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Impact of financial distress on the dividend policy of banks in India: evidence using panel data

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Abstract

The study primarily aims to examine the impact of financial distress on the dividend distribution policy of banks operating in India. Panel data analysis was performed using a static model to investigate the impact of distress on the bank's dividend policy. The Z-score developed by Altman measures a bank's financial distress (a high Z-score indicates the absence of financial distress). Data from 31 out of 34 banks operating in India between 2016 and 2020 has been used. The debt/equity ratio is used as the moderator. The sales log is used as the control variable. A linear connection exists between financial distress and dividends. Furthermore, debt/equity ratio significantly moderates the association of financial distress with dividend policy. The findings contribute to formulating a long-term dividend policy by drawing attention to the distressing situation in the banking sector, focusing on ensuring the banks' financial viability. Thereby, the findings are novel and hold significant worth in improving the current understanding of the subject.

Keywords Financial distress, Dividend payout, Debt/equity ratio, Panel data analysis

JEL Classification G01, C23

Introduction

In the ever-changing and heavily regulated banking industry, the careful and responsible administration of financial resources plays a vital part in safeguarding the stability and durability of financial organizations. Banks assume a crucial role in facilitating the economic development of nations through adequate capital and resource allocation [12]. Banks may be vulnerable to economic uncertainties, internal difficulties, and external forces, which can result in distress conditions. Nevertheless, it is not inaccurate to say that financial distress within banks or other organizations can be attributed to an ongoing and continuous lack of efficiency in their operations [68]. The origins of this phenomenon can invariably be traced back to the historical track record of financial institutions. Extensive scholarly literature has made predictions regarding financial distress in banking, as evidenced by the studies of [54, 43, 27, 9]. Financial distress inside banks can be observed in multiple ways, including liquidity crises, declining asset quality, and insufficient capitalization. These manifestations present considerable obstacles for decision-makers, particularly in determining dividend policy [51].

The dividend policy holds significant importance in financial management within the banking sector. The extant literature defines dividend policy as the proportion of dividends to earnings per share before accounting for unusual factors [25, 69, 13]. The concept of dividend policy refers to the strategic decisions a company's management takes regarding allocating dividends to its shareholders [67]. Dividend policy is responsible for the distribution of profits, as it pertains to the division

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between dividend disbursements to shareholders and the retention of revenues for reinvestment or bolstering capital reserves. Achieving an optimal equilibrium between the allocation of dividends and safeguarding capital is a multifaceted determination, which is further compounded when confronted with financial adversity. The impact of banks' dividend policy during challenging periods can have significant consequences for shareholders, the stability of the banking system, and, ultimately, the overall economy.

In emerging economies like India, where banks and financial institutions are integral to the nation's economic growth and the performance of a corporation is studied from the financial perspective, understanding how financial distress influences dividend policy is paramount [36]. However, the influence of financial distress on dividend policy varies among different institutions. Previous research has examined the relationship between financial distress and dividend policy and has predominantly found a negative or inverse association between these two variables [62, 26, 56, 60, 20]. However, even after being studied by different researchers, the association between distress and dividend needs a fresh perspective. A new and different finding can help create a different viewpoint.

The influence of financial distress on dividend decisions may vary depending on several aspects, such as the financial health of the bank, its risk appetite, and capital structure [65]. One such factor that could influence the connectivity between financial distress and dividend policy is the debt/equity ratio. The debt/equity ratio is a crucial financial indicator that indicates a bank's capital structure and leverage as it depicts the proportion of a bank's funding sourced from debt as against equity [23]. It plays a pivotal role in determining how a bank withstands financial stress, as it affects its ability to service debt obligations and maintain a healthy level of capitalization [22]. There is a large amount of material that supports the use of the debt/equity ratio as the primary element in determining dividend payouts in banks [58, 7, 44]. There is a lack of literature examining the relationship between debt/equity ratio, financial distress, and bank payout policy. Therefore, seeking new facts regarding the influence of distress and debt/equity ratio on bank dividends is crucial. The current study asserts that both linear and nonlinear financial distress impact dividends. Furthermore, the association between distress and dividends can be significantly impacted by including the debt/equity ratio in the market, which is also the aim of the study.

The primary objective of this study is to examine both linear and nonlinear associations between financial distress and dividend policy while also exploring the potential moderating influence of the debt/equity ratio on the connection between financial distress and dividends in Indian banks. Through data analysis, our objective is to gain a deeper understanding of the strategies employed by Indian banks in adjusting their dividend policies when faced with distressing conditions and how this adjustment varies based on their capital structures (debt/equity ratios).

The primary motivation for this study is the belief that addressing distress and debt/equity ratio could potentially resolve the issue of dividend payout decisions. Hence, a clear understanding of how the debt/equity ratio affects the likelihood of financial distress impacting dividend payments is crucial for establishing a stable regulatory framework and market organization within the banking sector. The possibility is high for a rising economy to face significant risks and potential consequences. Therefore, by researching a prominent emerging economy such as India, the researchers aim to establish a model for other emerging economies to follow.

The current study introduces novel contributions not previously explored in prior investigations. This step was taken to advance the analysis presented in the current study. Among others, one of the key findings includes a robust linear and insignificant nonlinear relationship between financial distress and dividends. The study's findings also reveal a significant linear association between banks' financial distress and the dividend distribution strategy followed by Banks in India. Similarly, the debt/equity ratio moderates the relationship between distress and dividends, exhibiting a significant adverse effect that diminishes the strength of the association. It should be noted that financial distress does not exhibit a nonlinear relationship with the dependent variable, namely the dividend. These findings have the potential to yield substantial implications for financial institutions. It suggests that when a bank encounters a challenging circumstance, shareholders promptly experience heightened anxiety. To mitigate the current circumstances, the organization will allocate dividends to shareholders at customary or marginally higher levels, as it has gained utmost importance to maintain good relationships with shareholders for organizations [38]. This view offers a novel and alternative perspective on the typical decision-making approach during distress. The paper's innovative and pioneering findings include a significant negative interaction between the debt/equity ratio and distress, which supports financial stability. This finding represents a significant contribution, given that no previous studies examine the connection between the debt/equity ratio and distress when analyzing dividends in Indian banks.

The remaining paper is organized as follows. The following section reviews the relevant literature and the

study's theoretical background. The next part includes a summary of the samples and data, tables, methodology, and models employed, followed by the study's findings. Finally, the discussion section, concluding observation, limitations, and future recommendation section concludes the paper.

Literature review

Contextual background

The investigation in the current study is based on a foundation that combines core financial ideas. The assertions contributed by Modigliani and Miller in 1958, which are considered groundbreaking contributions to corporate finance theory, state that, under specific idealized circumstances, the value of a company is unaffected by its capital structure. However, when faced with financial difficulties, an essential factor to examine is the potential impact on the company's dividend policy [59]. Banks facing financial challenges must find a way to balance the advantages of taking on debt with the expenses of financial distress, which prompts them to make strategic changes in how they distribute dividends.

Furthermore, the Trade-off Theory suggests that companies strive to find their ideal capital structures by balancing the tax benefits of debt with the potential costs of financial distress [66]. Despite the financial challenges Indian banks face, this theory proposes that calculating the most efficient capital structure may lead to dividend policy changes to reduce the expenses associated with financial distress. On the other hand, the Pecking Order Theory supports the idea that companies prioritize using their funds rather than seeking external funding. Consequently, they may strategically modify their payout policies. Dividend policy changes can serve as a means of communication for banks facing financial difficulties, allowing them to express information about their financial condition to investors and creditors while adhering to the established hierarchy of priorities.

Agency theory clarifies the relationship between the shareholder, the owner of a firm, and the company's management. In this relationship, the management serves as an agent, acting on behalf of the shareholder, who is the principal [70]. The Agency Theory lens enhances the knowledge by shedding light on the complex relationships among stakeholders in financially troubled banks. The study recognizes that financial stress can increase agency costs and modify the factors that affect payout decisions. The inherent agency conflicts in such settings may necessitate modifications in dividend policy to match the diverse interests of shareholders, management, and creditors [45].

Finally, an analysis of the consequences of the 2008 global financial crisis provides a perspective that allows the study to extract insights from international occurrences. Studying the adjustments made to their dividend policy by banks worldwide during the financial crisis offers insights into the tactics and difficulties that Indian banks may encounter.

Financial distress and dividend distribution

Financial distress is a detrimental situation for any organization. This issue substantially impacts the affected company's essential and routine activities. Wruck [64] posits that distress frequently leads to significant alterations in an organization's management, governance, and structure. It requires numerous modifications in a corporation's management practices to recover from the distressing condition. A vital differentiation between organizations that achieve effective recovery and those that do not is the frequency of management changes undertaken by the former. Organizations must first focus on technological advancements or innovations to improve the situation as soon as possible [5, 31]. In addition to this, a corporation must contemplate substantial modifications thoroughly. These modifications can appear as either an asset or financial restructuring.

Financial restructuring generally involves negotiating with banks and other creditors, issuing new securities, reducing or eliminating dividends, and converting debt into equity [34]. Reducing or omitting dividends falls under the purview of a business's financial reorganization or restructuring, assuming significant importance in company meetings. The primary goal of business management should consistently revolve around effectively influencing all stakeholders to endorse the proposed restructuring initiative, as failure to do so may have consequences on the organization's reputation over an extended period.

The existence of a direct connection between financial distress and corporate payout policy is not unknown to the world. It is clear to corporations that they must manage their financial structure effectively to keep the company surviving in the competitive world, as investors always hope to earn some profit in the form of dividends from the money invested in different companies. Thus, companies must make respectable profits, or their reputation will deteriorate in the long run. Although corporate payout policy and financial distress are some of the most researched areas in the finance literature, why firms pay them and how companies satisfy their investors in distressing situations remains one of the most critical unsolved puzzles in finance. However, a significant body of work explicitly addresses determining dividend payout decisions, financial distress (FD) decisions, or the connection between these variables.

The findings of each investigation that has been conducted so far consistently demonstrate a similar relationship between these two variables. Based on the research undertaken by Aivazian et al. [8] and Amidu & Abor [13], there is a negative association between dividend distribution and financial distress. Venkatesh et al. [60] proposed that the disbursement of dividends can potentially worsen a corporation's financial challenges. Furthermore, Malombe [37] examined the influence of dividends on the profitability of Kenyan enterprises and discovered a negligible but positive correlation between dividend policy and a firm's value. According to Malombe [37], a company's financial well-being might be a compelling justification for distributing dividends.

In the same way, Zeng [69] demonstrated that the distribution of dividends can potentially escalate financial difficulty for companies that own a substantial debt. Coffinet et al. [20] posit that in the event of financial challenges, businesses may opt to decrease their dividend payout ratio and corresponding disbursements. Widagdo and Sa'diyah [62] find that financial distress does not influence the earnings per share of investors in Indonesian banks. Reddemann et al. [49] found that the European insurance sector suggested dividend cuts to preserve capital during the financial crisis. Furthermore, several research studies conducted during different periods have been conducted to study the relationship between financial distress and dividends [33, 26, 56, 49, 6]. Some studies have also been conducted that involves exploring the inverse relationship between the variables, which means impact of dividend policy on financial distress [52, 53, 41]. However, our focus in the current study is to investigate the association between distress and the payout policy of banks.

We would want to assert that a fresh viewpoint is needed to examine the association between financial distress and dividends without questioning the findings of the current studies. Thus, we aim to investigate the linear and nonlinear correlation between the two variables, as financial distress cannot unilaterally affect the payout. There exists a potential for a nonlinear relationship between the two variables. Consequently, the subsequent hypotheses have been formulated:

H_1: Financial distress (FD) linearly impacts the dividend payout decision of banks.

H_2: Financial distress (FD) nonlinearly impacts the dividend payout decisions of banks.

Influence of debt/equity ratio on the association of financial distress with dividend distribution decisions

The debt ratio is one of the most important aspects to consider when assessing a company's financial parameters. A tremendous amount of study has been put into determining the impact of debt ratio on various variables. According to [50], an Indonesian stock exchange study discovered that the debt ratio did not affect the occurrence of a firm's distress condition. Meanwhile, according to the study by Gruszczynski [24], the debt/equity ratio is the most significant predictor when forecasting the possibility of financial distress conditions in Polish enterprises. Teknologi et al. [57] obtained a similar finding in the study conducted on Malaysian enterprises.

To date, all conducted research has investigated the relationship between financial distress (FD) and the debt/equity ratio, recognizing these variables as directly connected, [35, 50]. So far, we cannot find any empirical study conducted to examine the probable joint effect of financial distress and debt/equity ratio on the dividend distribution policy within organizational contexts. As we have evidence of the connectivity between financial distress and debt ratio, we can expect an interaction effect on the association between financial distress and dividends. Therefore, the above situation indicates a notable gap in research investigations in distress. Thus, the present study presents the following hypothesis to empirically assess the joint impact of debt ratio and financial distress on the dividend policy of banks (See Fig. 1 for conceptual model).

H_3: The debt–equity ratio moderates the causal association between financial distress (FD) and dividend payout decisions of banks.

Methodology

Sample and data

This study's sample includes the data of 31 out of 34 banks operating in the Indian banking sector with a sample period of 5 years, 2016–2020. The secondary data of banks has been retrieved from the Bloomberg terminal and the financial statements of respective banks. The selection of the timeframe and cross section is based on utilizing the most up-to-date data and the appropriate synchronization of banks' data to obtain current and reliable evidence. Hence, due to insufficient accessibility of banks' data, the sample period is limited to 2020, and some banks are not included in the data. Furthermore, the five-year timeframe in the study consists of

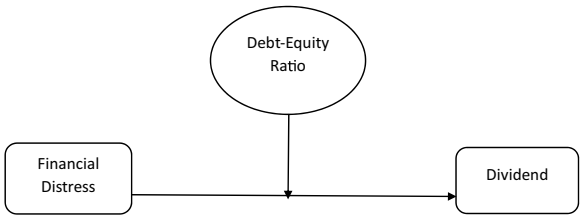

Fig. 1 Model displaying the relationship between financial distress and dividend moderated by debt/equity ratio

all the years in which the Indian banking sector has seen downward and upward trends, including the COVID-19 pandemic as many studies have been conducted so far in different areas which focused on the repercussions of the pandemic [2, 4, 3, 1, 40]. Thus, we also aimed to include the years of the pandemic to see its impact on the payout policies of Indian banks. In addition, the variables incorporated in the study are elaborated in Table 1 for better understanding.

In this figure, financial distress is impacting the dividend policy of banks. In addition, the debt/equity ratio moderates the FD and dividend association.

Variables

This study primarily includes three categories of variables: 1) dependent variables, 2) explanatory factors (dependent variables), and 3) control variables. The Altman Z-score is commonly employed by many researchers in their respective studies as a measure of financial distress [48, 46, 56]. Thus, the exogenous variable in this context is the "Altman Z-score," taken as a proxy of financial distress. Furthermore, the dividend is taken as the dependent variable. On the other hand, the debt/equity ratio (DER) represents the bank's financial leverage [30] and has been considered a moderating variable in the study. Lastly, the study's sales value log is used as a control factor to fit the model best.

Research methods

The present study employs panel data regression analysis. Hsiao [29] and Raj and Baltagi (2012) assert that panel data analysis offers benefits compared to conventional time series or cross-sectional data analysis. It has enhanced capability for constructing complex models, encompassing time and cross-sectional features. Therefore, it offers more significant variability and a higher amount of information. Many researchers use panel data analysis techniques in their respective studies [32, 47, 16, 15, 19, 55, 39, 10, 61];

The current study uses static panel data, as no endogeneity issue has been observed in the models. A total of three models are formed to examine the linear and nonlinear connection between financial distress and dividends. Then, the last model includes an examination of the association between financial distress and dividends under the influence of the debt/equity ratio. For the analysis, the following regression models are specified:

Static models:

$$\mathrm{DIV}_{it} = \beta_1 \mathrm{FD}_{it} + \beta_2 l\_\mathrm{sales}_{\mathrm{it}} + u_{it} \tag{1}$$

$$\mathrm{DIV}_{it} = \beta_1 DFD_{it} + \beta_2 DFD\_2_{it+} \beta_3 l\_\mathrm{sales}_{it} + u_{it} \tag{2}$$

$$\begin{aligned}\mathrm{DIV}_{it} =& \beta_1 \mathrm{DFD}_{it} + \beta_1 \mathrm{DDER}_{it} \\ &+ \beta_3 i\_\mathrm{DFD\_DDER}_{it} \\ &+ \beta_3 l\_\mathrm{sales}_{it} + u_{it}\end{aligned} \tag{3}$$

DIV is the dependent variable that represents the dividend. The explanatory variables suggesting financial distress are represented by FD. The square term for the nonlinear association is DFD_2 (square of demean of financial distress). Furthermore, DDER stands for the d-mean of the debt/equity ratio. DDER is the study's interaction variable. The interaction term is i_DFD_DDER (demean of financial distress x demean of debt/equity ratio). For the model's good fit, l_sales (log of sales) is used as a control variable. (−1) represents the lag value of the dependent variable DIV. *uit* stands for error-term, whereas *it* and *vit* stand for individual effect-term and regular error-term, respectively. The letter' *it*' represents the ith bank in the year "*t*."

Results and discussion

Descriptive analysis and correlation

Tables 2 and 3 present the descriptive analysis and correlation of the variables in the study, respectively. The mean value of Div is 1.10, dropping to zero. It means, on average, the dividend distribution in sample firms is relatively low. Financial distress has an average value of −1.53, indicating a financially unstable status of Indian banks, and thus, each bank offering banking services in India is in a distressed condition. The debt/equity ratio (DER) has

Table 1 List of variables

SN	Variable	Type	Code	Definition	References
1	Financial distress (Altman Z-score)	IV*	FD	It is the financial distress assessment of a firm based on multivariate discriminant analysis. Altman [11] has developed the model to compute Z-score (see Appendix for details)	Altman [11]
2	Dividend	DV*	Dividend	A dividend is a distribution of profits by a corporation to its shareholders	[42]
3	Debt/equity ratio	MV	Deratio	Debt ratio is a financial ratio that indicates the percentage of a company's assets provided via debt	[28]
4	Sales	CV	l_sales	represents the amount of money a firm receives in exchange for goods sold	[18]

DV and IV represent the dependent and independent variables, respectively.** indicates a moderating variable

Table 2 Descriptive statistics

Variable	Mean	Max	Min	SD
Div	1.1	7.5	0	1.8
FD	−-1.53	92.4	−8.58	8.89
Deratio	0.901	0.997	0	1.83
Sales	9.19	12.67	3.91	1.53

Div represents the dividend, whereas FD means financial distress, and Deratio means debt/equity ratio, respectively. Max is the maximum value. Min is the minimum value. SD is the standard deviation

an average value of 0.901, which is inclined to the maximum. The correlation matrix in Table 3 shows a positive correlation between FD and debt/equity ratio and with the interaction term, i_DFD_DDR.

In contrast, the correlation between financial distress and the log of sales is negative. Moreover, no significant combination of variables exhibits a correlation coefficient higher than 0.800. Therefore, the study rules out the multicollinearity problem [14]. Moreover, the VIF (variance-inflation-factor) values for explanatory variables are also low (< 10), which also ensures no multicollinearity [46].

Static models

Model 1 shows a linear relationship between financial distress and the dividend distribution policy of Indian banks. Table 4 depicts the results of the same. It is evident from the Hausman test that model 1 is consistent with random effect as the Hausman test exhibits insignificant values (p value > 0.05) [14, 63]. The significance level of the Wald test for heteroscedasticity and the Wooldridge test for autocorrelation is 5%. This finding implies that both heteroscedasticity and autocorrelation are present. Hence, robust standard error estimates are also provided [63]. Furthermore, the FD1 is positive and significant for dividends with a p value (0.000). Whereas l_sales has an insignificant and negative coefficient (−0.150) with a p value of 1.42. This result implies a positive and significant linear association between FD and dividend. When a bank encounters a challenging circumstance, the shareholders promptly become anxious. To alleviate the issue, the organization will distribute dividends to the shareholders at average or somewhat elevated rates. Hence, the first hypothesis mentioned in the literature section is not rejected.

Model 2 looks for the nonlinear relationship between the dependent and independent variables in the study (financial distress and dividend). Like model 1, the significance level of the Wald test for heteroscedasticity and the Wooldridge test for autocorrelation is 5%. Therefore, this suggests the presence of both heteroscedasticity and autocorrelation. Similar results are found in robust estimates. The analysis outcome in Table 4 exhibits a positive

Table 3 Correlation matrix

	FD	DFD	DFD2	DDR	I_DFD_DDR	L_sales
FD	1.00					
DFD	1.00*	1.00				
DFD2	.772*	.772*	1.00			
DDR	.097	.097	.044	1.00		
i_DFD_DDR	.520*	.520*	.578*	−.148	1.00	
L_sales	−.065	−.065	−.013	.338*	−.128	1.00

Table 4 Regression results

STATIC MODELS	(1)		(2)		(3)	
DV: DIV	COFF	*P* value	COFF	*P* value	COFF	*P* value
FD	.019	.000*	–	–	–	–
DFD	–	–	.007	.738	.024	.000*
DFD2		–	.0001	.640	–	–
DDER	–	–	–	–	.645	.245
I_DFD_DDER	–	–	–	–	−.085	.053*
l_sales	−.150	.142	−.308	.023*	−.162	.128
Wald test	10,061.2(.000)*		2.6e + 05(.000)*		10,310.4(.000)*	
Wooldridge autocorrelation	20.69(.0001)*		20.696(.0001)*		16.38(.0003)*	

Table 5 Summary of results

Serial No	Hypothesis	Result	Not rejected	Rejected
1	Financial distress (FD) linearly impacts the dividend payout decision of banks	Financial distress does linearly impact the dividend payout decision of banks	Yes	–
2	Financial distress (FD) nonlinearly impacts the dividend payout decisions of banks	Financial distress does not nonlinearly impact the dividend payout decisions of banks	–	Yes
3	The debt/equity ratio moderates the causal association between financial distress (FD) and dividend payout decisions of banks	The debt/equity ratio significantly moderates the association between financial distress and dividend payout decisions of banks	Yes	–

Results are obtained from the analysis conducted in the study

but insignificant coefficient p value of 0.640 for DFD_2. Here also, l_sales is negative (−0.308) and significant at 5%. Thus, it implies that no existence of nonlinear connectivity between the variables (financial distress and dividend) is present, which means that the second hypothesis asserted in the literature section is rejected.

Model 3 examines the impact of financial distress on dividends under the influence of the debt/equity ratio. The outcome is presented in Table 4. Similar to model 1, this model is also consistent with random effect as the Hausman test exhibits insignificant values (p value > 0.05) [14, 63]. In addition, as described in the above models, the significance level of the Wald and Wooldridge tests is 5%,which leads to the estimation of robust estimates [63]. Furthermore, I_DFD_DDER in Model 3 has a significant but negative coefficient with a p value of 0.053. Hence, it is clear from the result that financial distress, under the moderating effect of the debt/equity ratio, is significant for dividends. However, the nature of significance is negative, which means DER will weaken the association between financial distress and dividends. Furthermore, l_sales is also insignificant and negative, with a value of −0.162 in Model 3. The result implies that the third hypothesis of the study is not rejected (see Table 5).

Endogeneity and robustness analysis

The model specification states no endogeneity issue regarding financial distress in any models (see Table 6). The Durbin Chi-square test (0.045, p value 0.831) and the Wu–Hausman test (0.042, p value 0.837) provide evidence of no endogeneity presence; which is indicated by the fact that both tests have p values greater than 0.05, which is considered statistically insignificant [63]. Most of the models give comparable results, thereby confirming the robustness of the findings.The model specification states no endogeneity issue regarding financial distress in any models (see Table 6).

Hypotheses testing

The research presents three hypotheses, the first investigating the linear effect of financial distress (FD) on dividend decisions, and the second exploring the nonlinear impact of financial distress on dividends and examining the moderating impact of the debt/equity ratio on the association between financial distress and dividends. The debt/equity ratio serves as a moderating variable in the current study. The study's results confirm the validity of all three hypotheses, as demonstrated by the significant findings in models 1, 2, and 3, respectively. Model 1 represents a positive, significant linear relationship between financial distress and dividend distribution decisions of Indian banks. Based on these findings, we can say that when a bank gets into some distressing situation, the shareholders panic, so to calm the situation, the organization will decide to distribute dividends at normal or slightly higher rates to the shareholders. Thus, the first hypothesis of the study was not rejected. The second hypothesis has been rejected as the nonlinear relationship between distress and dividends has proved insignificant.

Furthermore, model 3 represents a negatively significant interacting impact of the debt/equity ratio on the association between financial distress and dividends. Thus, the third hypothesis that the debt/equity ratio will significantly impact the association between dependent and independent variables (financial distress and dividend) cannot be rejected. The negative impact of the debt/equity ratio means that the ratio's moderating effect weakens the association between financial distress and dividends in banks in India.

Comparison with earlier work

Numerous scholarly investigations have examined the association between financial distress (FD) and the

Table 6 Endogeneity and robustness test

	FD (Model 1)	DFD2 (Model2)	I_DFD_DDR (Model 3)
Durbin Chi-square test	.045(.831)	.152(.69)	.019(.88)
Wu–Hausman test	.042(.837)	.140(.70)	.017(.89)

The value in () is the p value. (Authors own compilation)

decision-making process of banks' dividend payout policy [62, 26, 56, 17, 33, 21, 49, 6]. However, as per our findings of positive and linear association among distress and dividends, it is interpreted that whenever a company faces financial difficulty, they opt to give a reasonable amount of dividends to decrease the panic level among investors. Any previously published studies do not support this interpretation, as Zeng [69] proved that the allocation of dividends could worsen financial difficulties for enterprises with a significant amount of debt. Furthermore, Coffinet et al. [20] proposed that businesses may reduce their dividend payout ratio and related payments when faced with financial difficulties. According to Reddemann et al. [49], the European insurance sector proposed reducing dividends to protect capital during the financial crisis. Sindhu et al. [56] also find that banks tend to decrease the dividend level during financial distress.

Similar kinds of interpretations are provided by the studies conducted so far. Secondly, regarding the nonlinear association between financial distress and dividends, a few previously conducted studies have come to our knowledge that focused on the nonlinear relationship of the variables [56]. Sindhu et al. [56] find that banks are nonlinearly associated with the dividend policy of banks. This outcome is the opposite of our results, as our analysis shows that financial distress and dividends have no significant nonlinear connection.

In addition, the current study's finding that the influence of the debt/equity ratio has a significant (and negative) impact on the relationship between distress and dividends lacks support from previously published research. Therefore, our interpretation of the debt/equity ratio, which weakens the association between distress and dividends, is more admissible.

Implications

The findings of the current study have significant research significance. Analyzing the observed trends in dividend adjustments during times of financial distress could provide valuable insights for developing regulatory frameworks and policies that aim to enhance the stability and resilience of the banking industry. Having this understanding can aid in formulating improved and efficient regulatory regulations that consider the different obstacles faced by banks in India, potentially improving the country's overall financial stability.

Moreover, the study provides valuable advice to bank executives and financial managers who are confronted with making dividend decisions during periods of financial stress. The factors that have been identified as influencing dividend policy can be utilized as a set of tools for strategic decision making, enabling banks to implement dividend strategies that are more informed and adaptable, which can enhance the overall financial well-being of individual banks and contribute to the banking system's stability.

Ultimately, the study enhances the existing body of research and offers practical and implementable guidance for policymakers, regulators, and professionals. This study examines the unique difficulties encountered by banks in India, adding to the current discussion on corporate finance. It provides practical insights that might influence decision making in the ever-changing and dynamic banking sector.

Conclusion and recommendations

The study's empirical findings provide a basis for formulating policy recommendations to advise regulatory bodies and financial institutions. Primarily, regulatory agencies like the Reserve Bank of India (RBI) should strengthen their monitoring methods and early warning systems to identify indications of financial distress in banks rapidly. Early detection would enable proactive intervention and the implementation of corrective actions, preventing the situation from worsening. Moreover, the study indicates the necessity of an adaptable and flexible regulatory structure to address the distinct challenges banks encounter during financial distress that may involve revisiting capital adequacy rules and stress testing techniques to ensure they effectively capture banks' risk profiles in different economic situations. Lastly, the study highlights the need to promote transparency and disclosure standards in the financial sector. Improved disclosure practices will allow investors, regulators, and other stakeholders to evaluate better a bank's financial condition. Regulatory authorities should engage with industry stakeholders to set ideal guidelines for transparent and open financial reporting.

The purpose of the current paper is to investigate the impact of financial distress on the dividend policy of banks in India. The paper first provides an assessment of the linear impact of financial distress on the dividends of banks. Secondly, the paper also assesses the nonlinear impact of distress on dividends. Finally, the paper examines the impact of distress on dividends under the interaction of the debt/equity ratio. Our analysis and results show that the linear association between financial distress and dividend decisions has become positively significant. Further, a positive but insignificant nonlinear relationship exists between the dependent and independent variables in the study (distress and dividend). Additionally, the investigation has yielded findings, indicating that the interaction variable examined in our study, namely the debt/equity ratio, exhibits a negatively significant influence on the association between financial distress and the

dividend payment policy of Indian banks. Hence, the results imply that whenever a distressing situation occurs in a company or a bank, the company starts to give good returns to the shareholders to minimize the panic among the shareholders. Therefore, the results offer helpful insights for all parties, including stakeholders, shareholders, and potential investors, to make informed investment decisions after noticing a bank's financial health.

Recognizing the limitations of this study is equally essential. The emphasis on Indian banks restricts the applicability of the results to other regions or economies. Therefore, the findings of this work may not apply to developed economies due to its focus on India, an emerging country. Furthermore, it would have been beneficial to consider additional variables or factors that could potentially impact the relationship between distress and dividend policies of banks, such as profit margin ratio, transparency and disclosure, and others. Finally, we had to limit our selection to only 31 out of 34 banks now operating in India, and the proper measurable data of the selected banks is only available until 2020.

Continuous adaptation is vital for acquiring new knowledge. Thus, scholars interested in FD may contemplate utilizing this study as a basis for their novel discoveries. Scholars should incorporate other variables in future research as interaction terms pertinent to dividends or financial distress. Furthermore, to ascertain the impact of financial distress (FD) on enterprises' dividend distribution decisions, researchers may also consider using data from a distinct sector or industry.

Abbreviations

FD	Financial distress
DER	Debt–equity ratio
DIV	Dividend
DFD_2	Square of demean of financial distress
DDER	Demean of debt–equity ratio
i_DFD_DDER	Demean of financial distress x demean of debt–equity ratio
l_Sales	Log of sales
RBI	Reserve Bank of India

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Author contributions
SG has analyzed and interpreted the results; along with the framing of the discussion and the conclusion sections. AR has been instrumental in the conceptualization, execution, and overall backend support for data retrieval and data cleaning processes; apart from writing the Introduction and Literature Review sections of the paper. Both authors have jointly read, reviewed, and approved the manuscript that is being submitted herewith.

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Availability of data and materials
All materials and datasets used in this study are available on reasonable request.

Declarations

Competing interest
The authors declare that they have no competing interests.

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