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THE ROLE OF RISK MANAGEMENT COMMITTEE IN ADDRESSING BANK CREDIT RISK: DO CAPITALIZATION AND COVID-19 MATTER?

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Abstract. Risk Management Committees (RMCs) offer specialised expertise that complements the board's strategic vision. This study aims to investigate the impact of RMC efficacy on credit risk, with a focus on the influence of capitalisation and Covid-19 on this relationship. The inclusion of independent directors, an independent chairman, and the active engagement of RMC members has a significant and negative impact on credit risk. Furthermore, the influence of RMC on risk-taking is contingent upon the level of capitalisation, underscoring the importance of integrating risk governance with external oversight to foster stability. Findings also confirm the critical role of risk governance in mitigating banks' credit risk in India during the COVID-19 pandemic. The rapid pace of change in the business environment, coupled with evolving regulatory demands, makes the decision-making process complex. Insights from this study are valuable for regulators and bank management in making informed policy decisions to address future uncertainties.

1. Introduction

Governance failures played a crucial role in triggering the 2008 financial crisis, which led to banks engaging in excessive credit risk-taking (Srivastav and Hagendorff, 2016). It posed a dual threat by endangering bank stability and precipitating adverse economic consequences (Ghosh, 2015). Various characteristics of the banking business model, such as lack of transparency and opacity, operational inefficiency, reliance on central bank liquidity, financial intermediation, and holding risky assets, made them vulnerable to risk (Acharya et al., 2016; Raouf & Ahmed, 2022). While the 2008 crisis stemmed from financial-sector weaknesses, COVID-19 emerged as an unforeseen health crisis (Giese and Haldane, 2020). Unlike previous downturns, the current pandemic had a unique impact on credit risk (Yin et al., 2022). It provides a quasi-natural setting to examine the potential impact of a health crisis.

Effective governance practice facilitates consistent risk assessments and thorough evaluation of asset quality (Faleye and Krishnan, 2017). Given their systemic importance, banks are subject to extensive capital regulation aimed at reducing conflicting interests and ensuring a resilient financial system (Yang et al., 2019). However, while guidelines are undoubtedly crucial, they are insufficient on their own to prevent excessive risk-taking (Addo et al., 2021). The board of directors holds the primary responsibility for managing risks and ensuring alignment

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between risk exposure and the institution's risk appetite (Srivastav and Hagendorff, 2016). As organisations grow, directors may struggle to grasp complex and specialised information essential for sound risk management (RM) choices. Risk Management Committees (RMCs) provide supplementary expertise that supports the development of risk metrics consistent with the bank's risk tolerance, particularly during periods of crisis (Srivastav and Hagendorff, 2016). In India, the formation of a board-level RMC is mandatory for all commercial banks to ensure proper oversight of risk.

The Indian banking sector is marked by an evolving regulatory environment, persistent credit risk challenges, a developing financial ecosystem, and notable economic growth. India's rapid economic advancement is reflected in its 4th position in the World GDP Ranking 2025, highlighting its increasing strategic importance in the global financial landscape. This economic momentum has intensified the scale and complexity of financial intermediation, thereby heightening the need for robust governance mechanisms. Additionally, as a bank-centric economy, India relies primarily on its banking sector to channel both savings and investments. Negi (2020) Asserts that despite the rise of alternative financial intermediaries, banks continue to exert a substantial influence on long-term economic growth. While governance plays a crucial role in ensuring financial stability, there is a notable lack of academic research on the impact of risk governance on credit risk in the Indian context. This study aims to assess the effect of RMC composition on credit risk-taking in banks. Additionally, this study examines the moderating role of capital adequacy and the COVID-19 crisis in shaping the relationship between risk governance structures and bank credit risk exposure. This study provides a valuable model for maintaining asset quality in other emerging and developing economies, especially in today's interconnected global economy.

This study makes several significant contributions to the literature on bank risk governance. First, although global interest in this area is increasing, existing research remains primarily concentrated in developed economies and often overlooks the unique systems and challenges of emerging markets, such as India (Jha et al., 2015). Second, the methodological strength of this study lies in its comprehensive inclusion of ten distinct RMC-related indicators. Unlike previous studies that examine RMC characteristics in isolation, this study employs principal component analysis to capture the complex interrelationships among attributes effectively. Third, we are pioneering in understanding the influence of RMC attributes on credit risk. In India, governance research primarily focused on the board of directors, thereby neglecting the critical role of specialised risk committees in shaping bank risk-taking (Gupta and Sharma, 2022; Mayur and Saravanan, 2017; Shukla et al., 2020, 2021). Furthermore, this study advances the literature by analysing how risk governance frameworks interact with external factors. While earlier research often considers capitalisation in isolation, this study examines its combined impact on credit risk. Additionally, COVID-19 posed unusual challenges to the global financial system; this study examines the pandemic's effect on the risk mitigation efficacy of RMCs. By integrating both capitalisation and the pandemic into the analysis, this research offers a more nuanced understanding of risk governance.

The paper is organised as follows: Section 2 reviews the relevant literature and outlines the hypotheses developed for the study. Section 3 explains the research methodology used for the empirical analysis. Section 4 reports and interprets the empirical results. Finally, section 5 concludes the study by summarising the key findings and their implications.

2. Related literature review and hypothesis development

2.1. **Risk Governance and Risk Taking.** The foundation of the relationship between RMC and risk-taking lies in agency theory. Since agents exhibit self-serving behaviour, agency problems significantly impact banks' risk decisions, necessitating a governance role to prevent risk exposure and information asymmetry (Eisenhardt, 1989; Jensen and Meckling, 2019; Mester, 1991). Proactive control mechanisms can mitigate excessive risk-taking behaviours preceding crisis. For instance, Andries and Brown (2017) reported that strong RMCs led to cautious

credit risk-taking and lower pre-crisis credit expansion. In a similar vein, Yeh (2017) suggests that adequate risk controls can manage rising default risks. Furthermore, Aebi et al. (2012) emphasise that banks where the Chief Risk Officer (CRO) reports directly to the board of directors, rather than to the CEO, exhibit significantly better performance during the 2008 financial crisis. Galletta et al. (2021) also highlight the importance of RMC size and structural complexity in mitigating liquidity risk in European banks. Likewise, Abid et al. (2021) found that both well-structured RMC and CRO's characteristics substantially reduce credit risk in Asian banks. However, Aljughaiman and Salama (2019) argue that a board-level risk committee considerably reduces bank risk-taking. Still, the presence of a Chief Risk Officer (CRO) does not have the same effect in the Middle East and North Africa (MENA) region.

Although RMCs, intended to manage risk and balance the interests of management and shareholders, may inadvertently encourage greater risk-taking, as evidenced by Mashamba and Gani (2022), in the context of African nations. Also, previous research suggests the evolving nature of the relationship, as, Nguyen and Dang (2023) suggest aligning sound risk governance mechanisms with a supportive institutional framework to strengthen risk oversight in banks. Similarly, Raouf and Ahmed (2022) argue that board-level RG practices strengthen RM efficacy in conventional banks but not in Islamic banks. In the context of Indian banks, some studies investigated the board of directors' influence on credit risk (Dalal et al., 2023; Gupta and Sharma, 2022; Mayur and Saravanan, 2017; Shukla et al., 2020, 2021) and the role of RMCs on performance and productivity (Battaglia and Gallo, 2015; Prakash et al., 2022). However, limited scholarly attention has been devoted to the distinct role and effectiveness of RMCs in managing credit risk within the Indian context. We hypothesise that:

Ha1: The credit risk appetite of banks is significantly influenced by the robust and independent RMCs.

2.2. **Risk Governance, Risk Exposure, and Regulatory Capital.** Capital has been a fundamental component of regulatory frameworks since the establishment of the Basel Committee on Banking Supervision. Banks may raise asset risk to comply with rule-driven capital increases, unless they are constrained by regulatory limits (Shrieves and Dahl, 1992). Well-capitalised banks typically exhibit more effective RM, resulting in lower non-performing assets (NPAs), observed in both developed and developing countries (Berger & Young, 1997; Chaibi & Ftiti, 2015; Ellul & Yerramilli, 2013; Godlewski, 2005; Goswami, 2022; Grohmann & Menkhoff, 2021; Lindquist, 2004; Maji & De, 2015; Ben Zeineb & Mensi, 2018). The theoretical background behind it revolves around the 'Moral Hazard Hypothesis", which states that banks with inadequate capital elevate the risk level of their loan portfolios, which often leads to problematic assets in the future (Berger & Young, 1997). An increased level of capital incentivises shareholders to enhance monitoring, governance, and overall RM practices (Srivastava et al., 2023). The effectiveness of capitalization in reducing NPAs remains uncertain. Interestingly, the latest research provides some evidence of a positive association between capital and risk (Haque, 2019; Hellmann et al., 2000; Qureshi & Lamarque, 2023; Rizvi et al., 2020).

Though research related to analyzing the moderating impact of capitalization is scarce, a couple of studies have explored the following aspects: Andrieș et al. (2017) report well-capitalised banks with stringent RMCs are technically more efficient. However, Srivastava et al. (2023) emphasise that regulatory capital requirements are linked to decreased risk-taking and the mitigation of destabilising impacts of competition. Similarly, Gaganis et al. (2020) Suggest that regulatory capital, combined with stringent governance practices, guide banks to indulge in less systemic risk. The existing literature does not address the potential impact of bank capital in shaping the association between RMC and credit risk. Hence, we propose the following hypothesis: Ha2: The bank's capitalisation level moderates the relationship between RMC characteristics and credit risk-taking.

2.3. **Risk Governance, Risk Exposure, and COVID-19.** Crises serve as crucial moments for uncovering the mistakes and inefficiencies that often occur during periods of economic expansion (Berger & Demirgüç-Kunt, 2021). Several studies (Carletti et al., 2020; Tao & Hutchinson, 2013; Unctad, 2010) emphasised that the 2008 financial crisis was primarily induced by a deficient corporate governance structure, a flawed remuneration system, inadequate RM, and internal controls. Recognising governance shortcomings, international bodies and regulators have issued guidelines aimed at enhancing the effectiveness of governance. Consequently, banking systems approached COVID-19 with increased resilience and safety measures.

The literature suggests a diverse impact of the pandemic on the banking sector's loan portfolio. (Beck & Keil, 2022) emphasise that lockdown measures spurred loan growth. Gulati et al. (2023) highlight the resilience and efficiency of Indian banks during the COVID-19 pandemic. However, as their analysis is limited to the period 2020-21 only, it indicates the need for further research. Conversely, EL-Chaarani et al. (2023) argued that the pandemic had a detrimental impact on financial performance and credit risk in the MENA region. Along the same vein, Elnahass et al. (2021), based on a global dataset of 116 countries, reveal the adverse effects of COVID-19 on market performance and financial stability. A recent study conducted by Uddin (2023) emphasises the moderating role of crises in the corporate governance and earnings management nexus, suggesting that companies reduce earnings management during periods of crisis. We hypothesise that:

Ha3: COVID-19 moderates the relationship between RMC characteristics and credit risk-taking.

3. Methodology and Data

3.1. **Dataset and sample selection.** This study examines 27 public and private sector banks currently operating in India. To avoid the potential impact of the financial crisis in the initial years (2008-2011), we selected a sample period from 2011-12 to 2022-23, following significant advancements in banking supervision post the global financial crisis (Raouf & Ahmed, 2022). Governance variables are extracted from banks' annual reports, while control variables and credit risk data are obtained from the Ace Equity and RBI DBIE databases. Macroeconomic indicators are sourced from the World Bank's World Development Indicators.

3.2. Key Variables used in the study.

3.2.1. *RMC Components:* The key attributes constituting the favourable RMC attributes, as defined by regulatory bodies and academic experts, include:

1. RMC Composition: A diverse board provides considerable benefits (Adams et al., 2015). Despite divergent opinions, Srivastav and Hagendorff (2016) highlight the effectiveness of larger boards and independent directors in assessing risk and minimising opportunistic managerial actions. Furthermore, the presence and participation of women in RMC can enhance RM due to their risk-conscious approach (Aldhamari et al., 2020). Also, busy directors bring valuable expertise from diverse industries (Galletta et al., 2021).

2. RMC meetings and attendance: Banks require precise and timely information, and proactive RMCs ensure close control over complex risky activities, as supported by seminal paper (Agnese & Capuano, 2020; Battaglia & Gallo, 2017; Felício et al., 2018).

3. Chief Risk Officer: BCBS norms, 2015, Principle 6, emphasise the significance of CRO presence as well as their communication and access to the board.

4. Risk Appetite Framework (RAF): A Risk Appetite Framework means the bank has clear rules and systems in place to decide, control, and regularly check that it is not taking more risk than it should. Financial stability board (2013) suggests that appropriate RAF help banks in safeguarding against undue risk exposure.

3.2.2. *Credit risk.* NPA means, banking assets cease to generate revenue" or "become overdue more than 90 days". We utilise two widely recognised measures to assess credit risk: GNPA and NNPA (Gaganis et al., 2020; S. Ghosh, 2017; Konishi & Yasuda, 2004; Mujtaba et al., 2022; Srivastava et al., 2023). NNPA represents the level of non-performing assets remaining after deducting provisions made against gross NPAs.

3.2.3. *Control Variables.* To ensure internal validity, various control variables affecting risk-taking beyond risk governance are included, such as Internal factors, board characteristics, and economic indicators (Antony & Suresh, 2023; Leung et al., 2015), as detailed in Table 1.

3.3. **Methodology.** We employ Principal Component Analysis (PCA) to construct factors that capture the risk governance dimensions outlined by Aljughaiman and Salama (2019). It offers additional advantages by being immune to subjective judgments, assigning intrinsic weights to factors, and explaining a large portion of data variance while addressing multicollinearity issues (Sun et al., 2009). To ensure PCA's effectiveness, we standardise values by normalising quantitative variables using the minimum-maximum method, ensuring the variables range from 0 to 1.

The analysis grouped the variables into four distinct risk management indicators: RMC1, RMC2, RMC3, and RMC4. The optimal number of factors is determined by using the scree plot and eigenvalues; eigenvalues > 1 are retained (Aebi et al., 2012). Kaiser-Meyer-Olkin test measures of sampling adequacy (value > 0.5) and a significant result from Bartlett's test of sphericity confirmed the suitability of the data (Jollife and Cadima, 2016). The cluster of variables are defined in Table 2.

To examine the impact of RMC on credit risk, several models are estimated by progressively incorporating risk governance variables, bank-specific factors, macroeconomic indicators, and finally integrating all variables in the main model (Pop et al., 2018). Lagged NPAs included to capture past influences on current values (Raouf and Ahmed, 2022; Yeh, 2017).

$$\mathrm{NPA}_{i,t} = \alpha_i + \beta_1 \mathrm{NPA}_{i,t-1} + \beta_2 \mathrm{RMC1} + \beta_3 \mathrm{RMC2} + \beta_4 \mathrm{RMC3} + \beta_5 \mathrm{RMC4} + \beta_6 \mathrm{Control} + \varepsilon_{i,t} \quad (1)$$

Here, i represents banks, while t denotes the timeframe.

Furthermore, we add moderating variables to capture the multifaceted nature of the relationship. Incorporating Covid-19 and capitalisation enables us to evaluate how the external environment and regulatory norms affect the governance-risk relationship, respectively. The linkages between key variables are shown in Figure 1.

Model 1:

$$\begin{aligned} \mathrm{NPA}_{i,t} = {} & \alpha_i + \beta_1 \mathrm{NPA}_{i,t-1} + \beta_2 \mathrm{RMC1} + \beta_3 \mathrm{RMC2} + \beta_4 \mathrm{RMC3} + \beta_5 \mathrm{RMC4} \\ & + \beta_6 (\mathrm{RMC1} \times \mathrm{CAR}) + \beta_7 (\mathrm{RMC2} \times \mathrm{CAR}) + \beta_8 (\mathrm{RMC3} \times \mathrm{CAR}) \\ & + \beta_9 (\mathrm{RMC4} \times \mathrm{CAR}) + \beta_{10} \mathrm{Control} + \varepsilon_{i,t} \end{aligned} \quad (2)$$

Model 2:

$$\begin{aligned} \mathrm{NPA}_{i,t} = {} & \alpha_i + \beta_1 \mathrm{NPA}_{i,t-1} + \beta_2 \mathrm{RMC1} + \beta_3 \mathrm{RMC2} + \beta_4 \mathrm{RMC3} + \beta_5 \mathrm{RMC4} \\ & + \beta_6 (\mathrm{RMC1} \times \mathrm{COV}) + \beta_7 (\mathrm{RMC2} \times \mathrm{COV}) + \beta_8 (\mathrm{RMC3} \times \mathrm{COV}) \\ & + \beta_9 (\mathrm{RMC4} \times \mathrm{COV}) + \beta_{10} \mathrm{Control} + \varepsilon_{i,t} \end{aligned} \quad (3)$$

Panel data are effective in handling unobserved heterogeneity, decreasing collinearity among variables, enhancing flexibility, and boosting efficiency (Sarafidis & Wansbeek, 2021) . For analysis, we use a Random Effects regression model, as suggested by the Hausman test result. Also, Fixed effects estimation with a considerable number of observations but relatively few time periods can lead to a reduction in degrees of freedom and inconsistency (Baltagi, 2007). The presence of heteroscedasticity is assessed through the Breusch-Pagan test. Consequently, to ensure the validity of our inferences, robust standard errors are computed using the "VCE

TABLE 1. Overview of Variables in the Study

Variable	Notation	Definition	Reference
Risk Management Committee			
Size	Size	Number of directors in RMC on the last day of the relevant year	(Galletta et al., 2021)
Independence	Ind	Number of independent directors in RMC	(Aljughaiman & Salama, 2019)
Chairman Independence	Ch Ind	The score is 1 if RMC chairman is independent; otherwise, it is 0.	(Raouf & Ahmed, 2022)
Gender Diversity	GD	Number of female directors in RMC	(Aldhamari et al., 2020)
CRO Presence	CROP	The score is 1 if the bank has a CRO; otherwise, it is 0.	(Andries & Brown, 2017)
CRO-Communication	CROC	The score is 1 if the CRO directly reports to the board; otherwise, it is 0.	(Andries & Brown, 2017)
Meetings	Meet	Total number of RMC meetings conducted during the relevant year	(Aljughaiman & Salama, 2019)
Attendance Rate	Att	Ratio of the total RMC meetings conducted to the meetings attended	(Fernandes et al., 2018)
Risk Appetite	R.Ap	The score is 1 if the bank follows the risk appetite framework for risk management; otherwise, it is 0.	(Financial Stability Board, 2013)
Busyness	Busy	Number of directors holding multiple directorships. Criteria used is: If executive directors hold directorships in more than three company boards is busy; if non-executive directors serve on more than six company boards is busy.	(Galletta et al., 2021)
Dependent Variables			
Net Non-Performing Asset	NNPA	$\frac{\text{Net Non-Performing Asset}}{\text{Total Loans}}$	(Gaganis et al., n.d.; S. Ghosh, 2017; Konishi & Yasuda, 2004; Mujtaba et al., 2022)
Gross Non-Performing Asset	GNPA	$\frac{\text{Gross Non-Performing Asset}}{\text{Total Loans}}$	(S. Ghosh, 2017; Konishi & Yasuda, 2004; Mujtaba et al., 2022)
Control Variables			
Bank Age	Age	Years have passed since the bank was established	(Aljughaiman & Salama, 2019)
Firm Size	FS	Total assets, in logarithm	(Nguyen & Dang, 2023)
Return on Asset	ROA	$\frac{\text{Net Income}}{\text{Total Asset}}$	(Galletta et al., 2021)
Ownership	OWN	Dummy variable 1 if private bank; otherwise, 0	(Prakash et al., 2022)
Board Committees	B Com	Total number of board-level committees in the bank	(Bhatia & Gulati, 2020)
LOG. Board size	B Size	Number of directors in the board in a year, in logarithm	(Aebi et al., 2012)
Covid-19	COV	Dummy variable 1 for years corresponding to the COVID-19 period in India (2020, 2021, and 2022), and 0 otherwise	(Colak & Oztekin, 2021)
Capital Adequacy Ratio	CAR	$\frac{\text{Tier 1 Capital + Tier 2 Capital}}{\text{Risk Weighted Assets}}$	(Alzayed et al., 2023)
Unemployment rate	Unemp	Unemployment rate	(Gupta & Sharma, 2022b)
Inflation	CPI	Consumer Price Index	(Gupta & Sharma, 2022b)
Growth rate	gGDP	Economic growth rate %	(Aljughaiman & Salama, 2019)

TABLE 2. RMC components derived by using PCA

Factor	Components	Loading	Cumulative variance explained (%)
RMC1	Independence	0.5299	0.195
	Chairman Independence	0.3915	
	Attendance Rate	-0.3297	
RMC2	Risk Appetite	0.5211	0.360
	CRO Presence	0.4995	
	Size	-0.4974	
RMC3	Meetings	0.6265	0.480
	Gender Diversity	0.5472	
RMC4	Busyness	0.6044	0.588
	CRO Communication	0.5799	

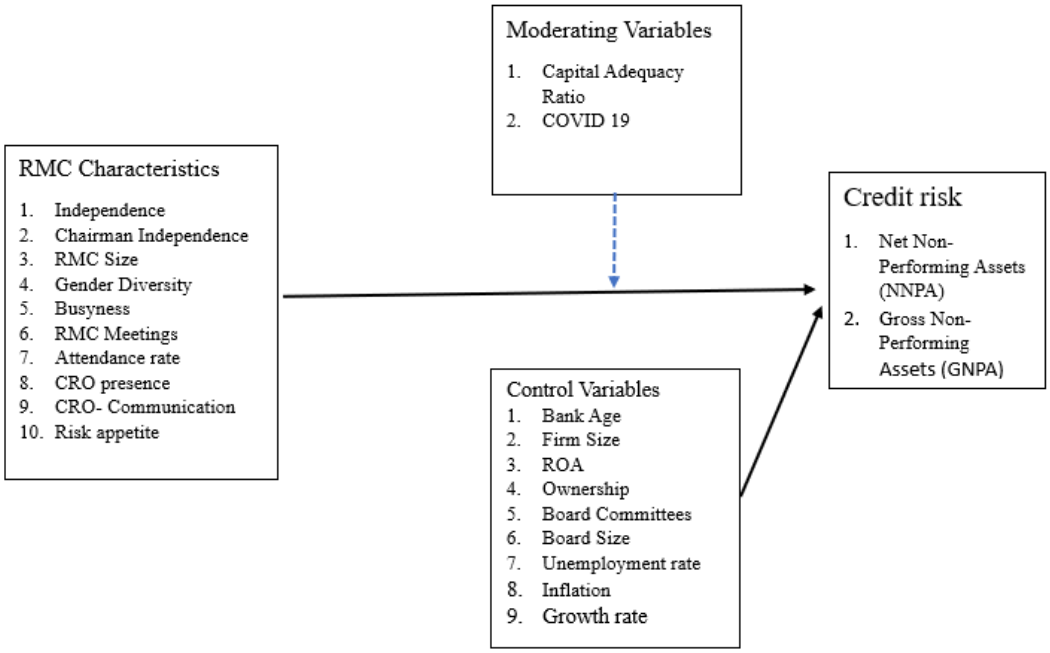

FIGURE 1. Graphical Representation Illustrating Framework of the Study

(ROBUST)" function. To address endogeneity concerns and validate the robustness of the findings, the analysis employed a dynamic panel estimation using the Generalised Method of Moments (GMM) approach.

4. Empirical Results and Discussions

4.0.1. *Key summary statistics.* To analyse the distribution properties of the variables used in the study, descriptive statistics are presented in Table 3. The Average board size in RMC is about 5 members, with variability ranging from 2 to 12 members in India. On average, four meetings are held with a commendable attendance rate. The majority of committee members are independent directors, indicating a positive trend; however, female participation and the number of banks with independent chairmen are relatively low. On average, there is a low prevalence of banks appointing a chief risk officer, while most banks adhere to a risk appetite framework for managing risk. Finally, we note the lower asset quality of Indian banks, which

reflects the impact of RBI-mandated provisioning, with mean values for GNPA at 5.92 and NNPA at 2.78.

TABLE 3. Key summary statistics of the variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Meet	324	4.84	1.558	1	9
Att	324	0.908	0.096	0.48	1
Size	324	5.432	1.519	2	12
GD	324	0.404	0.654	-3	4
Ind	324	2.747	1.103	0	5
Ch Ind	324	0.525	0.500	0	1
Busy	324	0.472	0.863	0	4
CROP	324	0.620	0.486	0	1
R.Ap	324	0.830	0.376	0	1
CROC	324	0.546	0.499	0	1
NNPA	324	2.785	2.656	0.01	15.33
GNPA	324	5.927	5.110	0.20	25.28
CPI	324	156.415	27.961	108.91	205.27
Unemp	324	7.421	0.970	4.82	8.22
ROA	324	0.613	0.977	-5.39	2.47
CAR	324	14.419	2.940	8.46	27.10
Age	324	77.423	34.911	9	129
B Size	324	5.312	0.569	3.858	6.742

Note(s): The table presents a comprehensive overview of summary statistics for all variables. Variable notations are explained in Table 2.

4.1. **Regression results.**

4.1.1. *Primary model.* In Table 4, we conduct estimations using four specifications, progressively incorporating risk governance variables, bank-specific factors, and macroeconomic indicators, and finally integrating all variables in the main model. A consistent, statistically significant, and positive coefficient of lagged NNPA confirms the persistence of credit risk in bank lending. The RMC1 coefficient is consistently significant and negative, indicating that independent directors, the Chairman's independence, and active participation significantly reduce credit risk in Indian banks. Our findings provide an initial illustration of the broader impact that board committee independence has on banks' RM. Independent directors serving on the RMC, owing to their enhanced access to financial information and strong oversight responsibilities, are better positioned to design and implement strategies that effectively reduce NPAs. Furthermore, independent directors in the RMC are also incentivised to closely monitor management to safeguard against reputational harm. Director attendance at RMC meetings is crucial for gathering information essential to informed decision-making.

However, while RMC2, encompassing RAF, CRO presence, and RMC size, exhibits a negative relationship across all models, its statistical significance is observed only in models 1 and 2. Similarly, RMC4 shows a negative and significant association in models 1 and 2. The impact of meeting frequency and gender diversity is negligible. Insignificant female participation is likely due to a low percentage and potential symbolic tokenism rather than true diversity. The evidence supports some aspects, but not all, of the proposed claims, leading to a partial acceptance of the hypotheses. Incorporating different control variables from models 1 to 4 enhances the reliability of the results and increases the model's explanatory power from 74% to 80%. These results confirm that control variables influence credit risk, supporting their

inclusion in our base model as established in existing literature (Antony & Suresh, 2023; Leung et al., 2015).

Table 4. Risk committee characteristics and NNPA

NNPA	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
L.NNPA	0.794	0.000***	0.808	0.000***	0.645	0.000***	0.605	0.000***
RMC1	-0.158	0.000***	-0.100	0.025**	-0.142	0.021**	-0.130	0.045**
RMC2	-0.231	0.000***	-0.144	0.017**	-0.050	0.489	-0.020	0.781
RMC3	-0.049	0.296	0.053	0.207	0.023	0.593	0.056	0.232
RMC4	-0.127	0.043**	-0.114	0.055*	0.075	0.225	0.020	0.762
Unemp			0.621	0.000***			0.668	0.000***
CPI			0.006	0.077*			0.015	0.007***
gGDP			0.073	0.003***			0.064	0.001***
OWN					0.007	0.976	-0.190	0.443
COV					-0.354	0.038**	-0.283	0.115
AGE					0.000	0.883	0.001	0.595
FS					0.073	0.651	0.131	0.477
B Com					0.000	0.998	-0.002	0.901
B Size					2.267	0.077*	1.930	0.136
CAR					-0.116	0.009***	-0.044	0.439
ROA					-0.558	0.028**	-0.635	0.023**
C	0.633	0.000***	-5.368	0.000***	0.487	0.736	-7.971	0.001***
R-Squared	0.741		0.773		0.787		0.802	
P-value	0.000***		0.000***		0.000***		0.000***	

Notes: (1) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. (2) Refer to the notation from Table 2. The table presents findings that highlight the factors influencing asset quality in Indian banks.

4.1.2. *Moderating variables.* Table 5, Model 1 presents the observed results concerning Hypothesis 2, which states that strong risk governance practices, when coupled with ample capitalisation, enhance RM strategies. The study reveals a significant negative impact of favourable RM characteristics and the capital adequacy ratio on bank risk-taking, controlling for other variables. These results are consistent with the findings of (Godlewski, 2005; Goswami, 2022; Lindquist, 2004) and "'Moral Hazard Hypothesis'". The interaction between the RMC1 and CAR is significantly positive. Interestingly, previously insignificant factors RMC2 and RMC4, when combined with CAR, now exhibit a significant negative influence on credit risk. Therefore, the findings align with hypotheses, indicating a moderating role of regulatory capital on the relation between RM indices and risk-taking. The coefficients exhibit increased robustness, and the model's explanatory power also improved compared to Model 4 in Table 4.

Table 5, Model 2, presents the findings regarding the hypothesis testing the moderating effect of the pandemic on credit risk taking. The coefficients for RMC1 and COV are both negative and statistically significant. The inverse correlation between the crisis and credit risk indicates the effectiveness of bank-level monitoring, the substantial role played by the central bank in governance, and the efficacy of regulatory norms. Additionally, the interaction between the pandemic and RMC1 is significantly positive, thereby rejecting the proposed hypothesis. Other factors such as RMC2, RMC3, and RMC4 remain insignificant. These findings align with previous studies (Elnahass et al., 2021; Gulati et al., 2023) as well as the Resilience theory of crisis management developed by Garmezy (1991). According to resilience theory, effective crisis management can lead to new opportunities amidst evolving challenges, such as the emergence of a new digital era for banking services post-pandemic (EL-Chaarani et al., 2023)

TABLE 5. Risk committee characteristics, NNPA, and interaction terms

NNPA	**Model 1**		**Model 2**	
	Coeff.	p-value	Coeff.	p-value
L.NNPA	0.545	0.000***	0.614	0.000***
RMC1	-1.176	0.000***	-0.208	0.001***
RMC2	-1.171	0.001***	-0.044	0.619
RMC3	0.427	0.163	0.105	0.072*
RMC4	-0.626	0.036**	0.036	0.676
RMC1×CAR	0.076	0.000***		
RMC2×CAR	0.084	0.001***		
RMC3×CAR	-0.025	0.214		
RMC4×CAR	0.040	0.042**		
RMC1×COV			0.347	0.014**
RMC2×COV			0.183	0.292
RMC3×COV			-0.155	0.223
RMC4×COV			0.053	0.733
Unemp	0.707	0.000***	0.645	0.000***
CPI	0.017	0.003***	0.014	0.006***
gGDP	0.069	0.000***	0.059	0.003***
OWN	-0.330	0.228	-0.262	0.305
COV	-0.230	0.236	-0.414	0.025**
Age	0.002	0.365	0.001	0.538
FS	0.110	0.503	0.094	0.599
B Com	-0.011	0.661	0.002	0.896
B Size	0.858	0.514	1.349	0.288
CAR	-0.107	0.027**	-0.044	0.381
ROA	-0.627	0.009***	-0.618	0.018**
C	-6.552	0.008***	-6.968	0.012**
R-Squared	0.822		0.811	
P-value	0.000***		0.000***	

Notes: (1) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. (2) Refer to the notation from Table 2. (3) The table presents the moderating impact of COVID-19 and regulatory capital.

4.2. **Robustness.** Wintoki et al. (2012) suggested employing "dynamic panel GMM" models to effectively address endogeneity issues in corporate governance research. Results are presented in Table 6. When executing the xtabond2 command, the specifications include constraining the instrument by the "collapse" function, implementing "robust" for Windmeijer-corrected standard errors, and orthogonal deviations rather than differencing. Two-step GMM is preferred because it adjusts weight matrices based on consistent parameter estimates, which is especially crucial for dynamic relationships (Windmeijer, 2005). The replication of results, along with the consistency observed across different components, underscores the reliability and robustness of our findings. The precision of the findings is tested through the Arellano-Bond test for detecting serial correlation in the error term and the Hansen test for excess instrument utilisation, a concern particularly with the system GMM. The lack of significance in the Hansen test and AR2, along with the relevance of AR1 in all models, supports our results. For robustness, we re-evaluated the main model using the GNPA ratio as a key metric for credit risk. We eliminated the table from the report since the outcomes were identical. Therefore, our study offers valuable insights into the relationship between independent directors, Chairman's independence, RMC attendance, and credit risk, as we observe consistent outcomes even after resolving endogeneity issues and using GNPA as a substitute measure.

TABLE 6. Arellano and Bond dynamic panel GMM

NNPA	**Model 1**		**Model 2**		**Model 3**		**Model 4**	
	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value	Coeff.	p-value
L.NNPA	0.883	0.000***	0.831	0.000***	0.766	0.000***	0.791	0.000***
RMC1	-0.126	0.009***	-0.089	0.036**	-0.363	0.077*	-0.625	0.069*
RMC2	-0.190	0.001***	-0.129	0.037**	-0.468	0.396	-0.073	0.839
RMC3	-0.078	0.134	0.028	0.583	0.098	0.481	0.300	0.387
RMC4	-0.064	0.378	-0.093	0.348	0.225	0.443	0.518	0.530
Unemp			0.509	0.000***			1.085	0.005***
CPI			0.004	0.289			0.052	0.146
gGDP			0.056	0.030			0.129	0.077*
COV					-0.168	0.802	0.616	0.142
AGE					-0.002	0.962	-0.005	0.927
FS					-1.026	0.707	-3.228	0.228
ROA					-0.416	0.439	-0.733	0.327
CAR					-0.136	0.394	0.082	0.652
B Com					-0.030	0.821	-0.118	0.741
B Size					12.274	0.062*	27.657	0.001***
C	0.356	0.000***	-4.145	0.005	-245.159	0.634	-24.512	0.090*
AR1	-2.860		-2.960		-2.910		-2.81	
P- value	0.004***		0.003***		0.004***		0.005***	
AR2	0.400		0.410		-1.520		-1.640	
P- value	0.687		0.680		0.130		0.100	
Hansen	21.93		22.09		19.09		11.62	
P- value	0.188		0.140		0.793		0.114	

Notes: (1) *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$. (2) Refer to the notation from Table 2. (3) The table presents findings highlighting factors that influence asset quality in Indian banks by using the GMM method.

5. Findings and Conclusion

In this study, we examine the relationship between risk governance and credit risk-taking behaviour. Credit risk remains one of the most significant threats to the stability of the banking industry in India. The dynamic interaction of economic factors, regulatory challenges, and sector-specific exposure intensifies this risk. To ensure stability, banks must strengthen their due diligence processes and adopt more proactive governance practices. We empirically analyse this relationship using a set of public and private sector banks in India from 2012 to 2023. Our results indicate that an effective risk governance framework reduces overall credit risk exposure, underscoring the importance of robust risk governance practices among commercial banks. Moreover, our findings emphasise that neglecting interaction in governance studies can result in drawing false conclusions. The impact of risk governance practices on credit risk is contingent upon COVID-19 and the capital adequacy ratio.

Contrary to our expectations, empirical evidence did not support the anticipated adverse impact of the pandemic on credit risk-taking. This resilience can be attributed to stringent credit policies enforced by banks, complemented by accommodative monetary policy and prudential regulations during crisis periods, as highlighted by the International Monetary Fund (2021). In India, the impact of COVID-19 on loan growth and NPAs was relatively short-lived, leading to sustained asset quality throughout the pandemic. Notably, Indian banks were resilient during the 2008 global crisis, mainly due to cautious regulations on capital provisioning and proactive fiscal and monetary policies implemented (Kumar and Vashisht, 2009). Notably, specific components of RMC demonstrate adverse or insignificant effects on risk-taking, but become significant when accounting for the interaction with the degree of capitalisation. It

highlights a crucial aspect that RM policies of RMC align with those prescribed by supervisors, effectively balancing the limited interests of shareholders with the broader public interests of regulators. This synergy between governance mechanisms and regulatory guidelines collaboratively constrains bank credit risk-taking. Our study highlights that integrating robust internal governance (such as effective RMCs) with external oversight (such as Regulatory capital) is crucial for minimising risk-taking and promoting stability.

The research contributes to the expanding literature on bank governance and risk-taking, offering valuable insights for policymakers, bank managers, and other stakeholders. Given India's remarkable growth, substantial financial sector reforms are expected, further integrating the country with other nations. This study provides regulators—particularly in countries with evolving risk governance frameworks—valuable insights to strengthen policies and enhance bank asset quality. Furthermore, this study contributes to the ongoing debate about the impact of COVID-19 on global economies. By illustrating the resilience of Indian banks, this study provides a crucial insight for lawmakers and other stakeholders to inform critical policy discussions in the aftermath of COVID-19. The research enhances understanding of the complex dynamics of RM, exploring whether robust internal governance alone can ensure bank stability or if regulatory norms are also essential. We propose a more integrated approach to risk governance—one that considers capitalisation and responds effectively to external economic shocks—as a pathway to creating more resilient banking institutions.

This research could be expanded by examining the critical role of RMCs across different banking systems and diverse financial systems, followed by cross-country comparisons to understand the nuances of these variations. However, the lack of data availability restricted us from conducting a comparison between the pre-crisis and post-crisis periods. Such a comparison could potentially uncover differential impacts across these phases. Moreover, exploring the specific policy measures implemented by India during crisis periods that contributed to its resilience would be valuable. A comparative analysis of policy measures during both the COVID-19 crisis and the 2008 crisis could offer valuable insights into practical strategies for navigating economic challenges.

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