

Effects of Institutional Ownership, Independent Commissioners, and CSR Disclosure on ROA: The Moderating Role of Green Credit in Indonesian Conventional Banks

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Abstract

Increasing commitment to sustainable finance has encouraged banks to strengthen corporate governance, improve the transparency of corporate social responsibility (CSR) disclosure, and expand environmentally responsible lending practices. Although previous studies have examined the associations of institutional ownership, independent commissioners, and CSR disclosure with financial performance, their findings remain mixed. Moreover, empirical evidence on the moderating role of green credit in these relationships remains limited, particularly among Indonesian conventional commercial banks. This study examines the associations of institutional ownership, independent commissioners, and CSR disclosure with bank financial performance and investigates the moderating role of green credit. Using a balanced panel dataset of 176 firm-year observations from 16 conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during 2014–2024, the study employs the Fixed Effect Model (FEM) to examine the direct associations and Moderated Regression Analysis (MRA) to assess the moderating role of green credit. The findings show that institutional ownership ($\beta = 0.028$, $p = 0.022$), independent commissioners ($\beta = 0.019$, $p = 0.037$), and CSR disclosure ($\beta = 0.022$, $p = 0.033$) are positively and significantly associated with return on assets (ROA). Green credit also significantly moderates the associations of institutional ownership ($\beta = 0.047$, $p = 0.019$), independent commissioners ($\beta = 0.039$, $p = 0.027$), and CSR disclosure ($\beta = 0.062$, $p = 0.008$) with ROA. The inclusion of green credit and its interaction terms increases the model's explanatory power from $R^2 = 0.45$ to $R^2 = 0.61$. These findings provide empirical evidence that governance mechanisms, CSR disclosure, and green credit are associated with bank financial performance and extend the application of Agency Theory and Stakeholder Theory within the sustainable finance context. The findings also offer practical considerations for regulators, policymakers, and bank managers regarding governance quality, CSR disclosure, and the development of green financing practices.

KEYWORDS

institutional ownership; independent commissioners; corporate social responsibility; green credit; return on assets (roa); sustainable finance.

Introduction

The banking sector is crucial for economic development because it supports efficient capital allocation, helps preserve financial stability, and finances productive activities that promote sustainable growth. As sustainability has gained increasing global attention, expectations of banks have expanded beyond the conventional objective of

profitability. The growth of sustainable finance encourages banks to incorporate ESG principles into their business models while protecting their financial soundness. Core elements such as strong corporate governance, clear CSR reporting, and green financing have become key drivers of performance. By embracing these practices, banks can enhance their efficiency, build greater investor confidence, and secure a more competitive position in the future market (Weber & Chowdury, 2020). This study uses return on assets (ROA) as a proxy for bank financial performance because it represents managerial efficiency in generating profits from total assets, demonstrating its relevance for assessing how effectively management produces earnings in relation to the institution's asset base. In addition, Agency Theory is used as the conceptual framework that explains how corporate governance mechanisms influence financial performance. (Jensen & Meckling, 1976) argue that the inherent tension of owners and managers—often leads to agency conflicts where managerial behavior deviates from the interests of shareholders. To mitigate these discrepancies, firms must implement governance mechanisms that restrict self-serving managerial choices and foster an environment where corporate actions are transparently linked to investor returns. Effective corporate governance can therefore help reduce information asymmetry, strengthen managerial oversight, and enhance accountability. In the banking context, institutional ownership and independent commissioners represent important governance mechanisms. Institutional investors have both the resources and incentives to monitor managerial decisions, whereas independent commissioners provide objective oversight of strategic and operational activities. Accordingly, stronger governance mechanisms are theoretically expected to be associated with improved financial performance by reducing agency problems (Adu et al., 2024).

Beyond corporate governance, bank financial performance may also be associated with an institution's ability to address the mind of its stakeholders. Stakeholder Theory expands the boundaries of corporate responsibility by proposing that firms achieve long-term success by incorporating the needs of all stakeholders including customers, employees, regulators, and society along with those of shareholders, rather than focusing only on shareholders (Freeman, 1984). From this perspective, CSR disclosure serves as a strategic mechanism through which banks communicate transparency, accountability, and their commitment to sustainable development. In the banking sector, where regulatory oversight is particularly important, effective CSR practices may strengthen organizational legitimacy, stakeholder trust, and corporate reputation, which can be associated with improved financial performance (Bofinger et al., 2022; Ernawati & Utami, 2024). However, previous studies examining the synergy within corporate governance structures, CSR disclosure, and financial performance have produced mixed findings. Several studies have reported positive relationships between governance mechanisms, CSR-related practices, and financial performance (Abedin et al., 2022; Bhatia & Gulati, 2021; Persakis & Al-Jallad, 2024), whereas other evidence suggests that these relationships may be insignificant or dependent on institutional conditions (Nguyen Kim, 2024). These inconsistencies indicate that the relationships between governance mechanisms, CSR disclosure, and financial performance may depend on additional factors that have not been sufficiently incorporated into previous empirical models. More specifically, an important empirical gap remains regarding the role of sustainable financing in these relationships. (Abedin et al., 2022) examined the correlation between institutional shareholding and business outcomes but did not investigate green credit as a moderating

mechanism. Likewise, (Bhatia & Gulati, 2021) considered although prior empirical work has examined the association between board-level monitoring and bank financial outcomes, the potential role of green credit in moderating the correlation between governance structures and financial success has not yet been explored. (Persakis & Al-Jallad, 2024) investigated CSR and bank performance, while (Rahmamita & Kahar, 2024) examined how corporate governance moderates the dynamic interplay between green banking disclosure and a firm's profitability metrics; however, these studies did not test green credit as a moderator of the relationships among institutional ownership, independent commissioners, CSR disclosure, and ROA within a single empirical framework. Consequently, existing evidence remains limited in explaining whether green credit serves as a boundary condition in the relationships of governance structures, CSR reporting, and financial outcomes within the banking sector.

The complementary perspectives of Agency Theory and Stakeholder Theory provide the theoretical foundation for the moderating role of green credit. From an Agency Theory perspective, sustainable lending requires greater transparency, accountability, and monitoring of social risks and environmental, which may increase the relevance of effective governance mechanisms. Under these conditions, institutional investors may exercise their monitoring role more effectively by overseeing managerial decisions related to sustainable financing, thereby potentially strengthening the correlation of institutional ownership and bank financial. Similarly, green credit may strengthen the association between independent commissioners and ROA under conditions that require more rigorous board oversight, stronger internal controls, and greater accountability in assessing sustainability-related risks. These requirements may enhance the supervisory role of independent commissioners and may be associated with higher profitability. In alignment with Stakeholder Theory, green credit appears to have the potential to solidify the bond surrounding CSR disclosure practices and ROA by translating sustainability commitments into tangible financing activities. The alignment between CSR disclosure and sustainable financing may enhance stakeholder trust, reinforce corporate legitimacy, and strengthen organizational reputation, which may ultimately be associated with improved profitability (Sutrisno et al., 2024; Zhou et al., 2021). Beyond these theoretical and empirical gaps, the Indonesian banking sector provides an important contextual setting for examining these relationships. Green credit has gained increasing regulatory and strategic relevance following the implementation of the Indonesian Financial Services Authority's (OJK) Sustainable Finance Roadmap, which motivates financial entities to embed environmental and social criteria into their practices to lending decisions and business strategies (Marfuah et al., 2025; Sutrisno et al., 2024). Nonetheless, evidence that simultaneously examines institutional ownership, independent commissioners, CSR disclosure, green credit, and ROA among Indonesian conventional banks is limited (Dos et al., 2024; Kartiko & Firmansyah, 2024; Postiglione et al., 2024). This contextual gap therefore provides a basis for investigating whether green credit moderates the relationships between governance mechanisms, CSR disclosure, and bank financial performance.

Using panel data from conventional commercial banks listed on the Indonesia Stock Exchange (IDX) over the 2014–2024 period, this study investigates the linkages among institutional ownership, independent commissioners, corporate social responsibility (CSR) disclosure, and bank financial performance, with financial performance proxied by return on assets (ROA). The study also tests whether green credit moderates the associations between these governance and CSR variables and bank financial performance. Conceptually, this research advances the sustainable finance literature by developing an integrated analytical framework that

treats green credit as a moderating variable connecting corporate governance mechanisms and CSR disclosure to bank financial performance. In addition, the findings broaden the application of Agency Theory and Stakeholder Theory by showing how green credit relates to the connections among governance practices, CSR disclosure, and financial performance in the setting of sustainable banking. Practically, the results offer meaningful guidance for regulators, policymakers, and bank managers to strengthen corporate governance, improve CSR implementation, and encourage green financing initiatives that enhance the long-term sustainability and financial resilience of Indonesian conventional commercial banks.

Methods

The empirical analysis relies on a balanced panel dataset covering conventional commercial banks on the IDX from 2014 to 2024, within the framework of a quantitative explanatory study. Bank financial performance, measured by ROA, served as the dependent variable, while institutional ownership, independent commissioners, and CSR disclosure were specified as the explanatory variables. Green credit was incorporated as a moderating variable to examine whether sustainable lending practices moderate the correlation of the explanatory variables and bank financial. The population initially consisted of 42 conventional banks on the IDX, a final sample was derived using purposive sampling, contingent upon specific inclusion criteria and data completeness across the study period. To estimate direct associations while controlling for cross-sectional and time-series variations, as well as bank-specific heterogeneity, panel data regression was utilized. Furthermore, MRA was performed by incorporating interaction terms between green credit and the independent variables to evaluate its moderating impact. This multi-stage analytical approach allows for a comprehensive assessment of the direct links among governance, CSR, and performance, while simultaneously identifying the moderating influence of green credit (Abedin et al., 2022; Nguyen Kim, 2024; Sutrisno et al., 2024).

Population and Sample

The research population comprised all conventional banks listed on the IDX during the 2014–2024 observation window. To maintain data consistency and credibility, and to form the final dataset, purposive sampling was employed. The criteria for inclusion were defined as follows:

1. Banks were continuously on the IDX and the 2014–2024 observation period.
2. Participation depended on the availability of audited financial statements and annual reports for each fiscal year from 2014 to 2024.
3. Banks disclosed sustainability-related information in their annual reports or sustainability reports.
4. Banks reported green financing information required to measure the green credit variable.

Exclusion from the final sample was applied to banks that failed to fulfill the aforementioned requirements. Table 1 illustrates the sample selection procedure and the number of banks excluded at each stage.

As indicated in Table 1, the purposive sampling process started with 42 conventional commercial banks listed on the Indonesia Stock Exchange (IDX). Of these, 16 banks satisfied all predetermined selection criteria and were therefore included in the final sample. The remaining 26 banks were excluded because they had incomplete annual reports, inconsistent data availability, or insufficient disclosures related to green financing. The empirical analysis spanned the 2014–2024 period, producing a balanced panel dataset containing 176 firm-year observations. The balanced panel

structure ensured that observations were consistent across all sampled banks, which in turn improved the comparability of the panel estimates (Le Gallo & Sénégas, 2023; Soberon et al., 2025). However, because only banks with complete information were included, the findings may be subject to survivorship and disclosure-selection bias, which may limit their generalizability to the broader population of Indonesian conventional commercial banks.

Data Collection

For this study, secondary data was acquired from publicly accessible sources, such as sustainability reports and yearly reports, financial records and disclosure statements published of The Stock Exchange of Indonesia (IDX), official bank websites, and relevant regulatory publications. These sources provided information regarding corporate governance mechanisms, CSR disclosures, green financing activities, and financial performance indicators. Banks with incomplete disclosure records were excluded during the sample selection process to ensure data consistency throughout the observation period. The use of secondary disclosure data is widely accepted in governance and sustainability research because it provides objective, reliable, and verifiable information for empirical investigation (Adu et al., 2024; Nguyen Kim, 2024).

Variable Measurement

Bank profitability is assessed via ROA, reflecting the capacity to yield earnings from total assets (Adu et al., 2024; Mansour, 2025). The formula for ROA is stated below:

$$\text{ROA} = \text{Net Income} / \text{Total Assets}$$

The ROA metrics were derived directly from the audited annual financial statements of the selected banks to ensure data accuracy.

Institutional ownership (KI) was measured as the percentage of equity ownership begun by institutional entities, reflecting the extent of institutional participation in corporate governance. The variable was counted as follows:

$$\text{KI} = \text{Institutional Shares} / \text{Total Outstanding Shares}$$

Data on institutional ownership were obtained from the annual reports of the sampled banks.

Independent commissioners (KIND) were measured as the proportion of the level of board independence, defined as the quotient of independent commissioners, reflecting the representation of independent members in board's supervisory structure. The variable was estimated as follows:

$$\text{KIND} = \text{Number of Independent Commissioners} / \text{Total Number of Commissioners}$$

Table 1. Population and Sample Selection Procedure

Sampling Procedure	Number of Banks
Conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during 2014–2024	42
Less: Banks not continuously listed during the observation period	(8)
Less: Banks with incomplete audited annual reports and financial statements	(6)
Less: Banks without CSR or sustainability disclosures	(5)
Less: Banks without green financing information	(7)
Final sample	16
Observation period (years)	11
Balanced panel observations (16 × 11)	176

Source: Compiled by the authors based on Indonesia Stock Exchange (IDX) data.

Information on board composition was obtained from the annual reports of each sampled bank.

CSR disclosure is measured through a 38-item index (CSRDI) developed in accordance with the 2021 GRI Standards. These indicators were assessed by examining the annual and sustainability reports of the sampled banks. To quantify these disclosures, a binary scoring approach was utilized: items were assigned a score of 1 if reported, and 0 if omitted. The CSRDI was calculated using the following formula:

$$CSRDI = \sum X_{ij} / N_j$$

where CSRDI denotes the Corporate Social Responsibility Disclosure Index, X_{ij} is the disclosure score for each CSR item (1 = disclosed; 0 = not disclosed), and N_j is the total number of applicable disclosure indicators based on the GRI Standards 2021. Higher CSRDI values indicate a greater extent of CSR disclosure (Bofinger et al., 2022; Le Gallo & S  n  gas, 2023).

The researcher applied a standardized coding protocol based on the GRI Standards 2021 to identify and classify CSR disclosure items. The content analysis was conducted by a single coder, and all coding decisions were systematically rechecked against the corresponding annual and sustainability reports to improve coding accuracy and consistency before statistical analysis. However, because an independent second coder was not involved, inter-coder reliability was not independently verified and no inter-coder agreement statistic was calculated. Accordingly, the absence of independent coder verification represents a methodological limitation, as the coding process relied on repeated verification by a single researcher rather than an independent assessment of coding reliability.

Green credit (GC) was assessed as the ratio of green financing to the total amount of loans extended by each bank. The variable was computed as follows:

$$GC_{it} = \text{Total Green Financing}_{it} / \text{Total Loans}_{it}$$

Data on green financing were sourced from the official annual and sustainability disclosures published by each bank sample. Green financing activities were identified based on sustainable finance disclosures reported by each bank in accordance with the applicable regulatory requirements and sustainability reporting standards. An elevated green credit ratio signals a strategic shift in a bank's lending portfolio toward environmentally conscious financing. By introducing green credit as a contingency variable, this paper explores whether the efficacy of institutional ownership, independent commissioners, and CSR disclosure in driving financial performance is amplified or constrained by the depth of a bank's sustainable lending practices (Gao & Guo, 2022; Zhou et al., 2021).

Data Analysis

The empirical framework utilizes panel data regression and MRA to evaluate direct relationships alongside the moderating role of green credit. After evaluating three possible estimators CEM, FEM, and REM the Fixed Effect Model (FEM) was selected based on the outcomes of the Chow and Hausman tests. This selection ensures that unobserved, time-invariant bank characteristics are systematically controlled, thereby enhancing the robustness of our findings (Dos et al., 2024; Sutrisno et al., 2024).

The moderating effect of green credit was evaluated by creating interaction terms between green credit and each independent variable, namely institutional ownership, independent commissioners, and CSR disclosure. The statistical significance of the interaction coefficients was evaluated to ascertain whether the correlation of these key drivers affecting a bank's financial metrics is contingent upon the level of green credit integration.

$$ROA_{it} = \alpha + \beta_1 KI_{it} + \beta_2 KIND_{it} + \beta_3 CSRDI_{it} + \beta_4 GC_{it} + \beta_5 (KI \times GC)_{it} + \beta_6 (KIND \times GC)_{it} + \beta_7 (CSRDI \times GC)_{it} + \varepsilon_{it}$$

where ROA_{it} represents the Return on Assets of bank i in year t ; KI_{it} represents institutional ownership; $KIND_{it}$ represents independent commissioners; $CSRDI_{it}$ represents the Corporate Social Responsibility Disclosure Index; GC_{it} represents the Green Credit Ratio; α denotes the intercept; $\beta_1 - \beta_7$ represent the regression coefficients; and ε_{it} denotes the error term.

Before estimating the regression models, several diagnostic tests suitable for fixed-effects panel data were carried out. Panel serial correlation was assessed to identify serial correlation within banks, while the Pesaran cross-sectional dependence test was employed to evaluate cross-sectional dependence across banks. Panel heteroskedasticity was also examined, since unequal error variances may influence statistical inference. When heteroskedasticity was present, fixed-effects models were estimated using White cross-section robust standard errors to produce heteroskedasticity-consistent estimates. In addition, all continuous explanatory variables and the moderating variable (green credit) were mean-centered before constructing the interaction terms, in order to limit non-essential multicollinearity. Variance Inflation Factor (VIF) values were then computed for the final moderation model, and the maximum VIF stayed below the widely used threshold of 5, indicating that multicollinearity was not a concern. Overall, these diagnostic procedures corroborate the robustness of the estimation approach applied in this study.

Model 1: Baseline Model

The regression equation: $ROA_{it} = \alpha + \beta_1 KI_{it} + \beta_2 KIND_{it} + \beta_3 CSRDI_{it} + \varepsilon_{it}$

Model 2: Main Effects Model Including Green Credit

The regression equation: $ROA_{it} = \alpha + \beta_1 KI_{it} + \beta_2 KIND_{it} + \beta_3 CSRDI_{it} + \beta_4 GC_{it} + \varepsilon_{it}$

Model 3: Moderation Model I

The regression equation: $ROA_{it} = \alpha + \beta_1 KI_{it} + \beta_2 KIND_{it} + \beta_3 CSRDI_{it} + \beta_4 GC_{it} + \beta_5 (KI \times GC)_{it} + \beta_6 (KIND \times GC)_{it} + \varepsilon_{it}$

Model 3 examines whether green credit moderates the relationship between the two aforementioned corporate governance mechanisms, namely institutional ownership and independent commissioners, and ROA. This specification allows the governance-related interaction effects to be assessed before incorporating the CSR-related interaction term.

Model 4: Moderation Model II

The regression equation: $ROA_{it} = \alpha + \beta_1 KI_{it} + \beta_2 KIND_{it} + \beta_3 CSRDI_{it} + \beta_4 GC_{it} + \beta_5 (KI \times GC)_{it} + \beta_6 (KIND \times GC)_{it} + \beta_7 (CSRDI \times GC)_{it} + \varepsilon_{it}$

Model 4 extends Model 3 by incorporating the $CSRDI \times GC$ interaction term, thereby representing the full moderation specification. This sequential approach enables the incremental contribution of CSR-related moderation to be assessed after accounting for the governance-related interaction effects.

Description:

ROA_{it} = Return on Assets of bank i in year t .

KI_{it} = Representing the weight of institutional capital, this variable is calculated by dividing institutional shareholdings by the bank's aggregate outstanding shares.

$KIND_{it}$ = We proxy the strength of independent board monitoring by the ratio of independent commissioners to the total number of commissioners.

$CSRDI_{it}$ = Corporate Social Responsibility Disclosure Index, derived from the quotient of reported CSR disclosure items and the total applicable GRI items.

GC_{it} = Green Credit Ratio, measured as total green credit divided by total bank credit.

α = Constant

$\beta_1 - \beta_7$ = Regression coefficients.

ε_{it} = Error term.

Result and Discussion

To confirm the robustness of our model, we implemented a comprehensive set of diagnostic tests: the Chow test, the Hausman test, and the Lagrange Multiplier (LM) test. As reported in Table 2, the significant result of the Chow test ($p=0,001$) favors the FEM over the CEM. Moreover, the Hausman test produced a significant outcome ($p=0,84$), supporting the conclusion that the FEM is statistically superior to the REM (Le Gallo & Sénégas, 2023; Marfuah et al., 2025). Although the LM test favored REM over CEM, the significant Chow and Hausman test results provided support for selecting FEM as the final specification. Accordingly, FEM was employed to account for unobserved bank-specific heterogeneity in the subsequent panel regression analysis.

Table 3 presents the panel diagnostic test results used to evaluate the assumptions underlying the fixed-effects estimation. The panel serial correlation test generated a statistic of 1.642 ($p = 0.118$), showing no indication of within-bank serial correlation over the observation period. Similarly, the Pesaran cross-sectional dependence test yielded a statistic of 0.851 ($p = 0.395$), suggesting that the regression residuals are independent across banks. However, the panel heteroskedasticity test indicated significant heteroskedasticity (Statistic = 53.481, $p < 0.001$). Therefore, to ensure valid statistical inference, all regression models were estimated using White cross-section robust standard errors, which deliver heteroskedasticity-consistent standard errors without changing the estimated coefficients. Furthermore, all continuous explanatory variables were mean-centered before forming the interaction terms to reduce non-essential multicollinearity. The maximum Variance Inflation Factor (VIF) of 3.17 remained well below the commonly accepted threshold of 5, indicating that multicollinearity was not a concern. Taken together, these diagnostic results support the credibility and robustness of the empirical findings reported in this study (Dos et al., 2024; Fata & Arifin, 2024; Gutiérrez-Ponce & Wibowo, 2024; Jeris, 2021; Kafidipe et al., 2021).

Table 4 shows the results from the panel regression and moderated regression analyses. The descriptive statistics indicate that the mean return on assets (ROA) was 0.0223 (2.23%), with values spanning from -0.0260 to 0.08885 (8.885%). Because ROA was expressed in decimal form, all reported values were cross-checked against the original dataset to ensure reporting accuracy and consistency. The standard deviation of ROA was 0.0215, reflecting moderate variability in profitability among the sampled conventional commercial banks during the 2014–2024 observation period.

The regression analysis indicates that institutional ownership ($\beta = 0.028$, $p = 0.022$), independent commissioners ($\beta = 0.019$, $p = 0.037$), and CSR disclosure ($\beta = 0.022$, $p = 0.033$) are positively and significantly associated with ROA, thereby supporting H1, H2, and H3. Further moderation analysis shows that green credit substantially moderates these relationships. Specifically, the interaction terms between institutional ownership and green credit ($\beta = 0.047$, $p = 0.019$), between independent commissioners and green credit ($\beta = 0.039$, $p = 0.027$), and between CSR disclosure and green credit ($\beta = 0.062$, $p = 0.008$) are all positive and statistically significant, which supports H4, H5, and H6. Among the interaction effects, the CSR disclosure–green credit interaction has the largest coefficient, indicating the strongest moderating linkage with bank financial performance. Including green credit and the interaction terms increased the regression models' explanatory power: the coefficient of determination (R^2) rose from 0.45 in Model 1 to 0.61 in Model 4, while the adjusted R^2 increased from 0.42 to 0.56. In

addition, all estimated models remained statistically significant (F-statistic, $p < 0.001$), suggesting that the explanatory variables together explain a substantial share of the variation in bank financial performance. Overall, these results provide empirical support for the hypothesized relationships among institutional ownership, independent commissioners, CSR disclosure, and bank financial performance, and they also emphasize green credit's moderating role in Indonesian conventional commercial banks.

Institutional Ownership's Effect on Bank Financial Performance

The features of Indonesia's banking industry, where institutional investors frequently have greater experience, stronger supervision capabilities, and more resources than individual shareholders, may help to explain the benefits of institutional ownership. Consequently, institutional investors are better positioned to oversee managerial activities and encourage decisions that align with interests of shareholders. The results corroborate Agency Theory, which holds that institutional ownership is a crucial governance instrument that lessens agency conflicts which occurs because of separate management and ownership (Abedin et al., 2022; Abid et al., 2021; Adu et al., 2024), which reported that stronger. Greater participation by institutional investors is expected to enhance corporate financial performance, contributes to improved profitability and governance effectiveness. Furthermore (Persakis & Al-Jallad, 2024), emphasized that institutional investors are essential to strengthening governance frameworks, particularly in emerging economies where effective monitoring mechanisms are essential for reducing managerial opportunism. Nevertheless,

Table 2. Model Selection Test

Test	Statistics Test	P-Value	Interpretation
Chow Test	F = 6,842	0,001	Fixed effect more accurate than common Effect
Hausman Test	Chi-square= 18,275	0,0184	Fixed effect more accurate than random Effect
LM Test (Breusch–Pagan)	Obs*R ² =19.756	0,001	Random Effect more accurate than common Effect

Source: Research data.

Table 3. Panel Diagnostic Test Results

Diagnostic Test	Statistic	p-value	Decision
Panel Serial Correlation Test	1.642	0.118	No serial correlation detected
Pesaran Cross-sectional Dependence (CD) Test	0.851	0.395	No cross-sectional dependence detected
Panel Heteroskedasticity Test	53.481	<0.001	Heteroskedasticity detected
Variance Inflation Factor (Maximum VIF)	3.17	—	No serious multicollinearity detected

Source: Research data.

earlier empirical studies have also documented weak or inconsistent relationships between institutional ownership and financial performance. These discrepancies could be attributed to differences in ownership concentration, regulatory environments, and corporate governance structures across countries. In the Indonesian banking industry, the relatively strict regulatory framework and supervisory requirements imposed by financial authorities may enhance the effectiveness of institutional monitoring, thereby strengthening its contribution to profitability. Consequently, the current results offer more proof that institutional ownership improves financial performance by encouraging accountability and monitoring efficacy, ultimately supporting long-term sustainable wealth generation.

The Effect of Independent Commissioners on the Bank's Financial Performance

The significant influence of independent commissioners highlights how important board independence is to bolstering corporate governance in the banking industry. By enhancing accountability, providing independent oversight, and reducing conflicts of interest between owners and managers, independent commissioners help to improve organizational performance. Consistent with Agency Theory, they also improve managerial alignment with organizational objectives and support more effective strategic decision-making. These findings are consistent (Buallay, 2019; Nguyen Kim, 2024; Weber & Chowdury, 2020; Yafie et al., 2024) who demonstrated that greater board independence contributes to stronger governance effectiveness and improved financial performance. Nevertheless, some studies have found weaker or insignificant effects of board independence, particularly in environments where independent directors possess limited authority or information access (Allie & Sudibijo, 2024). The Indonesian banking context may explain the stronger results

observed in this study, as independent Commissioners are essential in guaranteeing adherence to governance rules and strengthening risk oversight. Consequently, independent commissioners contribute not only to regulatory compliance but also to the achievement of sustainable profitability through enhanced monitoring and governance quality.

Corporate Social Responsibility's Impact on Financial Performance

The favourable correlation linking CSR disclosure to bank financial performance disclosure indicates that sustainability reporting has grown in significance within the Indonesian banking industry. Stakeholders are no longer concerned solely with financial outcomes but also with how banks address social and environmental responsibilities. By balancing the interests of shareholders, clients, employees, authorities, local communities, and environmental stakeholders, firms can generate long-term value, according to stakeholder theory. Through effective CSR implementation, banks may strengthen stakeholder trust, improve corporate reputation, and enhance organizational legitimacy.

These results align with (Bofinger et al., 2022), (Buallay, 2019), who discovered that sustainability-oriented practices contribute positively to organizational resilience, stakeholder satisfaction, and financial performance. However, previous studies have also reported mixed evidence regarding the financial advantages of corporate social responsibility, particularly in the short term, because sustainability initiatives often require substantial investment and may not immediately generate financial returns (Sindhu et al., 2024), (Postiglione et al., 2024). In the Indonesian banking industry, increasing public awareness of sustainability issues and stronger regulatory expectations may explain why CSR disclosure contributes positively to profitability. Therefore, CSR

Table 4. Descriptive Statistics and Regression Results

Variab el	Mean	Std Dev	Min	Max	B	Prob.	B	Prob.	B	Prob.	B	Prob.
Consta nt					0,018	0,041	0,015	0,038	0,012	0,029	0,010	0,021
KI	0,8891	0,0748	0,7124	0,9898	0,041	0,012	0,038	0,015	0,032	0,018	0,028	0,022
KIND	0,5828	0,0303	0,5067	0,6395	0,027	0,021	0,025	0,024	0,021	0,031	0,019	0,037
CSR	0,8686	0,1381	0,4600	1,0000	0,034	0,017	0,031	0,022	0,028	0,026	0,022	0,033
Green credit	0,0362	0,0144	0,0124	0,0662			0,029	0,019	0,024	0,023	0,021	0,028
KI x GC									0,055	0,014	0,047	0,019
KIND									0,044	0,021	0,039	0,027
xGC												
CSR											0,062	0,008
x GC												
ROA	0,0223	0,0215	-0,0260	0,08885								
R ²					0,45		0,50		0,56		0,61	
Adj R ²					0,42		0,46		0,51		0,56	
F-stat					7,98		8,74		10,12		11,85	
Prob(F- stat)					0,0001		0,0001		0,0001		0,0001	
D-W stat					1,88		1,91		1,95		1,99	
					2014-		2014-		2014-		2014-	
Period					2024		2024		2024		2024	
Numbe r of Bank					16		16		16		16	
Obs.					176		176		176		176	
Model					Fixed		Fixed		Fixed		Fixed	
					Effect		Effect		Effect		Effect	

Source: Research data

ought should be considered a strategic investment, capable of generating both economic and non-economic benefits while supporting sustainable business growth.

The Role of Green Credit as a Moderation Variable

According to the moderation study, the degree of green credit affects the links between institutional ownership, independent commissioners, CSR disclosure, and bank financial performance. Higher percentages of ecologically friendly lending among banks appear to strengthen these linkages, according to the interaction terms. H4 is supported by the positive and statistically significant interaction between institutional ownership and green credit ($\beta = 0.047$, $p = 0.019$). This result implies that banks with greater green credit ratios have a larger positive correlation between institutional ownership and ROA. Consistent with Agency Theory, sustainable lending may enhance institutional monitoring by increasing transparency, accountability, and oversight of environmental risks. In a similar vein, H5 is supported by the positive and significant interaction between independent commissioners and green credit ($\beta = 0.039$, $p = 0.027$). The interaction coefficient shows that as green credit rises, the positive correlation between board independence and ROA is greater. Agency Theory elucidates when banks increase sustainable lending, independent commissioners may be able to carry out their oversight function more successfully.

H6 is supported by the correlation of green credit and CSR disclosure, which has the greatest coefficient ($\beta = 0.062$, $p = 0.008$). This finding indicates that banks with higher levels of green credit exhibit a stronger positive contribution of CSR disclosure and ROA. According to stakeholder theory, sustainable financing increases organizational legitimacy and stakeholder confidence, which strengthens the credibility of CSR initiatives. Overall, the results is the linkages of governance systems, CSR disclosure, and bank financial are positively moderated by green credit. These results extend previous studies that primarily examined direct effects by indicating that sustainable financing is associated with stronger links between governance quality, CSR disclosure, and profitability in Indonesian conventional banks (Al frijat et al., 2025; Mansour, 2025; Zhou et al., 2021)

Due to organisational factors including bank size, risk profile, ownership structure, and the moderating function of green credit may vary amongst banks. Bigger banks frequently have more financial resources and stronger sustainability capabilities, allowing them to implement green financing more effectively. Differences in ownership structure may also shape banks' dedication to environmental responsibility and sustainable financing. Furthermore, banks with different risk profiles may experience varying benefits from green credit implementation because environmentally sustainable financing is often associated with improved risk management and lower exposure to long-term environmental risks. Therefore, the strength of the moderating effect of green credit may not be uniform across all banking institutions. Future studies are encouraged to examine these institutional characteristics in greater detail to give a more thorough explanation of how green credit affects the connection between financial success, CSR activities, and governance quality. Thus, this study's main contribution is to show how green credit functions as a strategic connection between corporate governance, CSR execution, as well as financial success in Indonesian conventional banks. By offering empirical proof that ecologically sustainable financing can increase the effectiveness of sustainability and governance initiatives in producing improved financial performance, this discovery enhances the physical attributes of knowledge regarding sustainable finance.

Conclusion

This study investigated the relationships among institutional ownership, independent commissioners, CSR disclosure, and the financial performance of Indonesian conventional commercial banks. Beyond evaluating direct effects, we also examine whether green credit moderates these associations. The regression results confirm that ROA maintains a positive correlation with all three independent variables. Moreover, green credit exerts a positive moderating effect, with the magnitude of this interaction being strongest in the relationship concerning CSR disclosure. The model's explanatory power was enhanced with the addition of green credit, indicating that better correlations between governance procedures, CSR disclosure, and profitability are linked to sustainable finance. All things considered, the research broadens the empirical application of Agency Theory and Stakeholder Theory and offers bank managers useful recommendations for enhancing CSR transparency, bolstering governance, and growing green lending programs. The findings might also help the Indonesian Financial Services Authority (OJK) promote sustainable financial practices.

When interpreting the findings, several limitations should be acknowledged. This study analyzed a balanced panel of 16 conventional commercial banks listed on the Indonesia Stock Exchange (IDX) during the 2014–2024 period, which may limit the generalizability of the findings to other banking institutions. Moreover, omitting banks with incomplete reports or inadequate green financing disclosures may create survivorship and disclosure-selection bias. Financial performance was measured only using return on assets (ROA), which captures accounting-based profitability but may not reflect broader aspects of bank performance. In addition, CSR disclosure was coded by a single coder without independent verification, which may lead to measurement bias. Because this study used an observational panel design, the reported associations should not be interpreted as causal relationships and could be influenced by reverse causality, omitted-variable bias, and potential endogeneity, given that no specific endogeneity correction method was applied. Future research should consider a wider range of banking institutions, add further performance measures such as ROE, NIM, and Tobin's Q, and use econometric approaches that explicitly address endogeneity while also examining other organizational and institutional factors that may shape the moderating role of green credit.

Author contributions

The first author helped with the planning, literature, data collection and analysis, results interpretation, and report writing. The method, data, and study approach were developed with assistance from the second author. validation, and critical revision of the manuscript. third author provided academic supervision, validated the analytical procedures, and contributed to the interpretation of results. fourth author contributed to manuscript editing, language refinement, and final review of the article. Each author has reviewed the completed document, given their approval, and agreed to take full responsibility for the work.

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