.655

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

b. Profitability Level

To examine the heterogeneity of the ESG value effect with profitability levels, this study follows the grouping approach of Azemi & Khairunnisa (2026) and divides the sample into two groups—high-profitability firms and low-profitability firms—based on the median ROE for regression analysis. The regression results presented in Columns (3) and (4) of Table 5 show that in the high-profitability group, the coefficient for the ESG score is 0.045, passing the significance test at the 1% level. This confirms the positive impact of ESG performance on the valuation of high-profitability firms. In contrast, in the low-profitability group, the ESG coefficient is 0.018 and statistically insignificant, indicating that ESG practices have not yet demonstrated a significant value-enhancing effect in firms with weak profitability. This differential effect may stem from the fact that high-profitability firms, by virtue of their robust financial foundation and ample discretionary resources, can internalize ESG investments into differentiated competitive advantages, thereby garnering recognition and premiums from the capital market. Conversely, low-profitability firms, constrained by limited financial flexibility and short-term survival pressures, often find it difficult to translate their ESG efforts into substantive strategic support. Such efforts may even be interpreted by investors as a signal of diverting resources from core business activities, thereby attenuating the market value effect of ESG performance.

c. Environmental Sensitivity

To investigate the heterogeneity of the ESG effect with respect to corporate environmental sensitivity, this study follows the grouping approach of Azemi & Khairunnisa (2025) and divides the full sample into polluting and non-polluting industry groups based on the industry classification system of the Indonesia Stock Exchange for regression analysis. The empirical results presented in Columns (5) and (6) of Table 5 reveal that the signs of the ESG coefficients are diametrically opposite across the two groups. In the polluting industry group, the coefficient for the ESG score is -0.037, passing the significance test at the 1% level with a negative direction, indicating a negative association between ESG practices and market valuation for firms in this group. Conversely, in the non-polluting industry group, the ESG coefficient is 0.028, also significantly positive at the 1% level, confirming the positive contribution of ESG performance to the value of non-polluting firms. This divergent pattern reveals that the market's interpretation of ESG information exhibits significant industry dependence. The underlying logic may stem from the fact that for firms in polluting industries, improvements in ESG performance are often perceived by investors as passive compliance behavior in response to regulatory pressure. The accompanying pollution abatement expenditures and production constraints may weaken short-term financial performance, thereby depressing firm valuation. In contrast, for non-polluting industries, ESG practices are viewed as strategic investments through which firms proactively assume environmental responsibility and build sustainable competitive advantages. Such practices can effectively enhance brand value and social recognition, subsequently translating into

positive feedback from the capital market. This finding highlights the critical moderating role of industry environmental sensitivity in shaping the ESG value effect within the context of Indonesia's emerging market.

E. Mechanism Test

To uncover the potential transmission pathways through which ESG performance drives the enhancement of corporate market value, this study, following the approach of Azemi & Khairunnisa (2025), selects the Current Ratio as a mechanism variable for empirical testing. This indicator, defined as the ratio of current assets to current liabilities, serves as a measure of a firm's short-term solvency and the efficiency of its capital operations. From an economic perspective, firstly, sound ESG management—such as fostering strong supplier relationships under the Social dimension and maintaining robust internal controls under the Governance dimension—can enhance working capital management. This accelerates the recovery of accounts receivable and optimizes inventory management, thereby improving the quality of current assets. Secondly, firms with superior ESG performance often find it easier to obtain trade credit (accounts payable) and short-term bank loans, which helps optimize their current liability structure. Finally, investments in the Environmental and Social dimensions can mitigate the risk of unexpected cash outflows arising from environmental fines, lawsuits, or strikes, making corporate cash flows more predictable. Consequently, such firms may not need to hold excessive precautionary cash reserves while still being able to maintain a healthy current ratio. Based on this rationale, this study constructs a recursive mediation model to investigate whether ESG performance influences market value by improving corporate liquidity conditions.

To further clarify the pathway mechanisms of ESG value creation, this study, referencing the standard framework for mediation analysis Amanova et al. (2025), selects Operating Margin as a process variable for testing. This indicator, defined as earnings before interest and taxes (EBIT) as a percentage of operating revenue, measures the profitability efficiency and cost control capability of a firm's core business. From an economic perspective, first, concerning the Environmental (E) dimension: through energy conservation, consumption reduction, and resource recycling, firms can directly reduce variable costs such as water, electricity, and raw materials. Regarding the Social (S) dimension: improving employee relations and providing training can reduce employee turnover, lower recruitment and training costs, and increase output per employee. Regarding the Governance (G) dimension: optimizing internal controls and supply chain management reduces efficiency losses caused by waste and corruption. Second, a strong ESG reputation can establish a brand moat, enabling products to command a green premium in the market, as consumers are willing to pay higher prices for sustainable products, thereby enhancing per-unit product profitability. Finally, ESG improvements reduce expenditures on fines and legal proceedings related to environmental pollution, as well as losses from work stoppages due to safety incidents. These directly reduce non-recurring losses in the income statement, thus protecting profit margins. Based on this rationale, this study constructs a recursive mediation model to investigate whether ESG performance influences corporate market value by enhancing operating profit margins. The following models are constructed for empirical testing:

$$Esg_{it} = \beta_0 + \beta_1 Cr_{it} + \beta_2 Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (2)$$

$$Tobin's\ Q_{it} = \emptyset_0 + \emptyset_1 Esg_{it} + \emptyset_2 Cr_{it} + \emptyset_3 Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (3)$$

$$Esg_{it} = \beta_0 + \beta_1 Opm_{it} + \beta_2 Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (4)$$

$$Tobin's\ Q_{it} = \emptyset_0 + \emptyset_1 Esg_{it} + \emptyset_2 Opm_{it} + \emptyset_3 Control_{it} + \delta_i + \mu_t + \varepsilon_{it} \quad (5)$$

In Equation (2), with the Current Ratio (Cr_{it}) as the dependent variable, we assess the intensity of the effect of ESG performance on a firm's liquidity management capability. Equation (3) incorporates the Current Ratio into the baseline model as a mediating variable to identify whether ESG indirectly drives valuation enhancement by strengthening a firm's short-term solvency. In Equation (4), the Operating Margin (Opm_{it}) is set as the dependent variable to examine the effect of ESG performance on a firm's profitability efficiency. Equation (5) then introduces the Operating Margin into the baseline model as a mediating variable to test whether profitability constitutes another transmission pathway through which ESG influences corporate market value. In all the above equations, the selection of control variables and the specification of fixed effects are consistent with those employed in the baseline regression.

Table 6 Mechanism Test Result

Variables	Current Ratio (1)	Tobin's Q (2)	Operating Margin (3)	Tobin's Q (4)
Esg	0.010*	0.030***		
	(0.005)	(0.008)		

Current Ratio		0.083***		
		(0.026)		
Esg			0.091***	0.027***
			(0.006)	(0.008)
Operating Margin				0.048*
				(0.025)
Constant	0.621*	-0.490	-1.193***	-0.381
	(0.327)	(0.462)	(0.341)	(0.463)
Firm & Year	Yes	Yes	Yes	Yes
Controls Var	Yes	Yes	Yes	Yes
Sobel Z value	2.017**		1.932*	
Goodman-1	2.063**		1.928*	
Goodman-2	2.078**		1.936*	
Observations	3,381	3,381	3,381	3,381
R-squared	0.377	0.636	0.615	0.635

Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Examining the estimation results presented in Table 6, Column (1) shows that the coefficient of ESG on the Current Ratio is 0.010 ($p < 0.1$), confirming that ESG practices have a positive promoting effect on liquidity. In Column (2), the coefficient of the Current Ratio on Tobin's Q is 0.083 ($p < 0.01$), while the direct effect of ESG remains significantly positive (0.030, $p < 0.01$). The mediation effect test reveals that the Sobel statistic is 2.017 ($p < 0.05$), and the Goodman test results are consistent, confirming the existence of a mediation effect through the liquidity channel. In summary, ESG performance is partially transmitted to the enhancement of market value by strengthening corporate financial flexibility and the liquidity safety margin. This finding deepens the understanding of the value creation mechanism of ESG, providing empirical evidence supporting Hypothesis 2.

Furthermore, examining the estimation results presented in Table 6, Column (3) shows that the coefficient of ESG on Operating Margin is 0.091 ($p < 0.01$), confirming that ESG practices have a significant positive impact on core profitability. In Column (4), the coefficient of Operating Margin on Tobin's Q is 0.048 ($p < 0.1$), while the direct effect of ESG remains significantly positive (0.027, $p < 0.01$). The mediation effect test reveals that the Sobel statistic is 1.932 ($p < 0.1$), and the Goodman test results are broadly consistent, preliminarily confirming the existence of a mediation effect through the profitability channel. In summary, ESG performance is partially transmitted to the enhancement of market value by strengthening corporate operational efficiency and profit quality. This finding reveals the micro-mechanism of ESG value creation from the perspective of profitability, providing empirical evidence supporting Hypothesis 3.

CONCLUSSION

This study takes Indonesian listed companies as the research object to systematically investigate the impact effects, heterogeneity characteristics, and underlying mechanisms of ESG performance on corporate market value. Based on panel data from 2016 to 2025, a rigorous empirical analysis is conducted on 3,381 firm-year observations from 339 Indonesian listed companies, comprehensively employing two-way fixed-effects models, instrumental variable methods, grouped regressions, and recursive mediation models.

The main findings are as follows: First, ESG performance exerts a significant and robust positive effect on corporate market value. After controlling for year and firm two-way fixed effects along with a series of control variables, the regression coefficient of the comprehensive ESG score is significantly positive at the 1% level. This conclusion remains valid after multiple robustness checks, including replacement of the dependent variable, disaggregation of explanatory variable dimensions, and introduction of high-dimensional fixed effects. Furthermore, after mitigating endogeneity bias by employing the industry-year average ESG score of other firms as an instrumental variable, the positive effect of ESG remains highly significant, indicating that ESG practices can indeed enhance a firm's valuation level in the capital market.

Second, the value effect of ESG performance exhibits significant heterogeneity characteristics. (1) At the firm size level, the enhancing effect of ESG on the market value of small and medium-sized enterprises (0.044, $p < 0.01$) is stronger than that on large enterprises (0.020, $p < 0.05$), suggesting that ESG practices play a more critical value-signaling function in alleviating information asymmetry and financing constraints for SMEs. (2) Regarding profitability levels, ESG shows a significant positive effect only in high-profitability firms (0.045, $p < 0.01$), while the effect is insignificant in low-profitability firms, indicating that a robust financial foundation is an important prerequisite for ESG value transformation. (3) Concerning environmental sensitivity, ESG performance

has a significant positive effect on firms in non-polluting industries (0.028, $p < 0.01$) but demonstrates a significant negative association for firms in polluting industries (-0.037, $p < 0.01$). This reveals a profound industry dependence in the market's interpretation of ESG information, as ESG investments by polluting firms may be perceived by investors as compliance costs rather than strategic investments.

Finally, ESG performance indirectly drives market value enhancement through two pathways: improving corporate liquidity conditions and enhancing core profitability. Mechanism tests indicate that ESG practices significantly strengthen firms' short-term solvency (current ratio) and operational efficiency (operating margin), with both exhibiting significant partial mediation effects between ESG and Tobin's Q. The Sobel test values reach 2.017 ($p < 0.05$) and 1.932 ($p < 0.1$), respectively, confirming that financial flexibility channels and profit quality channels are important transmission mechanisms for ESG value creation.

The conclusions of this study not only provide micro-level evidence from the Indonesian capital market on the relationship between ESG performance and corporate value in emerging market contexts, enriching the heterogeneous research literature in the field of ESG economic consequences, but also elucidate the intrinsic mechanisms of ESG value creation from the dual perspectives of liquidity and profitability. This offers theoretical support for understanding "how" and "for whom" ESG more effectively enhances corporate value. At the practical level, the research findings provide empirical evidence for Indonesian enterprises to formulate differentiated ESG strategies, for investors to construct refined investment portfolios, and for regulatory authorities to design targeted policy support systems.

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