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OPERATIONAL RISK AND ESG PERFORMANCE IN INDIAN BANKS: THE MODERATING ROLE OF CEO-CHAIRPERSON DUALITY

Keywords: operational risk, ESG performance, CEO chairperson duality, banks.

J E L Classification: G21, G28, G32, G34, Q56.

Abstract: This study investigates how operational risk (OR) influences the environmental, social, and governance (ESG) performance of Indian commercial banks, and explores whether CEO-Chairperson Duality (CCD) affects this relationship. Drawing on stakeholder theory and agency theory, the study argues that internal inefficiencies, such as high operating costs and weak process control, constrain banks' ability to achieve sustainability goals. The study covers data from 32 Indian commercial banks between 2017 and 2024. Fixed-effects regression results indicate a negative, significant relationship between OR and ESG performance, confirming that banks with greater inefficiencies struggle more with ESG performance. Additionally, CCD positively moderates this effect, showing that CCD can reduce the negative impact of OR through

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faster and more consistent decision-making. The study adds valuable insights to ESG and corporate governance literature and suggests practical policies, including improving operational efficiency, integrating ESG into overall risk management frameworks, and adopting governance structures suited to each bank's specific risks and contexts.

■■■ INTRODUCTION

The banking sector plays a critical role in economic growth and financial stability, particularly in emerging economies like India. In recent years, environmental, social, and governance (ESG) performance has emerged as a strategic priority for banks, not only as an ethical imperative but also as a mechanism for risk management and long-term value creation (Zouari & Abdelmalek, 2020). Despite the growing emphasis on ESG, limited attention has been given to internal organizational factors, particularly operational risk (OR). OR, which is defined as “losses resulting from inadequate or failed internal processes, people, systems, or external events” (Carnegie, Guthrie & Martin-Sardesai, 2022), represents a critical threat to banks' efficiency and stability. This risk is different from market and credit risks due to its asymmetric nature, typically resulting in direct financial losses and disruptions to internal operations (Xie, He, Huang & Ren, 2025). High OR can disrupt operations, damage reputation, and undermine a bank's ability to implement ESG strategies effectively.

Another central aspect of internal governance is CEO-Chairperson Duality (CCD), where a single individual holds both the CEO and Board Chair roles (Stephens, Srouf & Carmeli, 2025). More broadly, the board is regarded as the zenith of the internal control framework in banks, responsible for checking and directing top management (Quadri, Omotosho, Saheed & Adio, 2023). Studies argue that CCD enables coherent decision-making, swift responses to operational issues, and enhanced strategic alignment (Xiao, Xu & Li, 2024). However, contrast literature suggests that CCD exacerbates agency problems by concentrating power, thus potentially impairing effective oversight and escalating OR (Aktas, Andreou, Karasamani & Philip, 2019; Esteban-Sanchez, Cuesta-Gonzalez & Paredes-Gazquez, 2017). This is in line with the agency theory, which highlights conflicts between shareholders and managers (Langan, Krause & Menz, 2023). However, in high-risk settings like banking, centralized leadership can improve coordination and decision-making (Wegner, 2024). Therefore, understanding whether CCD strengthens or weakens the relationship between OR and ESG performance remains a critical empirical question.

As a rapidly growing emerging economy, India faces substantial sustainability challenges, ranging from marginalized communities to financial exclusion (Lal, 2021). At the same time, regulatory bodies such as the Reserve Bank of India (RBI) and the Securities and Exchange Board of India (SEBI) have strengthened ESG disclosure mandates (Krueger, Sautner, Tang & Zhong, 2024), pushing banks toward enhanced transparency and stakeholder accountability. The stakeholder theory suggests that firms must address the needs of all stakeholders, not just shareholders (Dmytriiev, Freeman & Hörisch, 2021). However, operational inefficiencies, legacy systems, and diverse governance practices continue to affect ESG integration across banks (Algeri, Brighi & Venturelli, 2025). These sectoral dynamics make Indian banks an ideal context to explore how OR and leadership structures influence ESG performance.

Reviewing the pertinent literature, we found that studies have examined OR in relation to traditional banking outcomes such as profitability, cost efficiency, loan quality, credit risk, and default probability. For instance, studies by Drake and Hall (2003), Avkiran (1999), and Buallay, Fadel, Alajmi and Saudagaran (2020) link operational inefficiencies to weakened financial performance. They argue that internal risk exposures diminish banks' ability to remain competitive and resilient, especially in dynamic regulatory and economic environments. Previous studies have also explored OR through the lens of technological transformation, governance failures, and service delivery inefficiencies, especially in emerging markets where regulatory enforcement is variable and institutional capacity is often constrained (Marquis & Raynard, 2015; Moosa, 2007). Most prior work has addressed ESG in relation to financial performance, market valuation, and investor behavior (Landi & Sciarelli, 2019; Zhou, Liu & Luo, 2022), while OR has been studied largely in relation to cost efficiency and credit risk (Ko, Lee & Anandarajan, 2019; Pakhchanyan, 2016). However, given that ESG implementation requires consistent resource commitment, reliable internal systems, and transparent disclosures, it is reasonable to infer that operational inefficiencies can act as significant barriers to achieving high ESG performance (Buallay, 2019). Similarly, high OR can strain financial resources, create governance blind spots, and impede transparent reporting factors that are essential for effective ESG execution (Cheng, Ioannou & Serafeim, 2013; Pakhchanyan, 2016). For instance, inefficient banks may lack the organizational agility or budgetary space to invest in climate risk assessment tools, socially inclusive lending practices, or robust governance reporting mechanisms. Moreover, the burden of high operating costs may necessitate compromises with de-prioritized long-term

ESG objectives in lieu of short-term viability. Therefore, ESG commitments will have a better impact if supported by strong internal governance and operational capacity (Chollet & Sandwidi, 2018).

Furthermore, the practice of CCD in banking is found to be vital in the literature. Banks have complex decision environments. Stakeholder value can deteriorate quickly due to operational inefficiencies (Hurley, Gong & Waqar, 2014). CCD may offer governance advantages in such situations. A single leader can improve coordination. This can remove bureaucratic delays. It can also speed up responses to regulatory, and operational issues (Finkelstein & D'Aveni, 1994). As such, CCD could serve as an enabling precursor condition to enhance the integral strategic alignment between risk management and ESG performance, especially under challenging internal settings. Existing empirical studies provide inconsistent findings regarding the performance implications of CCD. According to Grove, Patelli, Victoravich and Xu (2011), CCD may facilitate efficiency in the banking sector if boards are able to adequately supervise the actions of executives. Other studies point to the potential of concentration of power to weaken stakeholder accountability and dilute ESG performance (e.g., Dyck, Lins, Roth & Wagner, 2019). Together, these results suggest that CCD needs to be placed in context, considering the organization's risk profile.

Additionally, in the case of Indian commercial banks, where OR is often high due to legacy infrastructure, fragmented IT systems, and stiff bureaucratic structures (Delon, 2024), CCD may provide practical benefits. Having dual leadership may limit the friction of coordination between how the board and management operate and speed up the decision-making process relating to sustainability investment planning, risk mitigation, and regulatory compliance (Krause, Withers & Semadeni, 2017). Keeping in mind that OR is generally accepted as a construct that negatively influences ESG performance, having CCD may lessen this dynamic. Therefore, CCD may serve as a moderating governance structure that helps to mitigate some of the internal limitations of operational inefficiencies and allows greater consistency in undertaking ESG performance. Therefore, building upon the above rationale and through the theoretical lenses of agency and stakeholder theory, we propose the following hypotheses for this study:

H1: OR has a negative impact on ESG performance in Indian commercial banks.

H2: CCD moderates the relationship between OR and ESG performance.

The remaining paper is structured as follows: Section 2 offers methodology, description of data and model development. Section 3 represents the results and discussion. Lastly, Section 4 offers a conclusion along with limitations and future recommendations.

METHODOLOGY

Sample and Data

The sample comprises of Scheduled Commercial Banks (SCBs) in India which are listed in the second schedule of the RBI Act, 1934. SCBs satisfied certain requirements established by the RBI, such as maintaining a certain minimum level of paid-up capital and reserves, and operating in the interest of its depositors. The dataset consists of 32 SCBs, including 12 public and 20 private sector banks. The dataset spans eight financial years from 2017 to 2024. After cleaning for missing values, the final dataset comprises 255 bank-year observations. Continuous variables were winsorized at the 2% threshold to mitigate the impact of outliers and extreme observations. The entire data was derived from LSEG database, a well-known archival source that is noted for its extensive and reliable coverage. A detailed explanation of the variables is presented in table 1.

Table 1. Explanation of Variables

Variable	Definition and Measurement	Reference
Dependent Variable		
ESG Performance	ESG performance is measured using ESG score which assigned by LSEG database. This comprehensive score is calculated using the weighted averages of environmental, social, and governance components. It ranges between zero to hundred per cent.	Karki & Seth (2025).
Independent Variables		
Operational Risk (OR)	OR is measured using the bank efficiency ratio (BER), defined as operating expenses to gross earnings. This metric serves as an indicator of how efficiently a bank manages its costs. An elevated BER suggests diminished operational efficiency, thereby signalling increased OR.	Ebenezer, Islam, Yusoff & Shamsuddin (2018).

Table 1. Explanation...

Variable	Definition and Measurement	Reference
Moderating Variable		
CEO-Chairperson Duality (CCD)	This binary variable equals 1 when the CEO concurrently holds the position of Board Chairperson, and 0 when the roles are separated. It serves as an indicator of consolidated leadership authority within the organization.	Gupta & Mahakud (2020).
Control Variables		
Firm Size (SIZE)	Computed as the natural logarithm of a bank's total assets. It controls for the scale of bank operations.	Biswas, Bhattacharya, Jin, Bhattacharya & Sadarangani (2024).
Leverage (LEV)	Ratio of total debt to total assets. It indicates the financial risk arising from capital structure.	Biswas, Saikia & Bhattacharya (2025).
Liquidity (LQ)	Ratio of available funds to total assets. It assesses the bank's ability to meet short-term obligations.	Sufian & Chong (2008).
Gross domestic product per capita growth (GDP)	Growth rate of gross domestic product per capita. Used to control for macroeconomic variation across time.	Biswas et al. (2024).

Source: author's compilation.

Empirical Model

We use the following equations for testing our two hypotheses. In the equation (1), we test the direct relation between OR and ESG performance. In equation (2), we estimate the moderating effect of CCD on the relation between the OR and ESG performance. In our econometrics models, we employ fixed-effects regression techniques on an unbalanced panel dataset to control for unobserved heterogeneity across banks. Model selection was guided by the Hausman test, the results of which indicated that the fixed-effects specification is more appropriate than the random-effects alternative.

$$ESG\ performance_{it} = \beta_0 + \beta_1 (OR)_{it} + \beta_2 \Sigma(Controls)_{it} + u_{it} \quad (1)$$

$$ESG\ performance_{it} = \beta_0 + \beta_1 (OR)_{it} + \beta_2 (OR \times CCD)_{it} + \beta_3 \Sigma(Controls)_{it} + u_{it} \quad (2)$$

RESULTS AND DISCUSSION

Table 2 summarizes the descriptive statistics for 255 bank-year observations. The dependent variable, ESG performance, has a mean of 31.678 and a standard deviation (SD) of 27.648, indicating moderate variability in ESG performance among Indian banks. ESG scores range from 0 to 86.762, reflecting significant differences in ESG practices. OR shows a mean of 4.452 and SD of 25.612. The moderating variable CCD has a mean of 0.016 and SD of 0.125. Control variables SIZE (mean = 28.513, SD = 1.365), LEV (mean = 0.087, SD = 0.077), while LQ (mean = 0.875, SD = 0.094) and GDP (mean = 4.499, SD = 4.549).

Table 2. Descriptive Statistics

Variable	Observation	Mean	Std. Dev.	Min	Max	Skewness	Kurtosis
ESG performance	255	31.678	27.648	0	86.762	0.088	1.569
OR	255	4.452	25.612	-94.408	355.904	9.136	115.534
CCD	255	0.016	0.125	0	1	7.795	61.766
SIZE	255	28.513	1.365	25.494	31.840	-0.011	2.573
LEV	255	0.087	0.077	0	0.454	2.158	9.307
LQ	255	0.875	0.094	0.489	0.982	-1.692	6.156
GDP	255	4.499	4.549	-6.690	8.791	-1.725	4.764

Source: author’s compilation.

Table 3 represents correlation coefficients among the key variables used in this study. ESG performance shows a positive correlation with SIZE (0.204) and LEV (0.465), suggesting that larger banks and those with higher leverage levels are more likely to engage in ESG activities. However, ESG performance exhibits a negative correlation with LQ (-0.496), indicating that highly liquid banks might allocate fewer resources toward ESG initiatives. OR displays a negative correlation with ESG performance (-0.011), providing preliminary support for the hypothesized inverse relationship between OR and ESG performance. CCD has a positive correlation with both ESG performance (0.037) and OR (0.147).

Table 3. Correlation Matrix

Variables	ESG performance	BER	CCD	SIZE	LEV	LQ	GDP
ESG performance	1.000						
OR	-0.011	1.000					
CCD	0.037	0.147	1.000				
SIZE	0.204	-0.065	0.185	1.000			
LEV	0.465	0.046	0.156	0.214	1.000		
LQ	-0.496	-0.005	-0.170	-0.344	-0.939	1.000	
GDP	0.100	0.020	-0.048	0.011	0.019	-0.010	1.000

Source: author's compilation.

Table 4 represents the results of fixed-effect panel regression analyses examining both the direct and moderating effects of OR on ESG performance among Indian commercial banks. In model 1, which captures the direct effect, OR is found to have a statistically significant and negative impact on ESG performance ($\beta = -0.064$, $p < 0.05$). This finding supports the first hypothesis that higher operational inefficiencies, represented by OR, undermine a bank's capacity to engage effectively in ESG initiatives. Among the control variables, firm size (SIZE) shows a positive and highly significant effect on ESG performance ($\beta = 39.439$, $p < 0.01$), indicating that larger banks are more proactive in sustainability reporting. GDP growth also has a positive and significant relationship ($\beta = 0.467$, $p < 0.05$), reflecting macroeconomic support for ESG advancement.

In model 2, which includes the interaction term (OR \times CCD) to test the moderating effect of CCD, it shows positive and statistically significant ($\beta = 0.109$, $p < 0.01$). This suggests that CCD weakens the negative impact of OR on ESG performance, possibly by enabling more centralized and rapid decision-making in the face of internal inefficiencies. Although the direct effect of CCD alone is negative, it is statistically insignificant ($\beta = -1.394$, $p > 0.10$), implying that its effect is primarily conditional on the level of OR. Other control variables such as LEV and LQ remain statistically insignificant across both models. The R-squared values of 0.374 (model 1) and 0.376 (model 2) indicate that the models explain approximately 37% of the variation in ESG performance.

Table 4. Results for Direct Effect and Moderating Effect

Variables	Model 1	Model 2
	Direct effect	Moderating effect
	ESG performance	ESG performance
OR	-0.064** (0.031)	-0.077** (0.029)
CCD		-1.394 (4.583)
OR X CCD		0.109*** (0.037)
SIZE	39.439*** (6.835)	39.618*** (6.862)
LEV	74.905 (259.682)	82.590 (261.970)
LQ	-6.124 (260.588)	0.917 (262.024)
GDP	0.467** (0.212)	0.459** (0.217)
Constant	-1095.817*** (296.505)	-1107.673*** (297.014)
Observation	255	255
Number of banks	32	32
R-squared	0.374	0.376

Note: stars (***, **, *) mark 1%, 5%, 10% significance.

Source: author’s analysis and calculations.

Table 5 represents the results of robustness check, where the proxy for OR is replaced with the operating expenses ratio (OER) which is operating cost to net income (Trujillo-Ponce, 2012), to validate the consistency of findings. Model 1 examines the direct effect, while model 2 incorporates the moderating role of CCD through the interaction term (OER × CCD). Both models are estimated using a fixed-effects regression approach. In model 1, the coefficient for OER is negative and statistically significant at the 5% level ($\beta = -0.057, p < 0.05$). This indicates that higher operational inefficiencies, as reflected by increased operating expenses, reduce ESG performance. This supports the core premise that OR impairs banks’ capacity to effectively implement and sustain ESG initiatives.

In model 2, the interaction term (OER × CCD) is positive and statistically significant at the 5% level ($\beta = 0.071$, $p < 0.05$), confirming that CCD moderates the negative relationship between OER and ESG performance. The moderating effect suggests that centralized leadership may enable quicker strategic responses and enhance coordination, thereby reducing the detrimental impact of OR on sustainability performance. Control variables such as SIZE continue to show a strong positive and significant influence on ESG performance across both models, reaffirming the role of scale in supporting ESG investments. GDP also maintains its positive and significant association, indicating that favorable macroeconomic conditions contribute to ESG outcomes. Other control variables, including LEV and LQ, remain statistically insignificant in both models. The R-squared values are 0.377 in model 1 and 0.381 in model 2, indicating that both models explain a substantial proportion of the variation in ESG performance. Therefore, the consistency of the results across different proxies for OR reinforces the robustness of the study.

Table 5. Results for Robustness

Variables	Model 1	Model 2
	Direct effect	Moderating effect
	ESG performance	ESG performance
OER	-0.057** (0.027)	-0.094*** (0.025)
Duality		-3.223 (4.329)
OER X CCD		0.071** (0.029)
SIZE	39.775*** (6.829)	39.586*** (6.863)
LEV	61.489 (261.258)	88.567 (266.295)
LQ	-18.989 (261.663)	6.626 (265.681)
GDP	0.433** (0.210)	0.422* (0.212)
Constant	-1092.815*** (301.552)	-1111.782*** (303.115)

Table 5. Results...

	Model 1	Model 2
	Direct effect	Moderating effect
Observation	255	255
Number of banks	32	32
R-squared	0.377	0.381

Note: stars (***, **, *) mark 1%, 5%, 10% significance.

Source: author’s analysis and calculations.

Our study set out to examine how OR influences ESG performance in Indian commercial banks and whether this relationship is moderated by CCD, drawing on stakeholder theory and agency theory. The first hypothesis, which suggests that OR negatively affects ESG performance, is strongly supported. This aligns with stakeholder theory. It posits that organizations are accountable to a wide spectrum of stakeholders whose expectations extend beyond financial outcomes. OR manifests as inefficiencies in internal processes, excessive costs, or weak systems. Hence, it limits the ability of a bank to deploy resources for ESG-related programs. These internal limitations refocus management away from long-term stakeholder-oriented activities, instead focusing on dealing with immediate operational interruptions. This negatively affects ESG performance. Therefore, OR represents a strategic impediment to embedding sustainability and is not merely a financial cost.

The study further supports the second hypothesis, which states that CCD moderates the effect of OR on ESG performance. This aligns with agency theory’s contingency perspective. Specifically, agency theory notes that although centralization can be an agency concern, ultimately the effectiveness of governance structures is contextually dependent from an agency perspective (e.g., risk exposure, type of risk, etc.). While traditional agency theory concerns revolve around the risk of power asymmetry leading to manipulation or exploiting power imbalance, this study indicates that, with a high degree of organizational risk of reputation loss in the OR context, slow, centralized governance structures could lead to effective coordination and implementation of ESG activities. The nuance here is not that CCD contributes means of implementation alone, but rather the efficiencies it allows because of the firm’s ability

to absorb internal inefficiencies while still maintaining its strategic delivery under pressure. In tandem, our study enriches the existing literature by showing that internal operational effectiveness and governance structure are both of equal importance to the achievement of ESG. They underscore the importance of contextualizing ESG strategies within the organizational realities of process efficiency and leadership structure. In India's evolving banking landscape, where ESG mandates are tightening and operational complexity remains high, this interaction between risk and governance warrants greater scholarly and regulatory attention.

■■■ CONCLUSION AND RECOMMENDATIONS

This study extends the body of literature on sustainable banking by providing empirical evidence about the negative impact of OR on ESG performance and the moderating role of CCD. Anchored in stakeholder theory and agency theory, the study demonstrates that internal inefficiencies, including high operating costs and poor cost-to-earnings ratios, compromise banks' ability to deliver on their self-imposed ESG objectives. CCD can mitigate the impact of OR by creating the conditions for effective strategic leadership that can facilitate ESG objectives in otherwise resource-constrained conditions. Given India's evolving regulatory environment, existing infrastructure bottlenecks, and varying levels of ESG maturity, this study is particularly timely and relevant. It concluded that both operational soundness and leadership structures aligned with contextual elements are necessary for effectively embedding ESG. To facilitate effective implementation of the ESG strategies in Indian commercial banks, the following policy and managerial interventions are recommended. First, operational efficiency should no longer be defined merely as an indicator of financial performance but as an essential enabler of ESG adoption. Banks must also foster investment in digital transformation, robust internal control systems, and automated processes to allow for greater resources to be redirected from efficiencies to sustainability. Second, while CCD can facilitate strategic alignment and agile decision-making in high-risk or complex operational environments, it must be counterbalanced with strong board oversight and internal accountability mechanisms to prevent excessive concentration of power. Regulatory bodies should therefore adopt a contextual, risk-sensitive approach to governance prescriptions rather than enforcing a uniform model across all institutions. Third, given the observed posi-

tive relationship between firm size and ESG performance, it is essential to incentivize ESG adoption among smaller and mid-sized banks. This can be achieved through targeted capacity-building programs, regulatory support, and access to ESG-linked financial instruments. Furthermore, ESG considerations should be systematically integrated into banks enterprise risk management (ERM) frameworks. OR assessments must explicitly account for ESG-related vulnerabilities, such as environmental compliance breaches, stakeholder dissatisfaction, and exposure to socially sensitive lending practices. Finally, regulatory authorities such as SEBI and RBI should continue to strengthen ESG disclosure mandates while also issuing clear, standardized guidelines that link OR metrics with sustainability disclosures. Together, these measures can foster a more resilient, transparent and sustainability-oriented banking sector.

Our study has some limitations. We focus only on Indian SCBs; this may limit generalizability to other sectors or countries. The study examines only CCD, excluding other potentially influential governance factors. Future studies could explore the role of other governance dimensions such as board independence and gender diversity. Further studies can also expand the sample to include cooperative banks and non-banking financial institutions. Moreover, case studies could provide deeper insights into how leadership dynamics evolve with ESG maturity.

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