



Do Sustainable Banks Perform Better? Evidence from The Interplay of Financial Health and ESG Disclosure in Developing Asia Countries

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Abstract

Purpose – This study aims to examine the impact of banks' financial health, proxied by the Loan-to-Deposit Ratio (LDR) and Debt-to-Equity Ratio (DER), on bank market value, measured using Tobin's Q, in developing Asian economies. In addition, the study investigates whether ESG disclosure serves as a mediating mechanism through which financial health is translated into firm value.

Methodology – The study employs a quantitative approach using an unbalanced panel dataset covering 102 banks from developing Asian countries over the period 2009–2023, yielding 1,695 observations. Secondary data are obtained from the Bloomberg Terminal. Empirical analysis is conducted using panel regression with robust standard errors, incorporating country and year fixed effects. The mediating role of ESG disclosure is examined using path analysis and the Sobel test.

Findings – The results indicate that LDR has a positive and significant effect on Tobin's Q, while DER has a negative and significant effect. ESG disclosure positively affects bank value and mediates the relationship between LDR and Tobin's Q, but not between DER and firm value. These findings suggest that ESG disclosure strengthens liquidity signals but cannot offset the adverse valuation effects of excessive leverage.

Originality – This study integrates financial health indicators and ESG disclosure within a mediation framework, demonstrating that ESG disclosure complements financial fundamentals and enhances market valuation when supported by sound liquidity conditions in developing Asian economies.

1. Introduction

Banks in emerging Asian economies increasingly operate under a dual imperative: 1). sustaining financial resilience in volatile environments; 2). responding to intensifying demands for Environmental, Social, and Governance (ESG) disclosure. At the global level, the empirical literature provides mixed evidence on whether sustainable banks outperform their conventional counterparts. Higher market valuation, reduced risk exposure, and more resilience during financial

stress are related with superior ESG performance, according to several studies in developed markets. This is because ESG performance reflects improvements in governance quality, risk management, and stakeholder trust (Ersoy et al., 2022; Gangwani & Kashiramka, 2024). Conversely, the financial benefits of ESG engagement are highly context dependent, shaped by institutional quality, regulatory enforcement, and the credibility of sustainability reporting, with symbolic or superficial disclosure often failing to generate value relevant signals for investors (Buallay, 2019a; El Khoury et al., 2023)

These ambiguities are particularly salient in emerging Asian economies, where structural fragilities such as persistently high non performing loans, elevated leverage, fragmented regulatory regimes, and underdeveloped risk management systems continue to constrain banking sector stability (Linnenluecke, 2022). Within this context, ESG disclosure has expanded rapidly but unevenly, frequently reflecting compliance oriented practices rather than substantive integration into core financial strategies. As a result, the extent to which ESG initiatives enhance bank performance and market confidence in emerging Asia remains empirically unresolved, especially when underlying financial vulnerabilities persist.

The Indonesian banking sector illustrates these broader regional dynamics. While ESG disclosure among Indonesian banks has increased in response to regulatory initiatives and global sustainability norms, empirical evidence indicates that such disclosure does not consistently translate into superior profitability or market valuation. Instead, ESG appears to be value relevant primarily when supported by strong financial fundamentals, particularly sound liquidity management and credible governance structures (Angir & Weli, 2024; Cai et al., 2024; Chairani & Siregar, 2021). This pattern suggests that, in Indonesia and comparable emerging markets, ESG disclosure functions as a complementary mechanism that reinforces financial strength rather than as a substitute for weak balance sheet conditions.

A synthesis of the findings from the theories of agency, legitimacy, stakeholders, and signaling provides a theoretical framework for understanding this interplay. While acknowledging the possibility of opportunistic actions involving selective disclosure or greenwashing, agency theory highlights the importance of ESG disclosure in mitigating information asymmetry between managers and investors (Ghitti et al., 2024; Nazliben et al., 2024). Legitimacy and stakeholder theories conceptualize ESG report as a means for banks to align with societal expectations and stakeholder interests, thereby strengthening organizational legitimacy and trust (Bahadori et al., 2021). Signaling theory further suggests that ESG disclosure does not operate in isolation but interacts with traditional financial signals to shape investor perceptions, particularly in environments characterized by uncertainty and asymmetric information.

In banking, conventional financial ratios most notably the Loan to Deposit Ratio (LDR) and the Debt to Equity Ratio (DER) remain central indicators of liquidity and leverage, guiding investor assessments of stability and risk exposure (Eng et al., 2022; Ersoy et al., 2022). As capital markets increasingly internalize sustainability considerations, ESG disclosure has emerged as an additional signal that may enhance credibility, reduce perceived risk, and strengthen market confidence. Empirical studies show that credible ESG disclosure can lower funding costs, attract socially responsible investors, and improve resilience during periods of market stress (Elamer et al., 2024; García-Meca et al., 2025). However, the effectiveness of ESG as a signal critically depends on its consistency with underlying financial conditions.

Recent evidence increasingly indicates that ESG disclosure interacts with financial fundamentals rather than exerting an independent effect on performance. Banks with strong liquidity positions and prudent leverage are better positioned to implement credible ESG initiatives, thereby enhancing reputational capital and market valuation. In contrast, when ESG

disclosure is symbolic and unsupported by sound financial health, it fails to improve performance or investor trust (El Khoury et al., 2023; Mulchandani et al., 2022; Said & ElBannan, 2024). These findings imply that sustainable bank performance emerges from the joint influence of financial health and ESG transparency, rather than from either dimension in isolation.

Despite the growing emphasis on sustainable banking, evidence on how financial health and ESG disclosure jointly influence bank valuation in developing Asian economies remains inconclusive. Accordingly, this study addresses the following research questions: **(1)** How do financial health indicators, namely the Loan to Deposit Ratio (LDR) and the Debt to Equity Ratio (DER), affect bank valuation? **(2)** Does ESG disclosure influence bank valuation? and **(3)** Does ESG disclosure mediate the relationship between financial health indicators and bank valuation? Based on these questions, the purpose of this study is to examine the impact of LDR and DER on bank valuation in developing Asian economies using Tobin's Q as a proxy for market value, and to test whether ESG disclosure serves as a mediating mechanism that enhances market confidence by translating financial stability into firm value.

This study contributes conceptually by extending firm valuation and signaling theories through the mediating role of ESG disclosure (W. Hu et al., 2023). Practically, it provides insights for regulators, investors, and bank managers on integrating ESG considerations with financial strategies (Alkayed et al., 2024; Elamer et al., 2024). Empirically, it offers cross country evidence from developing Asian economies, contributing to the ongoing debate on sustainable banking performance in emerging markets.

1.1. The Loan-to-Deposit Ratio (LDR) and Firm Value

The Loan-to-Deposit Ratio (LDR) is a core indicator of bank liquidity management and serves as a critical financial signal in shaping market valuation, particularly as reflected by Tobin's Q. From a signaling theory perspective, LDR conveys information about how effectively a bank transforms deposits into earning assets while maintaining sufficient liquidity buffers. A balanced LDR indicates prudent intermediation, signaling financial resilience and disciplined risk management, which are positively perceived by investors. In banking markets characterized by information asymmetry, such signals are essential for reducing uncertainty and strengthening market confidence (Eng et al., 2022; Ersoy et al., 2022).

However, the valuation implications of LDR are inherently non-linear. An excessively high LDR defined as a condition in which loan expansion substantially outpaces deposit growth signals heightened liquidity risk and reduced capacity to absorb funding shocks. In volatile economic environments, such liquidity pressure increases exposure to cash flow shortfalls, elevates refinancing risk, and weakens solvency expectations, thereby exerting downward pressure on market valuation (Bilivogui & Iqbal, 2025; Liu & Xie, 2024). From a practical standpoint, banks operating with very high LDRs are perceived as aggressively leveraged institutions, which undermines investor trust and increases the risk premium demanded by capital markets.

Conversely, an excessively low LDR reflects inefficient utilization of deposits, signaling conservative lending behavior or weak credit demand. While such a position may reduce liquidity risk, it constrains income generation and profitability, ultimately limiting value creation and depressing market valuation (El Khoury et al., 2023; Saha & Khan, 2024). This condition may also signal suboptimal management decisions, as idle liquidity implies missed growth opportunities and weak intermediation efficiency.

Integrating these financial signals with sustainability considerations further reinforces the relevance of LDR for firm value. Banks that maintain an optimal LDR are better positioned to support credible Environmental, Social, and Governance (ESG) initiatives, as robust liquidity

management provides financial capacity which required for long-term sustainability investments. Credible ESG engagement, when supported by prudent liquidity conditions, enhances reputational capital and reinforces investor confidence, thereby strengthening the positive valuation effects of balanced liquidity management (Hussain et al., 2025). In contrast, ESG disclosures which issued by banks with extreme LDR positions either excessively high or excessively low are less likely to be considered as credible signals of sustainable value creation

Overall, both theoretical reasoning and empirical evidence suggest that LDR plays a significant role in shaping bank valuation by signaling liquidity discipline, risk exposure, and sustainability capacity. Accordingly, this study proposes the following hypothesis:

H₁: Loan to Deposit Ratio (LDR) has a significant effect on Tobin's Q

1.2. Debt-to-Equity Ratio (DER) and Value of the Firm

Debt-Equity Ratio (DER) is an important coefficient in determining the value of company, which represents how efficiently the company can generate debt financing with equity capital. A conservative DER achieves the best capital structure, as it can reduce too much leverage which caused risk and benefit from the proceeds of debt-financed growth at the same time. Some studies had found that firms with moderate leverage were likely to perform better than those with too little or too much leverage in terms of greater financial performance and high Tobin's Q, since optimal level of leverage minimizes capital costs and maximized operation (Tanjung, 2023; Wu & Chang, 2022). This balances cost consciousness with growth potential, increasing market valuation.

Excessive DER levels, however, can elevate default risks and amplify investor concerns, especially when accompanied by weak ESG practices. Studies show that high debt exposure exacerbates vulnerabilities to liquidity and solvency challenges, ultimately depressing Tobin's Q (Gangwani & Kashiramka, 2024; Liu & Xie, 2024). Standard-corporate risk factors may therefore be mitigated in firms where ESG commitments are integrated in their governance systems sufficiency, as solid sustainability practices standby investor confidence and lowers the cost of financing (Eliwa et al., 2021; Sidney & Liao, 2025).

The interplay between DER and ESG disclosure underscores that capital structure decisions cannot be viewed in isolation. Evidence indicates that firms with moderate DER and robust ESG reporting are better positioned to sustain market confidence, adapt to competitive pressures, and enhance Tobin's Q (Dkhili, 2024; Jung & Yoo, 2023; Maccarrone et al., 2024). Thus, DER functions not only as a financial indicator but also as a strategic signal of long-term value creation.

H₂: Debt-Equity Ratio (DER) has a significant effect on Tobin's Q

1.3. ESG Disclosure and Firm Value

The disclosure of Environmental, Social, and Governance (ESG) information has a significant impact on market value. By reducing information asymmetry, ESG transparency signals long-term stability and lowers investors' uncertainty about firm performance. According to signaling theory, voluntary ESG reporting conveys essential insights into corporate risk management and future viability, thereby fostering stronger investor confidence (Feng et al., 2022; Zhou et al., 2023).

Reputation ESG disclosure benefits also play a major part in market valuation. Research indicates that companies with strong ESG reporting obtain more support from stakeholders to enhance their legitimacy, develop better relationships that increase public confidence, and improve their brand image (Adeneye et al., 2022; Amarna et al., 2024). In high scrutinized industries, transparent ESG communication reduces reputational risks and signals of ethical governance,

which directly reinforces Tobin's Q through heightened stakeholder loyalty (Hammami & Hendijani Zadeh, 2019).

From a financial perspective, ESG transparency is linked to lower capital costs and improved financing conditions. Empirical evidence shows that firms with higher ESG scores often secure more favorable lending terms, as lenders and investors perceive reduced risks of insolvency and default (Eliwa et al., 2021; Maji & Lohia, 2023; Yu et al., 2025). In weaker legal or regulatory environments, ESG scores can even substitute for institutional safeguards, further reinforcing their value in sustaining higher Tobin's Q (Priem & Gabellone, 2024).

H₃: The ESG Disclosure has a significant effect on Tobin's Q

1.4. ESG Disclosure as a Mediator between LDR, DER, and Tobin's Q

The Loan-to-Deposit Ratio (LDR) and Debt-to-Equity Ratio (DER) are central indicators of financial health, yet their effect on market valuation, as measured by Tobin's Q, is often contingent on broader governance practices. Firms with excessively high LDR or DER frequently signal elevated risk, which may reduce investor confidence. In such contexts, Environmental, Social, and Governance (ESG) disclosure emerges as a vital mediator, transforming financial signals into reputational advantages that enhance firm valuation (Gangwani & Kashiramka, 2024; Wei & Chengshu, 2024).

A well-balanced LDR indicates prudent liquidity management, but even when liquidity risks are present, robust ESG disclosure can reshape stakeholder perceptions. By providing transparency on sustainability commitments, firms alleviate investor concerns associated with high leverage, thus preserving or even enhancing Tobin's Q. Alareeni and Hamdan (2020) confirmed that stronger ESG practices consistently correlate with higher market valuations, suggesting that ESG transparency enables firms to convert financial stability into long-term reputational gains. This dynamic underscores that ESG acts not merely as an add-on but as a bridge between liquidity management and market confidence.

Similarly, the DER reflects capital structure efficiency, yet excessive debt financing can heighten default risks. ESG disclosure mediates this relationship by signaling strong governance and ethical responsibility, which may offset concerns over high leverage. Empirical evidence shows that firms with transparent ESG reporting gain better access to financing and face lower capital costs, directly improving their market valuations (Amarna et al., 2024; Eliwa et al., 2021; X. Hu et al., 2023). Zhu (2024) further argue that firms engaging in proactive ESG disclosure strengthen creditor trust, mitigating the adverse perceptions linked to high DER and reinforcing market value as reflected in Tobin's Q.

The mediating power of ESG is further highlighted by its ability to reduce agency costs and information asymmetry. By disclosing credible ESG data, firms improve stakeholder trust, enabling them to attract investment even under financial strain (Khandelwal et al., 2023). This transparency not only buffers the risks of high leverage but also enhances the positive effects of optimal LDR and DER levels, reinforcing their influence on Tobin's Q. Thus, ESG disclosure operates as a reputational and financial conduit, ensuring that leverage ratios translate into sustained value creation in the eyes of the market.

H_{4a}: ESG disclosure mediates the relationship between LDR and Tobin's Q

H_{4b}: ESG disclosure mediates the relationship between DER and Tobin's Q

2. Research Methods

This study adopts a quantitative research design to examine whether sustainable banks exhibit superior market performance through the interaction between financial health and

Environmental, Social, and Governance (ESG) disclosure. Firm performance is measured by Tobin’s Q, which captures market-based valuation and reflects investors’ forward-looking assessments. The key independent variables are the Loan-to-Deposit Ratio (LDR) and the Debt-to-Equity Ratio (DER), selected to represent banks’ core dimensions of financial health liquidity and leverage, respectively. The choice of LDR is motivated by its central role in banking intermediation and liquidity risk management, as it reflects how efficiently banks transform deposits into loans while maintaining sufficient liquidity buffers. Similarly, DER captures capital structure risk by indicating the extent to which banks rely on debt financing relative to equity, where excessive leverage may heighten financial distress risk and undermine market confidence.

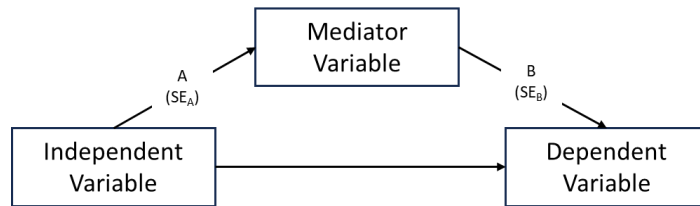


Figure 1. Path Analysis Diagram

ESG disclosure scores are incorporated as a mediating variable to examine whether sustainability transparency serves as a channel through which financial health is translated into market confidence. Several control variables are included to account for firm-specific and macro-level influences, namely profitability measured by return on assets (ROA), firm size proxied by the natural logarithm of total assets, as well as country and year fixed effects. Given the availability of bank-level data across multiple countries and time periods, the study employs an unbalanced panel dataset covering the period 2009–2023. The conceptual framework and hypothesized relationships among the variables are illustrated in the Path Analysis Diagram presented in (Figure 1).

2.1. ESG Disclosure as a Mediator between LDR, DER, and Tobin’s Q

This study focuses on commercial banks located in developing countries in Asia. A purposive sampling technique was employed to select the sample based on specific criteria relevant to the research objectives. The sample included only commercial banks that consistently published both annual reports and sustainability reports during the period from 2009 to 2023.

Table 1. Sample Selection

Country	Banks with Complete Data	Total Sample	Percentage (%)
Bangladesh	1	15	0.88
China	19	285	16.81
India	26	390	23.01
Indonesia	17	255	15.04
Kazakhstan	1	15	0.88
Malaysia	10	150	8.85
Pakistan	9	135	7.96
Philippines	9	135	7.96
Sri Lanka	2	30	1.77
Thailand	10	150	8.85
Vietnam	9	135	7.96
Total	113	1695	100.0

Source: processed data

In addition, the selected banks were required to disclose sustainability performance reports in accordance with the Global Reporting Initiative (GRI) framework. Furthermore, only banks with complete and accessible data for all research variables throughout the entire observation period were included in the study to ensure the reliability and consistency of the analysis.

These criteria aim to create research sample containing banks not only in the operation in developing Asia but also that committed to financial transparency and adoption of ESG practices. Accordingly, the chosen sample is highly appropriate for identifying the behavior of the banking industry in the regional dimension. The study is using Secondary data which were obtained from the Bloomberg Terminal, and provides standardized financial and non-financial indicators. Financial data, including Tobin's Q, LDR, DER, ROA, and total assets, were extracted from audited annual reports. ESG disclosure scores were collected from Bloomberg's ESG database, which is constructed based on GRI reporting standards. The final sample selection produced 102 banks with a total of 1,695 observations, as shown in (Table 1).

2.2. Variable Measurement

The study employs firm performance, measured by Tobin's Q, as the dependent variable, which is calculated as the market value of equity plus total liabilities divided by total assets (Gugler et al., 2004; Kim et al., 2015; Liao et al., 2025; Zaleski, 2024). The independent variables consist of the Loan-to-Deposit Ratio (LDR), measured as the ratio of total loans to total customer deposits (Ali et al., 2019, 2022; Sumani & Vily, 2017; Suryaman & Limakrisna, 2017), and the Debt-to-Equity Ratio (DER), measured as the ratio of total debt to total equity (Ali & Shaik, 2022; Alzubi & Bani-Hani, 2021; Tambunan et al., 2020). ESG Disclosure Scores serve as the mediating variable and are represented by Bloomberg ESG scores, which reflect the extent of sustainability disclosure across economic, social, and environmental dimensions (Eng et al., 2022; Meng & Shaikh, 2023; Tamimi & Sebastianelli, 2017).

Furthermore, the analysis incorporates several control variables, including Return on Assets (ROA), measured as net income divided by total assets (Iswajuni et al., 2018; Melina & Endri, 2024; Rahmawati et al., 2018; Titisari et al., 2020; Yudawisastra & Roespinoedji, 2019); firm size, measured as the natural logarithm of total assets (Ceylan et al., 2018; Durguti & Durguti, 2022; Topak & Talu, 2016); country, represented by a dummy variable to control for national effects (Claessens et al., 2023; Dialga & Ouoba, 2022; Kurbucz, 2022); and year, represented by a dummy variable to control for time-fixed effects (Asrori et al., 2024; Nasserinia et al., 2017). To test the proposed hypotheses, panel regression analysis is employed, and the empirical models are specified as follows:

Direct Effect of Financial Health on Firm Performance

$$TQ_{it} = \alpha + \beta_1 LDR_{it} + \beta_2 DER_{it} + \beta_3 PROF_{it} + \beta_4 SIZE_{it} + \beta_5 CTRY + \beta_6 YEAR + \epsilon_{it} \quad (1)$$

Effect of Financial Health on ESG Disclosure

$$ESGD_{it} = \alpha + \beta_1 LDR_{it} + \beta_2 DER_{it} + \beta_3 PROF_{it} + \beta_4 SIZE_{it} + \beta_5 CTRY + \beta_6 YEAR + \epsilon_{it} \quad (2)$$

Mediation Model

$$TQ_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 LDR_{it} + \beta_3 DER_{it} + \beta_4 PROF_{it} + \beta_5 SIZE_{it} + \beta_6 CTRY + \beta_7 YEAR + \epsilon_{it} \quad (3)$$

In the context of mediation, the relationship between the independent variables (DER and LDR) and the dependent variable (TQ) is hypothesized to occur indirectly through ESGD. Accordingly, when ESGD is included in the regression model together with DER and LDR, the

direct effect of DER and LDR on TQ is expected to decrease, while the effect of ESGD remains significant. The Sobel test determines whether this reduction is statistically significant, thereby confirming the presence of a mediation effect. The respective regression equations can be expressed as:

$$\text{ESGD}_{it} = \alpha + \rho_1 \text{LDR}_{it} + \rho_2 \text{DER}_{it} + \varepsilon_{it} \quad (4)$$

$$\text{TQ}_{it} = \alpha + \rho_3 \text{ESGD}_{it} + \varepsilon \quad (5)$$

$$\text{TQ}_{it} = \alpha + \rho_4 \text{LDR}_{it} + \rho_5 \text{DER}_{it} + \text{ESGD}_{it} + \varepsilon_{it} \quad (6)$$

The study employs Ordinary Least Squares (OLS) panel regression analysis. Robust standard errors are applied to address potential heteroscedasticity issues. Country and year fixed effects are incorporated to control for unobserved heterogeneity across countries and time periods. All statistical analyses are performed using Stata version 17.

3. Results and Discussions

Descriptive analysis is conducted to summarize the characteristics of the research data. The analysis includes minimum, maximum, mean, and standard deviation values for each variable. These statistics provide an initial overview of firm value, leverage, profitability, firm size, and ESG disclosure. The results are presented in the following table.

Table 2. Descriptive Statistics of Research Data

	TQ	LDR	DER	ESGD	PROF	SIZE
N	1489	1604	1628	1256	1610	1628
Min	0.958	1.43	0.344	46.207	0.423	25.918
Max	1.167	2.72	4.063	87.718	2.106	33.173
SD	0.066	0.403	1.205	13.461	0.516	2.353
Mean	1.032	2.06	1.619	71.922	1.166	28.683

Source: processed data

Based on the data presented in the table, it can be inferred that the research variables exhibit considerable variation in their characteristics. The average value of Tobin's Q (TQ) is 1.032, accompanied by a relatively low standard deviation of 0.066, suggesting a stable level of firm value among the sampled companies. The Loan-to-Deposit Ratio (LDR) has an average of 2.06 with a moderate degree of dispersion, while the Debt-to-Equity Ratio (DER) records a mean of 1.619 and a higher standard deviation of 1.205, indicating notable heterogeneity in firms' capital structures. Furthermore, the Environmental, Social, and Governance Disclosure (ESGD) variable displays an average of 71.922, ranging between 46.207 and 87.718, which implies significant variation in the extent of sustainability disclosure across firms. Profitability (PROF) demonstrates a mean value of 1.166 with moderate fluctuations, whereas firm size (SIZE) averages 28.683, suggesting that the sample is predominantly composed of large firms with relatively controlled variation in size.

There was a lot of character diversity among the research variables, according to the data in the table above. The sample companies exhibited a consistent level of firm value, as indicated by the average Tobin's Q (TQ) value of 1.032 and a comparatively low standard deviation of 0.066. While the LDR averaged 2.06 with a reasonable amount of dispersion, the DER averaged 1.619

with a greater standard deviation of 1.205, showing that the capital structures of enterprises were significantly more heterogeneous. The Environmental, Social, and Governance Disclosure (ESGD) variable also revealed a wide range of sustainability disclosure levels among organizations, with an average of 71.922 and a range of 46.207 to 87.718. Profitability (PROF) showed a mean value of 1.166 with moderate fluctuations, whereas firm size (SIZE) averages 28.683, suggesting that the sample was predominantly composed of large firms with relatively controlled variation in size.

Transitioning from descriptive to inferential analysis, it is essential to examine the relationships among the variables before performing regression estimation. Therefore, this study conducted a Pearson correlation analysis to assess the linear relationships between the main variables. The correlation test serves two critical purposes: first, to identify the strength and direction of associations among the variables; and second, to ensure the absence of multicollinearity, which could potentially compromise the validity and reliability of the regression model. The correlation results provide a preliminary understanding of how firm value, leverage, profitability, firm size, and ESG disclosure interact with one another. These insights are instrumental in justifying the inclusion of specific variables in the regression model and in anticipating the potential direction of their relationships. A summary of the correlation coefficients is presented in the following table, offering a foundational overview for the subsequent regression analysis.

Table 3. Pearson Correlation Matrix

	TQ	LDR	DER	ESGD	PROF	SIZE
TQ	1	0.1104*	0.1753*	0.0831*	0.5285*	0.1523*
LDR	0.1104*	1	0.035	0.3538*	0.0922*	0.2081*
DER	0.1753*	0.035	1	0.0246	0.1748*	-0.016
ESGD	0.0831*	0.3538*	0.0246	1	0.0612*	0.1398*
PROF	0.5285*	0.0922*	0.1748*	0.0612*	1	0.1996*
SIZE	0.1523*	0.2081*	-0.016	0.1398*	0.1996*	1

Source: processed data

Based on the results of the correlation analysis, it was found that firm value (TQ) has a significant positive relationship with profitability (PROF), leverage (DER and LDR), firm size (SIZE), and ESG disclosure (ESGD). Profitability shows the strongest correlation with TQ, confirming its role as the main determinant of firm value. LDR is strongly correlated with ESGD and SIZE, indicating that larger and more liquid firms tend to be more transparent in sustainability disclosure. Meanwhile, DER is only related to PROF and TQ, reflecting a limited role.

3.1. The Result of Regression Analysis

To examine the relationships among the main research variables, a panel regression analysis was conducted by including the key independent variables, namely Debt to Equity Ratio (DER), Loan to Deposit Ratio (LDR), and Environmental, Social, and Governance Disclosure (ESGD) on firm value (Tobin's Q / TQ). The regression results are presented in three models. Panel A tests the effect of financial variables, particularly DER and LDR, on firm value (TQ). Panel B investigates the determinants of ESG disclosure by examining the influence of DER and LDR on ESGD. Finally, Panel C analyzes the role of ESG disclosure in explaining firm value, while also

considering the effects of DER and LDR. A summary of the hypothesis testing results is presented in the following (see Table 4).

The regression results across the three models reveal mixed empirical support for the research hypotheses. In Panel A, the Loan to Deposit Ratio (LDR) shows a positive and significant effect on Tobin's Q ($\beta = 0.001$; $p < 0.01$). This finding is consistent with the first hypothesis (H_1), indicating that H_1 is supported. In other words, the healthier a firm's liquidity position, the more favorable the market response as reflected in firm value. Conversely, the Debt to Equity Ratio (DER) exhibits a negative and significant effect on Tobin's Q ($\beta = -0.005$; $p < 0.01$). This evidence contradicts the expected positive relationship in the second hypothesis (H_2). Therefore, H_2 is not supported, as higher leverage reduces firm value due to the greater financial risk it entails.

Table 4. Results of the Regression Analysis

Variable	Coefficient	T	p-value
Panel A. $TQ_{it} = \alpha + \beta_1LDR_{it} + \beta_2DER_{it} + \beta_3PROF_{it} + \beta_4SIZE_{it} + \beta_5CTRY + \beta_6YEAR + \epsilon_{it}$			
Constanta	0.923	49.60	0.000
LDR	0.001	2.67	0.008
DER	-0.005	-3.64	0.000
PROF	0.065	22.35	0.000
SIZE	0.0006	1.03	0.301
CTRY		YES	
YEAR		YES	
$R^2 = 0.302$; $Adj R^2 = 0.299$; $F=157.85***$; $N = 1467$			
Panel B. $ESGD_{it} = \alpha + \beta_1LDR_{it} + \beta_2DER_{it} + \beta_3PROF_{it} + \beta_4SIZE_{it} + \beta_5CTRY + \beta_6YEAR + \epsilon_{it}$			
Constanta	82.164	17.38	0.000
LDR	13.676	14.79	0.000
DER	-0.419	-1.38	0.167
PROF	1.604	2.25	0.024
SIZE	1.382	8.38	0.000
CTRY		YES	
YEAR		YES	
$R^2 = 0.173$; $Adj R^2 = 0.171$; $F=64.66***$; $N = 1239$			
Panel C. $TQ_{it} = \alpha + \beta_1ESGD_{it} + \beta_2LDR_{it} + \beta_3DER_{it} + 4PROF_{it} + \beta_5SIZE_{it} + \beta_6CTRY + \beta_7YEAR + \epsilon_{it}$			
Constanta	0.947	46.78	0.000
ESGD	0.001	6.10	0.000
LDR	0.018	4.46	0.000
DER	-0.005	-3.96	0.043
PROF	0.071	23.38	0.000
SIZE	0.008	5.85	0.000
CTRY		YES	
YEAR		YES	
$R^2 = 0.375$; $Adj R^2 = 0.372$; $F=146.39***$; $N = 1225$			

Source: processed data

In Panel B, where ESG Disclosure (ESGD) is treated as the dependent variable, the results indicate that LDR has a highly significant positive effect on ESGD ($\beta = 13.676$; $p < 0.01$). This suggests that firms with stronger liquidity management are more inclined to engage in sustainability disclosure. On the other hand, DER shows no significant relationship with ESGD ($\beta = -0.419$; $p > 0.10$), implying that debt structure is not a primary driver of sustainability disclosure.

Finally, in Panel C, ESGD has a positive and significant effect on Tobin's Q ($\beta = 0.001$; $p < 0.01$). This provides strong evidence in favor of the third hypothesis (H_3), meaning that H_3 is supported. Hence, the higher the level of sustainability disclosure, the greater the market's valuation of the firm. Within this model, LDR continues to display a significant positive effect on Tobin's Q ($\beta = 0.018$; $p < 0.01$), reconfirming H_1 , while DER remains negatively significant ($\beta = -0.005$; $p < 0.05$), further reinforcing that H_2 is rejected.

3.2. The Results of Path Analysis

To examine the mediating role of Environmental, Social, and Governance Disclosure (ESGD) in the relationship between corporate financial structure, represented by the Loan to Deposit Ratio (LDR) and the Debt to Equity Ratio (DER), and market performance (Tobin's Q), this study employs a path analysis approach. This method allows the researcher to trace not only the direct effects of LDR and DER on Tobin's Q but also the indirect effects through ESGD as a mediating variable. In doing so, path analysis provides a more comprehensive understanding of the mechanism through which financial structure can influence firm value via sustainability disclosure practices. The results of the analysis are presented in the following table, which reports the regression coefficients, t-values, significance levels, and adjusted R^2 for each causal path examined.

Table 5. Result of Path Analysis

Variable	Coefficient	T	p-value
Panel A. $TQ_{it} = \alpha + \beta_1LDR_{it} + \beta_2DER_{it} + \beta_3PROF_{it} + \beta_4SIZE_{it} + \beta_5CTRY + \beta_6YEAR + \epsilon_{it}$			
Constanta	0.923	49.60	0.000
LDR	0.001	2.67	0.008
DER	-0.005	-3.64	0.000
PROF	0.065	22.35	0.000
SIZE	0.0006	1.03	0.301
CTRY		YES	
YEAR		YES	
$R^2 = 0.302$; Adj $R^2 = 0.299$; $F=157.85^{***}$; $N = 1467$			
Panel B. $ESGD_{it} = \alpha + \beta_1LDR_{it} + \beta_2DER_{it} + \beta_3PROF_{it} + \beta_4SIZE_{it} + \beta_5CTRY + \beta_6YEAR + \epsilon_{it}$			
Constanta	82.164	17.38	0.000
LDR	13.676	14.79	0.000
DER	-0.419	-1.38	0.167
PROF	1.604	2.25	0.024
SIZE	1.382	8.38	0.000
CTRY		YES	
YEAR		YES	
$R^2 = 0.173$; Adj $R^2 = 0.171$; $F=64.66^{***}$; $N = 1239$			

Variable	Coefficient	T	p-value
Panel C. $TQ_{it} = \alpha + \beta_1 ESGD_{it} + \beta_2 LDR_{it} + \beta_3 DER_{it} + 4PROF_{it} + \beta_5 SIZE_{it} + \beta_6 CTRY + \beta_7 YEAR + \epsilon_{it}$			
Constanta	0.947	46.78	0.000
ESGD	0.001	6.10	0.000
LDR	0.018	4.46	0.000
DER	-0.005	-3.96	0.043
PROF	0.071	23.38	0.000
SIZE	0.008	5.85	0.000
CTRY		YES	
YEAR		YES	
$R^2 = 0.375$; $Adj R^2 = 0.372$; $F=146.39^{***}$; $N = 1225$			
Source: processed data			

The results of the analysis indicate that ESG Disclosure mediates the effect of LDR on Tobin's Q (H_{4a} supported), but does not mediate the relationship between DER and Tobin's Q (H_{4b} not supported). In other words, a firm's liquidity capacity encourages sustainability disclosure practices, which in turn enhance market value, whereas capital structure through leverage exerts a more direct negative impact on firm value without passing through the channel of sustainability disclosure.

3.3. The Result of Sobel Tests

To further examine the mediating role of ESG Disclosure in the relationship between financial structure and firm value, this study employed the Sobel test. The Sobel test provides a statistical procedure to determine whether the indirect effect of an independent variable on the dependent variable through a mediator is significant. By applying this method, the analysis not only confirms the presence of mediation but also evaluates the extent to which ESG Disclosure transmits the effects of LDR and DER on Tobin's Q. The results of the Sobel tests are presented in the following table.

Table 6. The Sobel Test Result and Effect Size

Variable	Sobel Test	p-value	R2 with mediator – R2 without mediator (A)	1 – R2 with Mediator (B)	f ² = A/B	Effect size
LDR => ESGD => TQ	3.385	0.003	0.047	0.922	0.051	Week
DER => ESGD => TQ	3.499	0.000	0.067	0.922	0.073	Week

Source: processed data

The mediation analysis, calculated using the Sobel Calculator, confirms that ESG Disclosure functions as a mediator in the relationship between financial structure and firm value. For both liquidity (LDR) and leverage (DER), the indirect pathways through ESG Disclosure are statistically supported, indicating that market valuation is partially shaped by sustainability practices. However, based on Cohen's (1988) criteria, the effect sizes fall into the weak category, suggesting that ESG Disclosure plays only a limited complementary role. While it enhances the financial–market linkage, its influence remains secondary compared to the firms' core financial fundamentals.

3.4. Discussions

The significant effect of the Loan-to-Deposit Ratio (LDR) on Tobin's Q reflects the role of liquidity management as a key signal of bank stability and risk discipline. A balanced LDR indicates a bank's ability to expand lending activities while preserving adequate liquidity buffers, thereby reducing perceived funding and solvency risk. This interpretation is consistent with Gangwani and Kashiramka (2024), who document that banks with stronger ESG performance in emerging markets exhibit lower liquidity and leverage risks and achieve superior market valuation as measured by Tobin's Q. Their findings suggest that effective liquidity risk containment constitutes an important channel through which banks enhance market confidence. Accordingly, liquidity functions not only as an indicator of financial stability but also as a driver of investor trust, reinforcing its relevance as a determinant of bank valuation in volatile emerging market environments.

Further evidence suggests that liquidity enhances investor confidence and lowers capital costs by reducing the probability of financial distress. Firms that manage liquidity effectively are not only able to fulfill their short-term obligations but also have greater flexibility to invest in profitable opportunities, thus reducing volatility in their valuation metrics (Chairani & Siregar, 2021; Chang & Lee, 2022). This dynamic illustrates how an optimal LDR serves as a financial signal of risk-return efficiency, directly shaping Tobin's Q. Such reasoning highlights that liquidity minimizes uncertainty, which market valuation theory identifies as a fundamental determinant of firm value. Extending this argument, liquidity management can also be connected to non-financial domains such as governance and sustainability practices, which increasingly influence investor decision-making.

Liquidity strength has been shown to support firms in expanding their engagement with Environmental, Social, and Governance (ESG) initiatives, thereby reinforcing legitimacy and enhancing reputational capital. Firms with adequate liquidity are more likely to invest in CSR and ESG disclosures, aligning themselves with stakeholder expectations and creating added value that markets recognize (Uyar et al., 2023). From the perspective of stakeholder and legitimacy theory, this integration illustrates that financial strength does not operate in isolation but feeds into broader reputational outcomes that investors reward. This connection between liquidity and ESG performance provides a framework for understanding how financial and sustainability dimensions intersect in shaping Tobin's Q.

In contrast, the regression results indicate that the Debt-to-Equity Ratio (DER) exerts a negative and insignificant effect on Tobin's Q, suggesting that leverage does not decisively influence market valuation. According to signaling theory, capital structure is expected to reflect managerial confidence and growth potential, yet high DER levels often convey financial vulnerability rather than strategic financing (budyono, Budyono & Santoso, 2019; Hidayati, 2023). Consequently, investors may discount the value of firms with high leverage, weakening Tobin's Q. This outcome underlines that, unlike liquidity, leverage transmits less consistent and less favorable signals to the market, raising questions about the role of contextual factors in shaping its impact.

The insignificance of DER also suggests that investors do not react uniformly to leverage but instead assess it in light of profitability, governance quality, and macroeconomic conditions. High DER levels may heighten financial distress and erode profitability, thereby discouraging investor confidence (Azizah & Munir, 2022; Mafakhir Shaleh & Kurniasih, 2021). Yet, in emerging markets, debt is sometimes tolerated when firms offset risk through sound governance or sustainability practices (Eliwa et al., 2021; Kalash, 2023). These variations demonstrate that the relationship between DER and Tobin's Q is contingent, shaped by complementary mechanisms

that either mitigate or exacerbate the risks of leverage. This complexity naturally shifts attention to the role of ESG disclosure as a potential moderating or mediating channel.

Empirical evidence confirms that ESG disclosure has a significant positive effect on Tobin's Q, reinforcing the argument that transparency in sustainability practices elevates firm valuation. From a signaling perspective, ESG disclosure reduces information asymmetry and communicates long-term resilience, thereby strengthening investor trust (Feng et al., 2022; Zhou et al., 2023). Legitimacy and stakeholder theories further argue that firms engaging in comprehensive ESG reporting gain reputational capital, attract broader stakeholder support, and reduce reputational risks (Adeneye et al., 2022; Amarna et al., 2024). These outcomes translate into lower capital costs and improved financing conditions (Eliwa et al., 2021; Maji & Lohia, 2023; Yu et al., 2025), highlighting that ESG practices enhance both intangible reputation and tangible financial efficiency. The consistency of these benefits raises the question of whether ESG can mediate the effects of liquidity and leverage on firm value.

The hypothesis testing demonstrates that ESG disclosure mediates the relationship between LDR and Tobin's Q but does not mediate the relationship between DER and Tobin's Q. For LDR, the mediation works because ESG transparency amplifies the signal of financial stability. Even when liquidity ratios are high, firms that disclose ESG commitments mitigate investor concerns by emphasizing long-term resilience and sustainability (Alareeni & Hamdan, 2020; Buallay, 2019b). This mechanism enables liquidity management to be converted into reputational and financial value. However, for DER, the mediation does not hold because excessive leverage creates risks that overshadow ESG disclosures. Research shows that highly leveraged firms often prioritize short-term performance, leaving little room for sustainability investments, and that ESG signals fail to offset concerns over solvency (Angir & Weli, 2024; Hamrouni et al., 2019; Harnida et al., 2023; Modugu, 2020). This contrast underscores that ESG is most effective when underlying financial health is credible, positioning liquidity as more conducive to sustainability-driven valuation than leverage.

4. Conclusions

This study examines the interplay between financial health and ESG disclosure in shaping bank valuation in developing Asian economies. The findings indicate that liquidity, measured by the Loan-to-Deposit Ratio (LDR), has a significant positive effect on firm value as proxied by Tobin's Q. A balanced liquidity position signals financial resilience and effective risk management, which enhances market confidence and contributes to higher valuation. These results confirm that liquidity remains a primary determinant of bank value in emerging markets characterized by economic volatility and information asymmetry.

In contrast, leverage, measured by the Debt-to-Equity Ratio (DER), does not contribute positively to bank valuation. Higher leverage is perceived by investors as a source of financial risk rather than value creation, limiting its effectiveness as a market signal. The study further shows that ESG disclosure exerts a significant positive effect on firm value and mediates the relationship between liquidity and Tobin's Q, but not between leverage and firm value. This finding underscores that ESG disclosure enhances market valuation only when supported by strong financial fundamentals, particularly sound liquidity management.

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