Does Corporate Governance Influence Firms' Credit Ratings? Evidence from India

Jaspreet Kaur [1]
Soma Dey [2]

Abstract

Purpose : Credit rating was an indicator of a firm's creditworthiness, evaluated by rating agencies using firm-level characteristics combined with their judgment and experience. The literature hypothesized that a firm's governance mechanism influenced its likelihood of default and the risk to debtholders. In this context, this study examined the impact of corporate governance on credit ratings.

Methodology : One hundred thirty-one non-financial Indian listed firms that received ratings from India's top four credit rating agencies from 2011 to 2021 formed the study sample. Ordered probit regression and marginal effect analysis were used to investigate the influence of selected corporate governance variables on credit ratings.

Findings : The results revealed that increased board size, gender diversity, institutional investor ownership, promoter shareholding, and independence of audit and compensation committees make it more likely for firms to achieve higher credit ratings. In contrast, an increase in insider ownership and CEO role duality were associated with lower credit ratings. Board characteristics and ownership structure emerged as the most critical governance categories, with board size and gender diversity having the most significant impact on credit ratings.

Practical Implications : The findings demonstrated that good governance improves credit ratings, helping to mitigate the information asymmetry problem faced by investors.

Originality : The research provided evidence on less explored corporate governance factors in determining credit ratings in an emerging market like India.

Keywords : **credit rating, corporate governance, board size, gender diversity, ordered probit regression**

JEL Classification Codes : G24, G30, G32, G34

Paper Submission Date : January 5, 2024 ; Paper sent back for Revision : August 26, 2024 ; Paper Acceptance Date : September 20, 2024 ; Paper Published Online : January 15, 2025

The debtholders of a firm are exposed to risk arising from agency conflicts in the firm. The first is the "agency risk" arising from the divide between ownership and control, where managers tend to prioritize their interests over those of stakeholders and may possess private information that impacts a firm's default risk. The second risk is due to a conflict of interest between debtholders and shareholders, which might lead to "wealth redistribution." The shareholders can influence managers to make risky decisions that might increase the firm's value but decrease the firm's ability to generate future cash flows, leading to a wealth transfer from bondholders to shareholders. Therefore, the governance mechanism of a firm affects the debtholder's risk and hence influences the firm's likelihood of default. Credit rating can be used to assess debtholders' credit risk and predict the likelihood of a firm's default. It indicates a firm's ability and willingness to pay off its outstanding debt.

[1] *Research Scholar,* Faculty of Management Studies (FMS), University of Delhi, North Campus, Delhi - 110 007. (Email : jaspreet.phd@fms.edu) ; ORCID iD : https://orcid.org/0000-0001-5576-3361

[2] *Professor (Corresponding Author),* Faculty of Management Studies (FMS), University of Delhi, North Campus, Delhi - 110 007. (Email : soma.dey@fms.edu) ; ORCID iD : https://orcid.org/0000-0002-4443-2433

DOI : https://doi.org/10.17010/ijf/2025/v19i1/174694

Credit rating agencies consider several factors (financial and non-financial) and use their experience and judgment to provide ratings to a firm. Due to the lack of a standard formula for determining credit ratings, it is essential to understand the factors influencing rating agencies' decision to arrive at a particular credit rating.

While existing empirical studies have explored the factors influencing CR, most have focussed on firms in developed economies, leaving a gap in understanding these dynamics in emerging markets (Kaur et al., 2023b). In addition to financial factors being key determinants of CR, the literature increasingly recognizes non-financial factors, such as corporate governance, as significant contributors to credit assessments. However, there remains a lack of comprehensive studies examining the impact of diverse and emerging sets of corporate governance measures on credit ratings (Kaur et al., 2023a). This study investigates the impact of corporate governance (henceforth CG) mechanisms on credit rating (henceforth CR) issued to listed Indian firms by India's top four credit rating agencies from 2011 to 2021. The study aims to answer the research question: how do various elements of corporate governance influence the credit ratings of the Indian listed firms?

This study includes the CR of four major rating agencies in India, covering a broad set of firms and CG measures, which extends the previous work done in this domain (Arora, 2020). The study makes several key contributions: first, it reinforces the argument that strong CG practices positively influence CR, with board size and gender diversity being the most significant factors in India. Second, the marginal effect analysis reveals an asymmetric effect of CG variables on CR. Finally, we observe that "India Ratings and Research Pvt. Ltd. (IND-RA)" is less likely to assign a higher rating compared to "Credit Rating and Investor Services of India Ltd. (CRISIL)," "Credit Analysis and Research Ltd. (CARE)," "Investment Information and Credit Rating Agency of India Ltd. (ICRA)." This distinction underscores the role that agency-specific factors may play in CR assignment.

Review of Literature and Hypotheses Development

A wide range of literature exists documenting the influence of governance practices on corporate decisions and firm performance (Jain et al., 2023; Singh et al., 2022). The central idea is that good governance abates managers' opportunistic behavior, ensures the protection of the interests of the investors, and lowers the risk for debtholders (Lithin et al., 2023). Bhojraj and Sengupta (2003) examined the relationship between CG mechanisms and bond ratings and found that higher institutional and outside ownership attracts higher CR, while concentrated ownership adversely affects CR. Using a comprehensive set of CG measures, the study by Ashbaugh-Skaife et al. (2006) asserted that CG factors significantly influenced the credit ratings of US firms. Similarly, studies by Aman and Nguyen (2013), Branzei et al. (2018), Cheng and Subramanyam (2008), and Liu and Jiraporn (2010) extended the seminal work of initial researchers by including several other measures of CG for firms from different parts of the world. In the Indian context, CG is found to significantly impact a firm's performance (Thomas et al., 2023), while CG factors like board size, ownership structure, and audit committee independence significantly impact credit ratings (Arora, 2020).

Prior research on each factor selected for this study aimed at providing a comprehensive understanding of the impact of various CG measures on CR of Indian firms, along with the hypotheses, is discussed below:

The presence of *independent/outside directors* on the board helps form unbiased opinions and provides effective monitoring of management decisions compared to insiders (Guo & Masulis, 2015; Jain et al., 2023). Also, due to their reputational concerns, outside directors will make sure that the firm is not involved in any fraud or failure, ensuring better firm performance (Aman & Nguyen, 2013; Gupta & Maurya, 2021), thus playing an important safeguarding role and resulting in higher CR (Ashbaugh-Skaife et al., 2006).

↳ **H_{01} :** A higher percentage of independent/outside directors on the board does not positively influence credit ratings.

- H_{a1} **:** A higher percentage of independent/outside directors on the board positively influences credit ratings.

Regarding the relevance of board size, the evidence is mixed. Some have argued that larger boards lead to increased coordination problems, while others have found that a larger board enhances firm performance by effectively monitoring and restraining managers from making risky decisions. However, most empirical papers found a positive association between board size and CR (Aman & Nguyen, 2013; Arora, 2020; Chintrakarn et al., 2020; Lee et al., 2021).

- H_{02} **:** Larger boards do not positively influence credit ratings.
- H_{a2} **:** Larger boards positively influence credit ratings.

Gender diversity on board has become a prominent CG issue in the recent past. On the one hand, female directors are expected to positively impact the firm performance as they are believed to be more committed to the organization and contribute to creating a transparent and effective corporate culture (Francis et al., 2015; Srinidhi et al., 2011). On the other hand, female directors may hamper a firm's performance due to communication gaps and inefficiencies attached to their appointment (Earley & Mosakowski, 2000). Empirically, El-Khatib and Joy (2021) and Kim and Hong (2020) found that the presence and higher proportion of female directors on board reduces bankruptcy and increases corporate bond ratings, respectively.

- H_{03} **:** Gender diversity on board does not positively influence credit ratings.
- H_{a3} **:** Gender diversity on board positively influences credit ratings.

It is argued that *CEO role duality*, that is, the CEO serving as the chairperson of the board, concentrates decision-making power in the hands of the CEO and compromises the governance of the board (Imhoff, 2003). A more powerful CEO is expected to hamper the board's objective, lowering firm performance and exposing debtholders to more risk (Lin et al., 2020; Shrivastav & Kalsie, 2016; Skousen et al., 2018).

- H_{04} **:** CEO role duality does not negatively influence credit ratings.
- H_{a4} **:** CEO role duality negatively influences credit ratings.

As per the management disciplining hypothesis, *institutional investors* promote effective monitoring of the management actions and decisions due to their greater financial interest in the firm and better knowledge. Previous studies, including some for India, have reported that the presence of institutional investors positively impacts the firm value (Kansil & Singh, 2018; Nashier & Gupta, 2016), dividend policies (Kiran & Ramesh, 2021) and, hence, CR (Aman & Nguyen, 2013; Driss et al., 2021).

- H_{05}**:** Higher institutional investor ownership does not positively influence credit ratings.
- H_{a5} **:** Higher institutional investor ownership positively influences credit ratings.

There exist contrasting arguments for the presence of *block shareholders* in a firm. The shareholders with dominant positions (higher voting powers) can either influence management to make unbiased decisions or may misuse their power for self-interest, hampering the interest of minority shareholders and debtholders, all of which leads to the lowering of CR. Studies have reported that higher ownership concentration leads to lower CR (Bhojraj & Sengupta, 2003). However, in the Indian scenario, promoters having substantial ownership and control

over the firm's resources (Sarkar & Sarkar, 2021) positively impacted firm performance (Haldar & Rao, 2011; Kumar & Singh, 2013). Also, Arora (2020) reported that majority shareholding of promoters in Indian firms leads to better CR.

- **H_{06} :** Higher promoter shareholding does not positively influence credit ratings.
- **H_{a6} :** Higher promoter shareholding positively influences credit ratings.

Higher insider ownership, i.e., shares held by managers and directors, may be positive or negative for the firm. Following Ashbaugh-Skaife et al. (2006), we argue that insider ownership increases agency risk for debtholders as they are more likely to misuse their voting power for personal benefits.

- **H_{07} :** Higher insider ownership does not negatively influence credit ratings.
- **H_{a7} :** Higher insider ownership negatively influences credit ratings.

The information gap between managers and stakeholders gives managers discretion in preparing financial statements. In such a scenario, outside auditors play a vital role as they provide independent verification and validation of financial statement disclosures and improve the creditability of the financial statements (Ramesh & Kamath, 2022). Previous studies have documented that Big4 auditors also improve the CR of a firm (Chabowski et al., 2019; Kim & Hong, 2020).

- **H_{08} :** Auditor quality does not positively influence credit ratings.
- **H_{a8} :** Auditor quality has a positive influence on credit ratings.

Board committees play a significant role in maintaining internal control and governance. Previous studies have found a positive impact of audit and remuneration board committees on firm performance (Bansal & Singh, 2022). A greater proportion of independent directors on these committees is viewed positively by stakeholders as it restrains management's opportunistic actions (Klein, 2002). Ashbaugh-Skaife et al. (2006) argued that an independent audit committee can perform its functions more effectively and increase financial transparency, leading to lower risk for debtholders. Also, the independence of the compensation committee ensures fair and unbiased adherence to financial procedures and directors' compensation determination (Fauzi & Locke, 2012). Arora (2020) reported a positive association between the independence of the audit committee and CR.

- **H_{09} :** A higher percentage of independent directors on the audit committee does not positively influence credit ratings.
- **H_{a9} :** A higher percentage of independent directors on the audit committee positively influences credit ratings.
- **H_{010} :** A higher percentage of independent directors on the compensation committee does not positively influence credit ratings.
- **H_{a10} :** A higher percentage of independent directors on the compensation committee positively influences credit ratings.

Data and Methodology

Data and Variables

The present study uses secondary data to investigate the influence of CG measures on the CR of firms. The CR data is extracted from the Prowess Database (CMIE), and the CG measures are obtained from the Prowess and Bloomberg databases. The data used in the analysis is from the financial year 2010–11 to 2020–2021. The year 2010–2011 was the starting year as the CR industry came into the limelight after the global financial crisis of 2008–2009, in which credit rating agencies were considered the "key enablers of the financial meltdown."[1] Also, there were a smaller number of observations for CR in the Prowess database before the year 2010–2011. The data is collected till 2020–2021 due to the unavailability of updated data post this year at the time of data collection.

The initial sample of the study contained all non-financial companies (8,622 companies) that received CR for their long-term debt instrument (long-term loan or bonds/debenture) in any year from 2010–2011 to 2020–2021. After removing financial and government-owned companies, the 2005 companies listed either on the NSE or BSE were retained. Further, 373 companies with minimum 7-year and maximum 11-year CR data were selected to better estimate and generalize the results (Gupta, 2023). Lastly, companies with missing data for any independent variables were excluded. The final sample for panel data analysis is an unbalanced panel of 131 firms with 1,255 firm-year observations.

The primary dependent variable of the study is CR, which consists of long-term debt ratings of firms given by any of the four leading agencies in India: CRISIL, CARE, ICRA, and Ind-RA. These rating agencies are selected as they are recognized by SEBI and accredited by RBI, holding 90% of the market share in the rating operations (Balakrishnan & Mangaiyarkarasi, 2017). The rating scale for long-term debt ratings ranges from AAA (highest safety) to D (lowest safety). Consistent with the prior literature, the credit ratings (AAA to D) are transformed into seven numerical values, as shown in Table 1.

The independent variables of the study include CG measures constituting board structure (percentage of independent directors on board, board size, women on board, and CEO role duality), ownership structure (percentage of institutional investors, promoter shareholding and insider shareholding), auditor quality (presence of Big4 auditor), and board committee characteristics (percentage of independent director on audit and compensation committee). Each governance variable, its definition, its predicted relationship with CR, and the source of data collection are presented in Table 2.

Table 1. ***Classification of Credit Ratings***

Rating	Meaning	Assigned value
AAA	Highest safety	7
AA+, AA, AA–	High safety	6
A+, A, A–	Adequate safety	5
BBB+, BBB, BBB–	Moderate safety	4
BB+, BB, BB–	Inadequate safety	3
B+, B, B–	High risk	2
C	Substantial risk	1
D	Default	1

[1] Financial Crisis Inquiry Commission (2011). "The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States." U.S. Government Printing Office, Washington, DC.

Table 2. ***Description of Variables***

Categories	Variables	Definition	Predicted Sign	Source
INDEPENDENT VARIABLES				
Board Structure	Independence of Board *(INDB)*	Independent directors as a percentage of total board ownership.	+	Bloomberg
	Board Size *(SIZEB)*	Number of directors on the board.	+	Bloomberg
	Gender Diversity on Board *(GENB)*	The dummy variable, "1" if more than 25% of directors on the board are women directors, '0' otherwise.	+	Bloomberg
	CEO Role Duality *(CEOD)*	The dummy variable, "1" if the CEO and Chairman of the board are the same, "0" otherwise.	–	Bloomberg
Ownership Structure	Institutional Ownership *(INSTO)*	The proportion of shares held by institutions.	+	Bloomberg
	Promoter Ownership *(PO)*	The proportion of shares held by promoters.	+	Prowess
	Insider Ownership *(INSIDERO)*	The proportion of shares held by insiders (insider includes an officer, director, or employee of a company).	–	Bloomberg
Auditor	Auditor Quality *(AUDQ)*	The dummy variable is "1" if the auditor is among the Big 4, "0" otherwise.	+	Prowess
Board Committee Characteristics	Audit Committee Independence *(ACIND)*	Independent directors as a percentage of the total members of the audit committee.	+	Bloomberg
	Compensation Committee Independence *(CCIND)*	Independent directors as a percentage of total members of the compensation committee.	+	Bloomberg
CONTROL VARIABLES				
Profitability	Return on Assets *(ROA)*	Ratio of profit after tax and total assets.	+	Bloomberg
Leverage	Debt to Equity Ratio *(LEV)*	The ratio of total debt and equity.	–	Bloomberg
Size of the Firm	Log Total Assets *(SIZEF)*	Natural logarithm of total assets.	+	Bloomberg
Financial Coverage	Interest Coverage Ratio *(COV)*	Ratio of earnings before interest and tax (EBIT) and interest expense.	+	Bloomberg
Age of the Firm	Years since Inception *(AGE)*	Number of years since the firm's inception.	+	Prowess

In conformance with the prior literature, the study includes a set of firm-specific characteristics as control variables that are expected to impact CR. These include return on assets (ROA) as a measure of profitability (Adams et al., 2005), leverage (LEV) as a ratio of debt-to-equity (de Souza Murcia et al., 2014; Gupta, 2023; Venkataramanaiah et al., 2018), size of the firm (SIZEF) measured as the natural logarithm of total assets (Ashbaugh-Skaife et al., 2006; Dodd & Hill, 2018), financial coverage (COV) using the interest coverage ratio (Attig et al., 2013; Venkiteshwaran, 2014), and age of the firm (AGE), i.e., the number of years since inception (Kar & Jena, 2019; Pittman & Fortin, 2004). All the control variables, with their hypothesized relationships, are defined in Table 2.

Empirical Model

The following regression model has been estimated to investigate the relationship between CG and CR:

$$CR_{it} = \beta_0 + \beta_1 INDB_{it-1} + \beta_2 SIZEB_{it-1} + \beta_3 GENB_{it-1} + \beta_4 CEOD_{it-1} + \beta_5 INSTO_{it-1} + \beta_6 PO_{it-1} + \beta_7 INSIDERO_{it-1} + \beta_8 AUDQ_{it-1} + \beta_9 ACIND_{it-1} + \beta_{10} CCIND_{it-1} + \beta_j CONTROLS_{it-1} + \gamma_i + \mu_t + \varepsilon_{it} \quad (1)$$

where CR_{it} represents the credit rating of firm *i* at time *t*. All the independent variables and CONTROLS (control variables) are explained in Table 2. γ_i denotes industry effects, μ_t denotes year effects, and ε_{it} represents the error term.

Due to the ordinal nature of the dependent variables, the empirical model is tested using ordered probit regression (Gujarati, 2011). As shown before, CR is divided into seven categories representing ranks. Ordered logit or probit models are appropriate for ordinal dependent variables over the ordinary least square (OLS) method as they do not assume that each rating category represents the same magnitude as compared to the lower or higher rating category (Baghai et al., 2014). Following the prior literature, ordered probit regression is applied in the present study.

Marginal effects analysis is performed to interpret the magnitude of the impact of an independent variable on the dependent variable. The marginal effects analyze the effect of one unit change in the independent variable on the probability of the dependent variable lying in a particular category, keeping all other independent variables constant. The fitness of the model is judged through the likelihood ratio test statistics (LR Chi^2) and Pseudo R^2.

Analysis and Results

Descriptive Statistics

Table 3 shows the descriptive statistics for all our variables. On average, the firms in our dataset have received ratings ranging from AA+ to A–, and 50% have a rating above AA–. Also, the average board independence is 54.33%, with half of the firms having more than 53.84% of independent directors on the board. The average board

Table 3. ***Descriptive Statistics***

Variables	Observations	Min.	Mean	Median	Std. Dev.	Max.
CR	1,255	1	5.25	6	1.33	7
INDB	1,255	0	54.33	53.84	9.38	83.33
SIZEB	1,255	2	9.6	10	2.63	22
GENB	1,255	0	0.15	0	0.225	1
CEOD	1,255	0	0.31	0	0.463	1
INSTO	1,255	0	21.57	19.42	16.75	80
PO	1,255	0	51.09	51.82	16.85	81.5
INSIDERO	1,255	0	10.03	1.928	17.21	79.306
AUDQ	1,255	0	0.23	0	0.42	1
ACIND	1,255	33.33	84.26	80	13.73	100
CCIND	1,255	33.33	83.27	80	17.32	100
ROA	1,255	–2.79	0.046	0.04	0.11	0.34
LEV	1,255	–8.59	1.28	0.59	5.68	120.49
SIZEF	1,255	6.17	10.48	10.54	1.67	16.08
ICR	1,255	–866.71	58.17	5.14	453.95	9895.95
AGE	1,255	5	42.54	34	23.73	116

Table 4. ***Correlation Analysis***

	Rating	*INDB*	*SIZEB*	*GENB*	*CEOD*	*INSTO*	*PO*	*INSIDERO*	*AUDQ*	*ACIND*	*CCIND*	*ROA*	*LEV*	*SIZEF*	*ICR*	*AGE*
Rating	1.000															
INDB	0.018	1.000														
SIZEB	0.371**	–0.102**	1.000													
GENB	0.095**	0.022	0.001	1.000												
CEOD	–0.151**	0.163**	–0.008	–0.076**	1.000											
INSTO	0.378**	0.113**	0.297**	0.124**	0.034	1.000										
PO	–0.104**	–0.022	–0.321**	–0.075**	0.033	–0.591**	1.000									
INSIDERO	–0.251**	0.003	–0.170**	0.003	0.097**	–0.316**	0.237**	1.000								
AUDQ	0.190**	–0.033	0.120**	0.029	–0.122**	0.188**	–0.139**	–0.144**	1.000							
ACIND	0.016	0.223**	0.096**	0.010	0.068*	0.099**	–0.107**	–0.021	–0.047	1.000						
CCIND	–0.269**	0.281**	–0.104**	–0.042	0.298**	–0.136**	0.064*	0.172**	–0.142**	0.283**	1.000					
ROA	0.314**	0.040	0.168**	0.025	0.005	0.110**	–0.023	0.037	–0.017	0.000	–0.031	1.000				
LEV	–0.226**	–0.032	–0.051	–0.028	0.074**	–0.022	–0.032	0.024	–0.049	0.004	0.021	–0.255**	1.000			
SIZEF	0.404**	0.048	0.470**	0.109**	–0.029	0.605**	–0.362**	–0.339**	0.224*	0.179**	–0.152**	0.022	–0.009	1.000		
ICR	0.126**	0.041	0.073**	–0.023	0.014	0.081**	–0.045	–0.028	0.010	–0.034	–0.058*	0.146**	–0.029	0.040	1.000	
AGE	0.209**	–0.076**	0.182**	–0.020	–0.035	0.191**	–0.245**	–0.191**	0.026	–0.015	–0.100**	0.127**	–0.057*	0.139**	0.102**	1.000

Note. * and ** indicate levels of significance at 10% and 5%, respectively.

size is 9.6 directors. For 15% of the firms, the share of female directors on board is 25%. A total of 31% of the firms in the sample have the CEO and the chairperson as the same person. The average institutional ownership is 21.57%, and half of the firms have promoter shareholding of more than 51.82%, while the average insider ownership is 10% ; 23% of firms have the Big4 auditor as their external auditor. Regarding the board committees, 84.26% and 83.27% of independent directors are in audit and compensation committees, respectively.

The correlation matrix is presented in Table 4. Size of the board, board gender diversity, institutional ownership, and auditor quality have significant positive correlations with CR. In contrast, CEO role duality and insider ownership correlate significantly negatively to CR, supporting the purported respective hypotheses. Promoter shareholding and independence of the compensation committee are negatively correlated to CR, which contrasts with the expected relationship. Further, as expected, the firm-level control variables show a significant correlation with CR, hence validating their inclusion in the empirical model.

Regarding the independent and control variables, larger firms tend to have larger boards, more women on board, higher institutional investor ownership, better auditor quality, and lower promoter shareholding and insider ownership. Also, firms with higher debt are more likely to have the CEO and chairman of the board as the same person. However, as suggested by Hair Jr. et al. (1998), the correlation coefficients of independent and control variables are within the acceptable limit of 0.80. Also, the VIF values for all the variables are less than 10, which rules out multi-collinearity.

Ordered Probit Regression

The results of ordered probit regression applied to investigate the predicted relationship between CG and CR are reported in Table 5. Model 1 runs the regression equation 1 that examines the influence of CG attributes on CR in the presence of firm-specific characteristics. Model 2 shows the influence of CG attributes in isolation on CR, while Model 3 takes only firm-specific characteristics. We find that the Model 1 (Table 5) results are consistent with the hypothesized relationship. Board structure characteristics, the board size, gender diversity, and CEO role duality are found to be significant determinants of CR, while the percentage of independent directors is found to be insignificant. In line with prior literature, we find that board size improves CR while CEO role duality worsens CR. The likelihood of obtaining higher CR increases with more female directors on the board, supporting the results of Kim and Hing (2020) that female directors enhance effective monitoring and corporate transparency, thus building the debtholders' confidence. Hence, the credit market is more likely to favorably assess gender diversity on board.

As predicted, the ownership structure is found to be significantly influencing CR. Higher shareholdings of institutional investors and promoters representing block shareholders increase the probability of getting higher CR. As argued by Aman and Nguyen (2013) and Cheng and Subramanyam (2008), institutional investors better monitor management actions due to the greater incentives associated with large equity stakes in the firm. Higher promoter shareholding also leads to higher CR, as in Indian firms, promoters with majority shareholding tend to have significant control over management actions, leading to better firm performance. In contrast, higher insider ownership decreases the likelihood of higher CR. This is supported by the argument that insiders (directors and managers) are more likely to keep self-interest forward and that, with greater power, they tend to increase agency risks for debtholders.

Auditor quality, measured by whether the auditor is from the Big4, positively influences CR, but the effect is insignificant. In our dataset, only 23% of the firms have the Big4 as their auditor. The size variable and other financial risk-related control variables may render the auditor quality redundant when assessing CR for this sample. Our study confirms that the independence of the audit committee improves CR as independent directors ensure the effective functioning of the committee. We also find that having more independent directors in the

Table 5. ***Ordered Probit Regression Results***

Variables	Dependent Variable = Credit Rating					
	Model 1		Model 2		Model 3	
	Coefficient	*z*-stats	Coefficient	*z*-stats	Coefficient	*z*-stats
INDB	0.004	1.17	0.007*	1.84		
SIZEB	0.116***	7.33	0.167***	12.30		
GENB	0.135**	2.23	0.135*	1.71		
CEOD	–0.417***	–5.37	–0.440***	–5.87		
INSTO	0.023***	8.01	0.037***	13.90		
PO	0.014***	5.61	0.015***	6.33		
INSIDERO	–0.003*	–1.84	–0.005***	–2.88		
AUDQ	0.076	0.93	0.142*	1.80		
ACIND	0.004*	1.70	0.007***	3.06		
CCIND	0.012***	5.62	0.013***	6.28		
ROA	2.23***	7.16			2.679**	8.84
LEV	–0.034***	–5.19			–0.034***	–5.34
SIZEF	0.270***	9.37			0.432***	19.07
ICR	0.001	5.55			0.001	5.31
AGE	0.341***	5.14			0.437***	6.95
CRISIL Dummy	0.853***	5.53	0.752***	5.06	1.234***	8.45
CARE Dummy	0.286**	1.96	0.188	1.32	0.629***	4.53
ICRA Dummy	0.806***	3.60	0.617***	2.86	1.334***	6.28
Industry FE	Yes		Yes		Yes	
Year FE	Yes		Yes		Yes	
Pseudo-R^2	0.377		0.328		0.309	
LR Chi^2	1050.29***		862.03***		794.24***	

Note. *, **, *** indicate level of significance at 10%, 5%, and 1%, respectively.

compensation committee increases the likelihood of better CR. This could be due to the increased confidence of debtholders as the presence of independent directors increases the possibility of unbiased and fair financial procedures, hence curbing managerial opportunism. Further, the differential effect of the CR agency dummy variable shows that firms getting credit ratings from CRISIL, CARE, and ICRA are more likely to get a higher CR than firms getting credit ratings from Ind-RA.

A comparison among the three models based on the value of the pseudo-*R*-square shows that the CG and firm-specific variables, when taken together (model 1), explain a greater variation in CR than the variation they explained individually. Also, when financial and CG variables are studied in isolation (models 2 and 3, respectively), CG variables better explain the variation in CR for Indian firms.

Marginal Effect Analysis

To determine the relative impact of each variable on CR, marginal effects for both the CG and firm-specific variables are depicted in Table 6. The marginal effect analysis illustrates changes in the probability of credit rating categories due to one unit change in the independent variable, given other variables as constant. The results

Table 6. ***Marginal Effect Analysis***

Variables	Credit Rating Category						
	1	2	3	4	5	6	7
	"Coefficient"	"Coefficient"	"Coefficient"	"Coefficient"	"Coefficient"	"Coefficient"	"Coefficient"
INDB	–.0002742	–.0000335	–.0001205	–.0003389	–.0003261	.0005751	.0005181
SIZEB	–.0068198***	–.0008333***	–.0029974***	–.0084293***	–.0081107***	.0143035***	.0128871***
GENB	–.0083303	–.0010179	–.0036614**	–.0102963**	–.0099071	.0174716**	.0157415**
CEOD	.0256893***	.003139***	.011291***	.0317521***	.0305519***	–.0538794***	–.048544***
INSTO	–.001471***	–.0001797***	–.0006465***	–.0018181***	–.0017494***	.0030851***	.0027796***
PO	–.00088***	–.0001075***	–.0003868***	–.001087***	–.0010465***	.0018456***	.0016628***
INSIDERO	.0002283*	.0000279	.0001003*	.0002822*	.0002715*	–.0004788*	–.0004314*
AUDQ	–.0047187	–.0005766	–.0020739	–.0058323	–.0056118	.0098967	.0089166
ACIND	–.0002672*	–.0000326	–.0001174	–.0003302*	–.0003177*	.0005603*	.0005048*
CCIND	–.0007512***	–.0000918***	–.0003302***	–.0009285***	–.0008934***	.0015755***	.0014195***
ROA	–.1374684***	–.0167976***	–.0604201***	–.1699115***	–.1634891***	.2883187***	.259768***
LEV	.0021067***	.0002574***	.0009259***	.0026038***	.0025054***	–.0044184***	–.0039809***
SIZEF	–.0166279***	–.0020318***	–.0073083***	–.0205522***	–.0197753***	.0348745***	.0314211***
ICR	–.0000739***	–.0000224***	–.0000325***	–.0000913***	–.0000878***	.0001549***	.0001396***
AGE	–.0210544***	–.0025727***	–.0092538***	–.0260234***	–.0250397***	.0441584***	.0397856***
CRISIL Dummy	–.0525453***	–.0064206***	–.0230947***	–.0649462***	–.0624913***	.1102056***	.0992925***
CARE Dummy	–.0176191*	–.0021529*	–.007744*	–.0217773*	–.0209542**	.0369534**	.0332941**
ICRA Dummy	–.0496473***	–.0060665**	–.021821***	–.0613643***	–.0590448***	.1041276***	.0938164***

Note. *, **, *** indicate level of significance at 10%, 5%, and 1%, respectively.

indicate that with a one-unit increase in board size, the credit rating is 1.43% (1.28%) more likely to be in the AA(AAA) category. Similarly, as gender diversity on board, institutional investor ownership, promoter shareholding, and independence of audit and compensation committee increases, the credit rating is significantly more likely to be in the higher categories (AAA and AA). However, with a one-unit increase in insider ownership and CEO role duality, the credit rating is 0.047% (0.043%) and 5.38% (4.85%) less likely to be in the AA(AAA) category, respectively. Among the significant CG variables, CEO role duality has the highest influence on credit rating, followed by gender diversity and board size.

Further, for control variables, one unit increase in return on asset, firm's size, interest coverage ratio, and firm's age increase the likelihood of receiving higher credit rating categories, i.e., AA(AAA) by 28.83% (25.97%), 3.49% (3.14%), 0.015% (0.013%), and 4.42% (3.98%), respectively. On the other hand, leverage has a negative coefficient, indicating that an increase in leverage decreases the likelihood of receiving an AA(AAA) credit rating by 0.44% (0.39%). We also find that firms with CR from CRISIL, ICRA, and CARE are 9.92%, 9.38%, and 3.32% more likely to have a rating in the highest category compared to the firms rated by Ind-RA. This observation could be attributed to the dominant position held by the top three rating agencies (CRISIL, CARE, ICRA) and their tendency to provide inflated ratings to maintain their competitiveness, hence supporting the argument that competition among the CRAs impacts the quality of CR (Sharma et al., 2023).

Additional Analysis

We also conducted additional analyses to support our main results using alternate methodology and alternate CR classification.

Following Baghai et al. (2014) and Driss et al. (2021), equation (1) is re-estimated using OLS regression. First, pooled OLS is performed to examine the relationship between CG variables and CR while controlling for firm-specific characteristics with year and industry-fixed effects (model 1). Further, to control unobservable heterogeneity across cross-section units (firms), we apply firm fixed effects (model 2). Table 7 shows that the OLS regression results align with that of ordered probit regression, except that the coefficient of auditor quality is significant. In contrast, the audit committee independence coefficient is insignificant in model 1. Further, the board-independence variable is significant in model 2 but not in model 1, and the CEO-duality variable is significant in model 1 but not in model 2. While controlling for firm-specific unobserved heterogeneity, board independence, size, gender diversity, institutional investor shareholding, promoter shareholding, audit committee, and compensation committee independence have a significant positive impact. In contrast, insider

Table 7. ***OLS Regression Results***

Variables	Dependent Variable = Credit Rating			
	OLS		Fixed Effects	
	Coefficient	*t*-stats	Coefficient	*t*-stats
INDB	0.002	0.70	0.007***	2.73
SIZEB	0.096***	7.54	0.045***	2.94
GENB	0.139**	2.05	0.062*	1.78
CEOD	–0.262***	–3.91	–0.05	0.66
INSTO	0.019***	7.56	0.028**	8.01
PO	0.015***	6.96	0.025***	6.19
INSIDERO	–0.005***	–3.07	–0.001**	–2.12
AUDQ	0.206***	2.96	0.045	0.67
ACIND	0.002	0.82	0.002*	1.75
CCIND	0.009***	–4.94	0.003*	1.86
ROA	2.08***	7.39	0.451**	2.17
LEV	–0.031	–6.15	–0.016***	–4.41
SIZEF	0.115***	4.79	0.217***	2.72
ICR	0.000	1.61	0.000	0.28
AGE	0.257***	4.53	1.099***	3.20
CRISIL Dummy	0.641***	4.77		
CARE Dummy	0.313**	2.42		
ICRA Dummy	0.725***	3.77		
Industry FE	Yes		No	
Year FE	Yes		Yes	
Firm FE	No		Yes	
Adjusted R^2	46.85		69.98	

Note. *, **, *** indicate level of significance at 10%, 5%, and 1%, respectively.

Table 8. ***Binary Probit Regression***

Variables	Dependent Variable = Investment Grade		
	Binary Probit Regression		Marginal Effects
	Coefficient	*z*-stats	Coefficient
INDB	0.006	0.75	.000598
SIZEB	0.227***	6.11	.021475***
GENB	0.149*	1.92	.14108*
CEOD	–0.160	–1.01	–.015148
INSTO	0.011*	1.94	.00994*
PO	0.007**	2.25	.007365**
INSIDERO	–0.001*	–1.78	–.000966*
AUDQ	0.019***	3.50	.182377***
ACIND	0.007*	1.71	.00738*
CCIND	0.014***	2.68	.001375***
ROA	2.23***	4.79	.211536***
LEV	–0.017**	–2.37	–.001660**
SIZEF	0.164**	–2.57	–.015478**
ICR	0.005***	3.05	.000504***
AGE	0.702***	4.31	.066299***
CRISIL Dummy	0.109**	2.28	.010277**
CARE Dummy	–0.287	–1.10	–.027081
ICRA Dummy	0.278	0.40	.026335
Industry FE	Yes		
Year FE	Yes		
Pseudo-R^2	0.3875		
LR Chi^2	274.12***		

Note. *, **, *** indicate level of significance at 10%, 5%, and 1%, respectively.

shareholding has a significant negative effect on CR. Hence, our results are robust to alternate techniques and the firm-specific omitted variable issues.

The relationship between CG and CR is further examined by substituting the 7-category CR dependent variable with an investment/speculative grade (INVSPEC) binary dependent variable, which holds a value of "1" if credit rating lies in the investment-grade category, i.e., above BBB or above and value "0" if credit rating lies in the speculative-grade category, i.e., below BBB. The results, reported in Table 8, show that higher values of board size, gender diversity, institutional investor shareholding, promoter shareholding, audit committee independence, and compensation committee independence increase the probability of investment grade ratings while insider ownership decreases the probability. However, CEO role duality is insignificant here, while auditor quality is significantly positive.

Further, marginal effect analysis is performed. We find in Table 8 that a unit increase in board size, gender diversity, institutional investor and promoter ownership, auditor quality and independence of audit and compensation committee increases the probability of CR being in the investment grade by 2.15%, 14.1%, 0.99%, 0.73%, 18.23%, 0.73%, and 0.13%, respectively. However, CR is 0.09% less likely to be in the investment grade as insider ownership increases.

Discussion

The results indicate that certain governance attributes have a notable influence on credit ratings. The findings align with the agency theory that improved governance practices can curb opportunistic behavior and mitigate information asymmetry between the insiders (company's management) and outsiders (lenders), consequently reducing the risk for the latter.

Among the board characteristics, we find that gender diversity and board size are the most important CG variables for improving credit rating, suggesting that investors consider board composition as an important indicator of CG and transparency. The result on gender diversity reinforces that a diverse group brings different understandings of management to the table, enhances investor confidence, and, hence, improves credit ratings. Therefore, companies should aim for diversity as part of their overall management strategy, even if that involves incorporating changes that are not organic. With these results, we reject our null H_{02} and H_{03}hypotheses and accept the alternate hypotheses. On the issue of whether the percentage of independent board members matters for credit rating, we find that the coefficient is positive but not significant, and hence, H_{01} cannot be rejected. We also find that both CEO-duality and higher insider ownership lower CR (rejecting null hypotheses H_{04} and H_{07} while accepting the respective alternate hypotheses), indicating that investors and rating agencies pay attention to the asymmetric information problem and consider those arising from dual managerial roles and internal ownership problematic.

Among other ownership structure variables, the percentage of institutional investor shareholding and promoter shareholding positively influences credit ratings. These indicate that large shareholders' monitoring, financial interest, and higher voting power help protect debtholders from certain actions by management that pose a risk to the firm's solvency. Hence, the null hypotheses H_{05} and H_{06} stand rejected. Regarding whether auditor quality matters for credit rating, we find from the ordered probit model that the coefficient is positive but not significant and, hence, H_{08} cannot be rejected. A higher percentage of independent directors on the audit and compensation committees are favorably viewed by debtholders, which increases the probability of higher credit ratings (rejecting null hypotheses H_{09} and H_{10} and accepting the respective alternate hypotheses).

We also find that rating agency Ind-RA is less likely to provide higher ratings than CRISIL, CARE, and ICRA. This observation raises interesting questions regarding the reputation effect and the market power of the three large rating agencies with 80% of the market share.

Implications, Limitations of the Study, and the Way Forward

Our results have both managerial and regulatory implications. Although the results are broadly along expected lines, the paper highlights the importance of certain CG variables over others for managers and organizations. Corporate governance is the centerpiece of corporate strategy, and the board is the crucial nerve center. The point that the board's structure, size, and composition have wide-ranging implications for current profitability and future direction is worth re-iterating and re-enforcing. Corporations must focus on strong governance practices, like promoting greater gender diversity on the board and avoiding CEO duality, to signal effective monitoring and functioning of the firm to the investors. It also makes sense that actual and potential investors push for governance reforms in these dimensions. Similarly, regulators would want to protect investors and, therefore, would want to encourage firms to set up the proper corporate governance structure that mitigates information asymmetry. To that end, regulators can play a significant role in suggesting an acceptable board composition and structure nomenclature. Again, regulators must understand the underlying mechanism so that they can focus their attention on a subset of CG variables. The observation that certain rating agencies are giving higher ratings than others may also interest the regulators.

This study focuses on less explored CG factors, such as gender diversity, board composition, ownership structure, and auditor and compensation committee characteristics. However, it is limited to non-financial listed firms and examines only long-term debt ratings. Future research could expand on this by including financial firms and analyzing the impact of CG factors on different types of ratings. Additionally, future studies could explore emerging factors like financial disclosure quality, earnings management, environmental sustainability practices, and the role of CSR in determining credit ratings for Indian firms.

Conclusion

Credit rating agencies are supposed to provide independent evaluations of the creditworthiness of companies to help potential investors. In sync with the existing literature, we confirm that corporate governance variables that signify higher transparency, better internal monitoring, and lower moral hazard influence credit ratings positively. Not all corporate governance variables are created equal, though, and investors and regulators must push for the right ones based on an understanding of the underlying mechanism that reduces credit risk. This paper is an effort in that direction.

Authors' Contribution

Jaspreet Kaur conceived the idea and did the literature survey. Jaspreet Kaur and Soma Dey developed qualitative and quantitative designs to undertake the study together. Jaspreet Kaur developed the hypotheses. Soma Dey verified the analytical methods and supervised the study. Jaspreet Kaur collected the data and did the empirical analysis. Soma Dey studied the results and did the interpretation part. The manuscript was a joint effort, with Jaspreet Kaur writing the literature review and the results while Soma Dey wrote the Discussion and the Motivation part.

Conflict of Interest

The authors certify that they have no affiliations with or involvement in any organization or entity with any financial interest, or non-financial interest in the subject matter or materials discussed in this manuscript.

Funding Acknowledgment

The authors received no financial support for the research, authorship, and/or for the publication of this article.

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About the Authors

Jaspreet Kaur is a Research Scholar at FMS, Delhi University. She is a UGC JRF awardee with Master's and Bachelor's degrees in Commerce. Her research interests include credit risk, corporate finance, banking, and corporate governance.

Soma Dey's broad area of research is applied microeconomics. She has worked on the R&D and patenting behavior of firms, the role of MFIs in poverty alleviation in India, and the impact of recent Government regulations on e-waste management.