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## **Board structure composition and financial distress likelihood of Indian firms**

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**Abstract:** This study based on a dataset of 363 BSE listed Indian firms, examines how the composition and structure of their boards, proxied by the corporate governance variables, impact the likelihood of financial distress. Ten variables representing different features of the board were undertaken. These include board size, independent directors, non-executive directors, CEO-chair duality, chair concurrent position, CEO concurrent position, presence of female directors, ownership structure, lineage and having family members on board. Financial ratios and other corporate governance variables were entered as control variables along with industry dummies. Results report that the variables, CEO chair duality, government-owned firms, chair concurrent position, and non-lineage firms reduce the financial distress likelihood. Our results are robust to multiple criteria of the financial distress measures. Moreover, they corroborate one of the important guidelines of the separation of CEO and chairperson positions, suggested by the Kotak Committee in 2017.

**Keywords:** financial distress; bankruptcy; board structure; Kotak Committee; corporate governance.

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## **1 Introduction**

The concept of financial performance and financial distress are contrary to each other. While the former assesses how a firm has fared with respect to the profit making capacity in the current year versus its previous years, the latter explores the debt repayment capacity of the firm. In both cases, the principal (owners) practices the carrot and stick approach with the agent (managers).

The owners of the firms are the ones who select qualified professionals upon whom lies the faith and belief of steering the firm into meaningful directions. These qualified professionals together form the firms' board structure and this composition keeps on shuffling from time to time. There are voluntary resignations, periodic retirements or quick fires.

Owners of the firms understand that each type of 'director' has a crucial role to play. The onus lies on the owners on how to channelise the individual synergies into one major force that can help them maximise shareholders' wealth. However, the wavelength of these individual synergies can to an extent be controlled by the owners and the regulators of each country. For instance, will doubling up of powers of the two important positions (chairperson and chief executive officer) in a firm, contribute in achieving the firm's objectives. Or can individual synergies be maximised if this CEO of a firm does not hold any directorship in other firms.

In many countries, the board structure usually comprises of independent directors, non-executive directors and executive directors. To channelise these individual synergies, the independent directors understandably play a crucial role of trustees to the shareholders. They are expected to be fully aware about the conduct of the business and take a stand, as and when required. On similar lines, many countries have also advocated the presence of at least one female director, as such participation, strengthens the board structure of a firm.

The few instances mentioned above, are some of the many decisions which either lie in the hands of the owners (non-mandatory) or the regulators (mandatory). For instance, nearly half of the S&P 500 firms listed in the United States, practice CEO chair duality (two important positions of the chairman and the CEO held by one single person). On the other hand, the United Kingdom has roughly around 15% of UK listed firms as it is largely discouraged by successive codes of best practices and large institutional investors.

The academia has decent work on how firm performance is impacted by the personalities/roles on a firm's board (Bonn et al, 2004; Jackling and Johl, 2009; Chiang and Lin, 2011; Wang et al., 2013; Rodriquez-Fernandes et al., 2014; Bhatt and Bhattacharya, 2015; Yasser et al, 2017). The current study focuses on the opposite aspect, i.e., financial distress.

Prior research on the effect of board structure has primarily been conducted from western, predominantly Anglo-American, perspectives. However, firms elsewhere, particularly in the Asian subcontinent, operate with their respective cultures and in distinct legal and institutional environments, that might have important outcomes for the theme of corporate governance. Therefore, we proffer that the applicability of western models should be tested in different contextual environments.

The focus of this article is on an emerging economy, India, which positions atop in the list of emerging economies. The United Nations issue on world economic situation and prospects (WESP), 2019 opined India to have an even better GDP growth rate than China in 2019. However, the corporate governance scenario in India is still in its nascent

stage. Narayanaswamy et al. (2012) in their work report about the weak corporate governance norms, and the not so stringent compliance behaviour of the firms. Moreover, the rank of India according to the Asian Corporate Governance Association (2018) remains stagnant at the 7th position (out of the 12 Asia Pacific countries) for the 5th time in a row since 2014. Additionally, SAHA Ratings, in its 2018 World Corporate Governance Index of 150 countries, placed India in Group 2, comprising countries eligible to enter Group 1, but requiring further steps in the field of corporate governance.

In response to this, there is an increasing drive from the regulators towards aligning the corporate governance mechanism across India in line with the country's rapid economic growth. The amendments made by the Securities and Exchange Board of India (SEBI) in Clause 49 of the Listing Agreement in 2014<sup>1</sup>, the introduction of the Insolvency and Bankruptcy Code in 2016, the instituting of the Uday Kotak Committee in 2017<sup>2</sup> and the formation of the National Financial Reporting Authority in 2018 have been some of the major measures taken by the Central Government to align the Indian corporate governance codes with the world parameters.

Particularly, SEBI made amendments to Clause 49 of the Listing Agreement in 2014 which firms were expected to follow from the financial year beginning in 2015.<sup>3</sup> While many of these amendments were made mandatory for the listed firms, a few were however left at the discretion of the management. It should be duly pointed that apart from the reasons mentioned above, such stringency and rigorousness in issuing these new protocols also stemmed because the country had recently faced the Satyam Scam (2009) and SAHARA Scandal (2012).

This study pinpoints about how changes with respect to the board structure, directed by the Regulator SEBI could help explore the financial distress likelihood of Indian listed firms. Specifically, it steers to examine how the following factors impact the financial distress likelihood of the firms:

- 1 size of the board
- 2 presence of independent directors
- 3 presence of non-executive directors on board
- 4 having a female director
- 5 separation of the posts of CEO and chairman
- 6 chairman of firms holding directorships in other firms
- 7 CEOs holding directorships in other firms
- 8 government vs private ownership structures
- 9 firms practicing lineage
- 10 having family members on board as directors.

To this end, keeping the 2014 SEBI amendments as the basis, we use a dataset of 363 BSE listed Indian firms. Four years of data for 2015–2018 (a total of 1,452 year-end observations) is examined using the logit model. Board structure proxies along with control variables of financial ratios, industry dummies and other corporate governance variables are modelled. We also infer the robustness of our results by changing our dependent variable, financial distress likelihood, to varying degrees.

This study contributes to the domain of corporate governance and bankruptcy/financial distress in the following ways. First, it reinforces the importance of internal structure (corporate governance mechanism) of firms, over and above the financial ratios in indicating their financial healthiness. Second, the results based on an emerging economy in this article, find similar corporate governance variables to be significant as those reported in studies based on developed countries. This leads to an important inference that corporate governance variables in both advanced and emerging economies, by and large, impact the financial distress levels of the firms in a similar way. Third, this study takes into account the two variables namely lineage and family members on board, that typifies the Indian business environment along with several other corporate governance variables.

Standard setters and financial market regulators could benefit from this investigation by gaining a better understanding of how a firm's board structure could be regularised for the overall improvement of its financial health. This study could also aid potential investors to understand more about the ideal corporate governance structure of firms. Additionally, they would be able to assess the future financial viability of the firms based on cues from firms' respective board structure compositions.

The rest of the paper is organised as follows. Section 2 outlines the variable financial distress and other independent variables undertaken in this study. In the next section, we present this study's research design. In the subsequent Sections 4 and 5, we summarise our results and provide the conclusion of this study, respectively.

## **2 Literature review**

The literature review is presented in five subsections. The first subsection discusses the theoretical framework of the study. The second subsection defines and presents studies on the dependent variable, financial distress. The third subsection discusses the explanatory variables proxying various aspects of a firms' board structure. We then elucidate the control variables adopted in our study with respect to corporate governance and financial ratios in the respective last two subsections.

### *2.1 Theoretical framework*

#### *2.1.1 Agency theory*

Two theories have been prominently used in the field of firm performance in academia. These are agency theory and resource dependency theory. We proffer their usage when firm performances go negative, i.e., in situations of financial distress.

As per the agency theory, shareholders appoint representatives to manage the firm on their behalf. This leads to a separation between the firm's ownership and control. Extant research points out that problems such as conflict of interest, moral hazard and information asymmetry arise due to this separation.

Due to the owners and the runners of the firm being different, the managers are always in a position to pursue self-interest at the expense of the shareholders, which creates agency costs. Studies by Leung et al. (2014) and Terjesen et al. (2016) report that such risk related to conflict of interest could be reduced by monitoring and supervising the managers' work. As such, this monitoring of the management and making sure they

act in favour of the shareholders is the direct responsibility of the board (Jensen and Meckling, 1976). The firms' performance levels improve with an enhancement in the monitoring process (Zahra and Pearce, 1989; Pearce and Zahra, 1992).

On the other hand, Guest (2009) and Yapa Abeywardhana (2016) show that conflict of interest could be reduced if either positive and/or negative action is undertaken by the owners of the firm. Research by Fama (1980) and Jensen and Meckling (1976) suggest that aligning the board incentives with the shareholders' interests instinctively serves as a major monitoring approach. Alternatively, independent directors could be appointed alongside the other type of directors which could enhance the act of monitoring (Fama, 1980; Zahra and Pearce, 1989).

Moral hazard is another implication when the ownership is separate from the management of a firm. The situation arises if the managers make reckless decisions and the impact of which, goes beyond the risk bearing capacity of the owners. The managers are unaltered by the consequences of such decisions because it is not them who will be bearing such costs.

Information asymmetry is also one of the concerns in case of the principal-agent relationship. The agents (managers) have more private information about the firms' future than the shareholders. In these situations, the managers could manipulate the information which ultimately prevents the principal to take correct economic decisions.

Both the problems of moral hazard and information asymmetry could be optimised if the board incentivise the managers in line with the shareholders' goals and by deciding up such composition of the board, that would ensure intense monitoring and supervision.

Besides the stated problems arising out of the separation of ownership and control, boards vary in their ability to monitor (Hillman and Dalziel, 2003). Each board is heterogeneous and is therefore composed of individuals with unique qualifications. Hence, apart from giving discretion to the owners in configuring their board structures, some form of regulation that can be stipulated by the country's authorities could be deemed mandatory for every listed firm.

### *2.1.2 Resource dependence theory*

Resource dependence theory is the second principal theory that is being examined to study the board structure. Along with monitoring the management on behalf of the owners, the board has another equally important function of the provision of resources.

The resource dependence theory provides an altogether refreshing viewpoint to understand board structure. It is based on the work of Salancik and Pfeffer (1978). The authors identified that a board assists a firm in four ways. These are advice and counsel, legitimacy and reputation, providing channels of communicating information between external organisations and the firm and lastly assistance to obtain resources or commitments from important elements outside the firm.

From these four benefits, it can be inferred that boards in a firm consist of members who bring specific knowledge and expertise. These members have their intrinsic prestige which if channelised properly could enhance the firm value. Also, the board could help to reduce environmental uncertainties by reducing information asymmetry. Lastly, firm performance can be improved by appointing representatives on the board from important sectors of the business.

These four elements are closely tied to the provision of resources and board capital. As per Hillman et al. (2000), the provision of resources is a very important perspective of the resource dependence theory.

Provision of resources indicates the type of external experience, connections and other enhancements a board member possibly could bring into a firm. These positives could either be in form of prior work experience in the industry, executive level rapport or acquaintanceship, current positions in other boards or simply, all the human and social capital that the member possesses. As per Hillman and Dalziel (2003), this human and social/relational capital collectively could be deemed as board capital. For instance, if an incoming board member has prior experience of rescuing a firm from bankruptcy, then the same could be beneficial if the firm is currently facing one.

Keeping in view how the agency theory and the resource dependence theory impact the formation of the firms' boards and their occasional configuration, we examine how the different parameters of a board could impact the financial distress likelihood of firms.

## *2.2 Financial distress*

The current literature has defined the term business failure in a number of ways, and thus has failed to arrive at a consensus (Crutzen and Van Caillie, 2007). Various criteria applied by previous authors are Altman's Z-score model, credit ratings by agencies, firms delisted from the stock exchange, late filing of IT returns, negative net assets value, going concern qualification issued by the auditor, breach of debt covenants and the inability to pay preferred dividend (Hafeez and Kar, 2018). However, this article defines business failure with reference to the work of Bhattacharjee and Han (2014). They created a synthetic measure of financial distress built on the debt sustainability aspect along with a criterion to judge any changes (decrease) in both, the assets and equity levels of the firm. In their work, they considered financial data of 1,609 Chinese listed firms ranging from 1995 to 2006. In line with the previous studies, financial ratios such as gearing and cash flow were found important. Greater levels of financial distress were reported in firms listed on the Hong Kong, Shenzhen, and other foreign stock exchanges in comparison to the Shanghai stock exchange that featured large state-owned firms. Their study also revealed that the weak, as well as some private firms, were state protected in China. We share more in detail about our dependent variable in Section 3.

## *2.3 Independent variables*

Our choice of the explanatory variables is motivated by the extant literature. The variables representing various characteristics of the board structure are board size, presence of independent directors, presence of non-executive directors, CEO-chair duality, chair concurrent position, CEO concurrent positions, female director on board, ownership structure, lineage and family members on board. Prior work with respect to these variables is presented below.

### *2.3.1 Board size*

The size of board indicates the total number of directors a firm has on board (PanAsian et al., 2003; Levrau and van Den Berghe, 2007). Both executive and non-executive directors constitute an optimal board size (Ghosh, 2006). An effective structure of the

board is important to govern a firm well. Board size has been reported to differ between countries because of their diverse cultures. It could thus be inferred that there is no standard optimal board size.

Several studies advocate that smaller board sizes are reportedly more proficient in information transmission and decision making (Lipton and Lorsch, 1992; Uzun et al., 2004; Fich and Slezak, 2008). Smaller boards allow more accountability and responsibility as active involvement is a must as contrary to the larger boards (Judge and Zeithaml, 1992; Fischer and Pollock, 2004). Also, Hsu and Wu (2014) and Fernando et al. (2019) opinionated that the probability of corporate failure could increase if a high number of executive directors are there on the board.

Problems associated with a bigger board size are high agency costs, miscommunication and low coordination between the board members (Jensen, 1993; Cheng, 2008). A study by Salloum and Azoury (2010) articulated that if a firm's board size is large, it may not be able to benefit from the directors' expertise service. Jensen (1993) states that large boards could also become incapable of supervising the top management with time.

On the contrary, the agency theory argues that a large board size would put more disciplinary pressure on the CEO (Bredart, 2014). Further, the resource dependence theory states that a large board would provide varied expertise (Zahra and Pearce, 1989), access to critical resources (Gales and Kesner, 1994) and also additional external connections (Goodstein et al., 1994).

On similar lines to these two theories, there are also studies advocating for a large board size. One of the seminal works by Pearce and Zahra (1992) studied a dataset of 200 companies to understand if board size has any effect on firm distress. They report that a large board is equipped with more skill that would help generate many ideas and come up with quality suggestions. Simpson and Gleason (1999) asserted that a smaller size of the board would only put the firm at risk when the board members align their interests with the shareholders. Similar results were found in a study undertaken by Dalton et al., (1999) in which the dataset was 21 pairs of healthy and non-healthy firms. Work by Adams and Ferreira (2007) used logistic regression on a dataset comprising both financial indicators and corporate governance variables. They report that a large board could assist in reducing the firm's financial distress. Also, Platt and Platt (2012) reaffirmed that larger boards are better placed to help a firm stay out of bankruptcy.

Further, authors such as Dalton et al. (2007) and Klein (2002) state that more experts having diverse backgrounds can be a part of a big board. And that they can be assigned and delegated to take strategic decisions in favour of enhancing firm performance. A big board enhances the overall managerial monitoring capacity and better decision-making (Ntim, 2015). Manzanque et al. (2016a) found that companies with larger board size had the capability to direct management while also accessing resources and information efficiently, thereby reducing the financial distress likelihood.

According to our data consisting of 363 firms, the board size for Indian firms on average is 9.39. As per the literature, it seems right below the large board size criteria. Thus, we deem that our sample on average has a smaller board size. Consequently, we hypothesise the following:

H1 Small board sizes hold a negative association with the financial distress likelihood.



### 2.3.2 Independent directors on board

Studies that advocate that a higher number of independent directors reduces the financial distress likelihood, strengthen the ‘monitor and control’ argument. The presence of independent directors ensures a strong check on the power entrusted to the top management. Works of authors such as Elloumi and Gueyie (2001) on Canadian dataset; Abdullah (2006) on Malaysian firms; Wang and Deng (2006) and Li et al. (2008) on Chinese firms; Platt and Platt (2012) and Fernando et al. (2019) on the United States listed firms; Salloum and Azoury (2012) on Lebanese firms; Manzaneque et al. (2016b) on Spanish dataset; Luqman et al. (2018) on Pakistani firms and Al-Smadi (2019) on Jordanian firms reinstated the importance of independent directors in reducing the level of financial distress in firms. Moreover, referring to a work based on examining the role of institutional shareholders, Manzaneque et al. (2016b) found the proportion of independent directors as significant when introduced as a control variable. Likewise, the findings of Ciampi (2015) stated that the presence of independent directors on the board (only to the extent of 50%) reduced the likelihood of financial distress.

Also, there have been studies that report a negligible impact of the same. Miglani et al. (2015) examined how the voluntary disclosure of corporate governance measures impact the financial distress likelihood of Australian firms and didn’t find any supporting evidence. A recent study by Cardoso et al. (2019) on the Brazilian dataset of firms found no impact of the proportion of independent directors on the board on the financial distress likelihood.

On the other hand, results contrary to the one stated above were reported in one of the seminal works by Daily and Dalton (1994). They examined a dataset consisting of 100 firms and reported that the interaction of CEO-chair duality and independent directors was positively associated with financial distress.

The revised Clause 49 has mandated the minimum requisite number of independent directors in accordance to the type of chairman of the firm, i.e., whether the chairman is executive or non-executive. If the chairman is executive, then not less than 50% of the board should consist of independent directors. Otherwise, if the chairman is non-executive, then there should be at least 1/3rd independent directors on the board. Thus, following the above mandate, we introduced this variable as binary wherein, ‘0’ implies that the firm fulfilled the criteria, while ‘1’ is otherwise.

Hence, we hypothesise that,

H2 The presence of independent directors on the firm’s board reduces the financial distress likelihood.

### 2.3.3 Non-executive directors

A non-executive director could be a member of the firm and can hold any number of shares without any restriction. Whereas an independent director may only be allowed to hold the share capital of a firm up to a certain limit. All independent directors are non-executive directors though, all non-executive directors cannot be said to be independent.

The extant literature does not discuss much about how non-executive directors impact the financial distress levels of firms. While reviewing the previous work, it was found that authors have not differentiated between independent and non-executive directors. However, in India the regulatory authority SEBI tends to differentiate between them. To

highlight, SEBI directs that at least 50% of the board should be consisting of non-executive directors in every listed firm. Also, the 2014 amendments directed the BSE listed firms to constitute different committees headed by specific types of directors. For instance, audit and remuneration committees are to be headed by independent directors and shareholders relationship committees by non-executive directors.<sup>4</sup> Thus, we felt the need to differentiate the non-executive directors from the independent ones, given the importance reckoned to this particular ‘class of directors’ by SEBI. This variable has also been introduced as a binary variable, with ‘0’ marked as firms that fulfill the criteria, and ‘1’ otherwise.

We have come across only one study which has previously considered this variable and is based on a Malaysian dataset. It reported a negative relationship between the non-executive directors and the financial distress likelihood (Abdullah, 2006). Thus, on the lines of this work, we hypothesise that,

H3 The presence of non-executive directors on the firm’s board reduces the financial distress likelihood.

#### 2.3.4 *Duality of CEO and chair*

CEO-chairman duality refers to occupying the two important positions of the chief executive officer and chairman by different directors. The duality concern remains amongst one of the most discussed variables (Dalton et al., 2007).

Seminal research by Jensen (1993) evidence that duality provides greater autonomy and improves the boards’ monitoring management. The performance evaluation of two directors occupying two different positions becomes relatively easier while the agency cost problem also optimises (Fama and Jensen, 1983; Lipton and Lorsch, 1992 and Jensen, 1993 among others). Moreover, if these two important positions are overseen by two different people, there is also no reduction in the power dynamics of these two positions (Jensen, 1993). The agency theory proposes that these two positions should be separately filled (Luqman et al., 2008), so as to reduce the chances of managerial entrenchment (refer to works of Eisenhardt, 1989; Fama and Jensen, 1983).

In the scenario of the CEO and chair being the same, there are several negatives too. The absence of duality would create a situation wherein, a single individual gains immense power that also impacts the board’s overall independence and effectiveness negatively (Osma and Guillamón-Saorín, 2011). Though as per Brickley et al. (1997), the decision-making process might be more unified, the firm’s ability to retort to crises-like situations declines, to the extent that it becomes inflexible (Daily and Dalton, 1994).

Moreover, the power associated with these two positions vested in a single person would increase by manifolds (Eisenhardt, 1989) and could be utilised to pursue his/her interests. The CEO-Chair may also rule out any decision taken against them (Elloumi and Gueyie, 2001). A study by Salloum and Azoury (2012) provided negative consequences at the firm level of having no duality. They found that firms that didn’t feature the concept of duality, incurred expenses on unproductive transactions while also reporting negative operating income levels.

Conversely, corporate governance theories namely stewardship theory and resource dependence theory support for no form of separation in these two key positions. There are low chances of conflict of interests at the higher levels, the channels of communication are short and there are minimal coordination expenses (Donaldson and

Davis, 1991; Davis et al. 1997; Simpson and Gleason, 1999; Mangena and Chamisa, 2008). A single director at the helm reassures unity of leadership and stronger control.

Empirically, the relationship between CEO-chair duality and financial distress likelihood has produced mixed results. Elloumi and Gueyie (2001) and Ciampi (2015) reported a negative relationship between CEO-chair duality and the likelihood of financial distress. Daily and Dalton (1994) and Darrat et al. (2016) reported a positive association. Moreover, studies by Wang and Deng (2006), Platt and Platt (2012), Salloum and Azoury (2012), Miglani et al. (2015), Appiah and Chizema (2016), Manzaneque et al. (2016a), Fernando et al. (2019) and Al-Smadi (2019) reported insignificance. Thus, the hypothesise for this variable is as follows:

H4 Duality in CEO and chair positions reduces the financial distress likelihood.

### 2.3.5 Chair concurrent position

Chair concurrent position as the name suggests identifies whether or not the chairman of a particular firm has directorship(s) in other firms. With respect to the current work, we aim to examine the holding of multiple directorships, either of the chairperson or the CEO and not of every director on board.

The directors on the board are the providers of social capital which is the aggregate of a set of factors namely information, knowledge and relations, both within and outside of the firms (Duchin, et al., 2010). However, their overall contribution in enhancing the firm value is based on three things namely their skillset, time devoted and the effort in and outside the boardroom meetings (Kiel and Nicholson, 2006).

Another closely related variable to chair concurrent position is multiple directorships, which has been adopted by previous authors in this domain. It indicates the total number of outside directorships a particular member of the board of a focal firm holds (Fich and Shivdasani, 2005; Jiraporn et al., 2009a, 2009b). Previous research has enumerated several advantages of holding multiple directorships. Particularly, Fama and Jensen (1993) opinionated that the real reason why firms hire outside directors are two folds; to enhance the firm's reputation and to improve the monitoring aspects of their directors. A director serving on multiple boards gains varied experience by dealing with different opportunities and threats faced by the firms (Ferris et al., 2003). Research by Gilson (1990) and Wilson et al. (2013) also added that firms allowing multiple directorships were at a better stance in comparison to those which didn't, in accessing various finance options due to their connections and business ties.

Also this variable, multiple directorships has been examined in other domains of financial accounting: firm value (see Loderer and Peyer, 2002; Jiraporn et al., 2008), firm performance refer to Core et al. (1999), Fich and Shivdasani (2005), and effectiveness of the board Harris and Shimizu (2004).

With respect to holding multiple directorships in Indian firms, both The Companies Act (2013) and the SEBI 2014 amendments of Clause 49 apply. Whilst Section 165 of The Companies Act (2013) allows the director of one firm to hold a position in not more than 20 firms at a single point of time (10 in case of public companies), the revised Clause 49 had brought down this number drastically. The latter reads that a director cannot hold multiple offices in more than 7 listed entities. However, as per Kotak Committee guidelines, as per regulation 17A, 'a person shall not act as a director in more

than 8 listed companies with effect from April 1st, 2019, and in not more than 7 listed entities with effect from April 1st, 2020.

Based on the above discussion, we hypothesise that:

H5 Holding concurrent positions by the chairperson in other firms aids in reducing the financial distress likelihood with respect to the primary firm.

### 2.3.6 *CEO concurrent position*

The CEO concurrent position accounts for the number of directorships held in other firms by the CEO of a particular firm. The CEO of a firm holds a very important position. Unlike the chairman, who is on the ownership side of the firm, the CEO is usually hired. There could be scenarios wherein this hired employee holding such an important position in one firm, is also a director in a few other firms. We aim to understand how his association with other firms, impacts the financial distress likelihood of the firm in question where s/he holds the position of a CEO).

Not much work has been done with respect to the variable, CEO concurrent position. To the best of our knowledge, one of the seminal works by Platt and Platt (2012) included the variable CEO concurrent position. Their study was based on a simple comparative analysis of the board composition and governance committees of 87 bankrupt and 205 non-bankrupt firms listed in the United States. They reported that CEOs holding concurrent positions in other firms could aid in reducing financial distress possibilities. Another article by Li et al. (2015) included this variable in their study. They worked on a 10 year Chinese dataset which included information relative to four corporate governance measures namely board composition, ownership structure, management compensation and director and manager characteristics. A total of 35 variables were modelled using the discrete-time hazard model. Results however revealed that all the variables barring salaries of independent directors, the work location of independent directors, the chair's age, concurrent CEO positions held, CEO education level, state control and institutional ownership reported insignificance.

This variable, like chair concurrent position, shares the literature with respect to holding multiple directorships. As stated previously, work done on multiple directorships has been majorly in the related theme of firm performance, firm value and effectiveness of the board. Thus, we insist on checking this variable with respect to financial distress. The hypothesis for this variable is as follows:

H6 Holding concurrent positions by the CEO in other firms aids in reducing the financial distress likelihood with respect to the primary firm.

### 2.3.7 *Female directors*

Gender diversity is another factor that helps in increasing the effectiveness of the corporate governance framework in firms (Deng et al., 2017). There have been critical arguments raised in support of women's engagement on the boards. Women's voice improves diversity in opinions (Catalyst, 1995), brings strategic input to the meetings (Bilimoria, 2000) and provides an independent view to the board Fondas (2000), among many others. Understandably, their promotion onto the top half of the management ladder also serves as a role model to many (Catalyst, 1995). The study by Bear et al. (2010) proposes that the function of monitoring the management can be strengthened by

balancing the gender diversity on the board. Moreover, Hillman et al. (2000) identified women to be better community influencers because their network touches relatively wider stakeholder groups. Adams and Ferreira (2009) in their work on women in the boardroom advocated that the impact of female directors is at par with the independent directors' role.

Referring strictly to the theme of bankruptcy/financial distress, results with respect to the presence of female directors on board are mixed. Salloum and Azoury (2010) from their study on 178 Lebanese firms reported that the presence of female directors on board does not necessarily reduce the levels of financial distress. Conversely, Wilson et al. (2014) found a negative association between female directors on board and the financial distress likelihood. Their results are based on a sample of six million observations from the UK.

Overall, research studies focusing on the impact of female directors on this theme are scant. Our motivation for including gender in this article is to answer whether or not the benefit of gender diversity can be amplified with respect to reducing the financial distress levels in the firms. Alternatively, it also inspects what impact the SEBI 2014 guidelines of introducing a female director on board has on the financial distress likelihood. Hence, taking up this variable is one such novelty of this study. On the basis of the above discussion, we hypothesise that:

H7 The presence of female directors on the board helps to reduce the likelihood of financial distress.

### *2.3.8 Ownership structure*

The variable ownership structure strictly classifies a firm into either a private or a government-owned one. Lin and Tan (1999) proclaimed that state-operated enterprises (SOEs) are in a more comfortable position due to two reasons; first, they receive subsidies over and above their annual incomes, and that unprofitable firms are usually more subsidised and second, the state-run banks provide them loans at a relatively lower cost of capital. In support of this opinion, Faccio (2006) added that due to lower taxation, higher leverage and a huge market share, the SOEs hold a dominant position in the market. At the same time, the SOEs also reflect high shades of corruption, are less transparent and thus do not attract foreign investment.

A number of studies found a negative association between government shareholding and the likelihood of financial distress (Abdullah, 2006; Wang and Deng, 2006; Zeitun and Gang Tian, 2007; Li et al., 2015; Zeitun, 2009 and Li et al., 1992). On the contrary, an article by Shahwan (2015) reported a positive relationship between the two, implying that SOEs are more prone to experiencing financial distress. Moreover, in a study by Md-Rus et al. (2013), no impact of the ownership structure was found on the financial distress likelihood.

This variable has been entered as binary, wherein '0' has been accredited to all the private firms while state/centrally controlled firms were marked as '1'. The hypothesis for the ownership structure variable has been as follows:

H8 The state/central government-controlled firms are less likely to face financial distress situations.

### 2.3.9 Lineage

The variable lineage has been introduced in our study to account for firms, which pass on the baton of business leadership onto their next generations. A firm would be deemed as following the practice of lineage when either the founder is in the business, or he/she has more than one generation working in the family business. This was identified by manually going through the corporate governance reports of the firms under study.

Although succession planning is difficult in all organisations, but for family firms, it is more challenging. This is because the one taking all the calls has to converge the biological considerations with the institutional ordering.

Family-led businesses believe that succession planning should come from within the family and that their descendants are the rightful heirs. In some scenarios, by following this practice, the chairman or the parents after retiring from the post, assume the status of emeritus chairman. Though the position of emeritus chairman is not an official position among the board of directors, but the emeritus chairman may be called upon by the chairman himself or the board of directors for special purposes. In all, apart from the day-to-day working, everything goes right below their scrutiny. Another point to be mentioned here is that the firms which follow the practice of lineage, do not hire professional directors as their chairman.

The literature on the variable lineage and financial distress/bankruptcy has been scant. Rather, work in related themes such as firm performance (Anderson and Reeb, 2004; Perez-Gonzalez, 2006; Bennedsen et al., 2007; Bertrand et al., 2008; Rusmin et al., 2012; Ding et al., 2014; Muttakin et al., 2015), earnings management (Firth et al., 2007; Davidson et al., 2007; Stockmans et al., 2013) cost of capital (Tran, 2014), firm value (Villalonga and Amit, 2006; Goldman et al., 2009; Kim and Lim, 2010; Sitthipongpanich and Polsiri, 2015) and corporate disclosures Ali et al. (2007) in relation to lineage has been more.

The Credit Suisse Research Institute in their report of 2017, conducted a detailed analysis on around 1,000 family business firms in relation to non-family business firms. While focusing on the compliance of corporate governance norms, the report surprisingly states that family-owned firms slightly lag behind the non-family owned firms. Also, the descriptive statistics with respect to the database highlight that most family-owned firms are located in China, the USA and India (167,121,108 firms respectively).

Family-led businesses could either hold significant ownership or in other scenarios they hold both, ownership and management control. Firms other than those in India, have separated ownership and management control, majorly after the enactment of the Sarbanes Oxley Act (2002) and the Dodd-Frank Act (2010). However, India has a greater number of firms having owners being active in their management.

With regards to our dataset, 69% (68.73 approximately) of the firm-year observations reported the existence of a lineage relationship. One of the inferences that we could draw from this statistic, is that family-led businesses are a major characteristic in the Indian business sector.

Amendments stated in either of The Companies Act (2013) or the directives issued by SEBI are silent on this variable. Thus, the variable lineage has been entered as binary. Firms that do not practice lineage are marked with '0' and firms that do are entered as '1'.

H9 Firms that practice lineage have a more severe likelihood of facing financial distress situations.

### 2.3.10 Family members on board

An important consideration to be mentioned here is that around 69% of our dataset consists of family led businesses. This statistic indicates that these businesses have an important contribution to the economic development of the country (also because our dataset is based on BSE top 500 listed firms). Also, these firms are not just amateur public entities, nor are they just highly successful startups. Some of their distinctive behaviour is explained by their 'familyness' in the same way that public companies' behaviour is explained by their 'publicness'. Thus, to understand firms that form a major chunk of our dataset, attention should be paid to their internal dynamics.

Through this variable, we intend to identify whether members of the promoter's family other than him/her self are put as directors on the board or not. The corporate governance reports are scrutinised minutely to find whether the relatives of the promoter's family are on the board. Relations only in the capacity of the spouse, children, brother or sister were considered to be of the promoter's family.

Looking at the statistics of both the variables, lineage (69%) and family on board (57%) and the observation made while extracting data on these variables, it is safe to deem that families which had lineage were majorly the same as those who put family members on the board.

There have been a few studies to refer to, such as Anderson and Reeb (2004) and Stavrou et al. (2007) wherein the impact of having family members on the board (as CEOs only) is examined with respect to the firm's financial performance. By and large, no prior study has included this variable to be investigated in the light of financial distress likelihood.

The Companies Act (2013) and SEBI have not set any provisions with respect to this variable. Thus, in relation to the current work, the variable family on board has been entered as a binary variable where '0' denotes that no family member is part of the board of directors and '1' indicates that there is a family member on the board. Based on the above discussion, we hypothesise that

H10 Promoters whose family members are on the board of directors are more likely to face financial distress likelihood scenarios.

## 2.4 Corporate governance control variables

Some of the corporate governance measures which are not a part of the board structure, have otherwise been introduced as control variables with reference from the previous works. These include dual listing like listed on BSE and NSE, employee stock options and firm size.

### 2.4.1 Listed on BSE and NSE

Dual listing refers to the firm being listed on more than one stock exchange. The inclusion of a variable on the listing of firms on BSE and NSE in our study is based on the proposition that if a firm is listed on two stock exchanges, the general acceptability among the potential investors would be greater in comparison to the firm having a single listing, keeping other things equal. Li et al. (2015) included this control variable in their work on financial distress likelihood but results reported insignificance.

### *2.4.2 Employee stock options*

Employee stock options refer to granting of stock plans to employees (directors/employees) as a part of their salary structure. It indicates whether a firm has opted to dilute some part of its ownership among its workforce or not. Although not in a major way, the variable may exemplify the change in power structure from time to time. The rationale to introduce this variable in our study is to understand the impact of ESOPs on the financial health of the firms. Moreover, SEBI's amendments of Clause 49 in April 2014, also required the disclosure of stock option details in the corporate governance reports. While hand collecting the corporate governance data, it was observed that firms did switch between granting and non-granting of employee stock options during our four years of the time period considered.

Employee stock options have been notably used in the theme of firm performance. Studies by authors namely Sanders (1999) and Guo et al. (2006) reported a positive relation while Alves (2011) found a negative relation between the stock options and firm performance.

In the field of financial distress/bankruptcy, one of the first authors to investigate employee stock options is Shahwan (2015). Although their results reported an insignificant relationship, we deem this variable important enough to include in our study.

### *2.4.3 Firm size*

The size of the firm has also been taken into consideration. While Parker et al. (2002), and Cardoso et al. (2019) found a positive association of firm size with the financial distress likelihood, research by Shahwan (2015) found no significance.

### *2.4.4 Domestic promoters*

Promoters are the investors and hold the shares of a firm. They are the owners of the firm and have the right to profits earned through the firms' operations. All the promoters are not the directors of the firm while also, all the directors are not the promoters of the firm.

Directors are the managers of a firm who manage the day-to-day operations of a firm. The different types of directors (independent and non-executive) have already been included as primary variables in this study. Since the current paper intends to only focus on the composition of the boards, including the extent of promoter ownership as one of our primary variables would not have been the best fit. So, the variable promoters have been included to control for the ownership structure of firms.

There have been studies that indicate a negative relationship between the domestic promoters and the financial distress likelihood (see Elloumi and Gueyie (2001), Wang and Deng (2006), Li and McNally (2007), Fich and Slezak (2008), Donker et al. (2009), Zeitun (2009) and Al-Tamimi (2012) to cite a few).

### *2.4.5 Foreign promoters*

Similar to domestic promoters are foreign promoters, except that these are outside the country. Work by Zeitun and Tian (2007) and Abdullah (2006) highlight a negative relationship between the foreign promoters and the likelihood of being in financial distress.



#### *2.4.6 Non-promoter institutions*

Non-promoters are classified into two types, non-promoter institutions and non-promoter non-institutions. Non-promoter institutional shareholding consists of shares held by mutual funds, banks, financial institutions, insurance companies, foreign institutional investors and venture capital funds.

Donker et al. (2009) state that institutional investors have dealt well to become the colossal group in today's stock markets. The splurge in volume and the active part they play indicates their increasing value. Work by Daily and Dalton (1994), Shleifer and Vishny (1997), Wang and Deng (ibid.) and Mangena and Chamisa (ibid.), among others, report a negative association between non-promoters and the financial distress likelihood. Moreover, recent studies by Manzaneeque et al. (2016a) on the Spanish dataset and Udin et al. (2017) based on the Pakistani dataset suggested that institutional shareholdings have an insignificant impact on the financial distress likelihood of firms.

#### *2.4.7 Non-promoter non-institutions*

Non-promoter non-institutions comprise the shares held by corporate bodies and individuals. A review of the related literature suggests that this variable has not been studied exclusively in its subdued form except for Manzaneeque et al. (2016a), which found it insignificant. Rather, the non-promoters have been preferred. Nonetheless, we segregate the variable in its divisive form to conduct in-depth explorations.

### *2.5 Financial ratios*

We select a number of financial ratios from the extensive literature to be introduced as control variables in our study. For instance, liquidity ratio is a proxy to gauge the short-term insolvency status of the firm and has been widely used in the literature (Elloumi and Gueyie, 2001; Parker et al., 2002; Wang and Deng, 2006; Li et al., 2008; Shahwan, 2015, Cardoso et al. (2019). Another variable, debt indicates how the total liabilities of the firm in relation to its total assets. It has been adopted in studies by Elloumi and Gueyie (2001), Parker et al. (2002), Wang and Deng (2006), Luqman et al. (2018) among many others. Profit margin, also known as return on sales is another proxy that indicates a firm's ability to recover from any kind of financial distress situation. Parker et al. (2002) suggested that a high level of return on sales could indicate healthy conditions about the firm's financial performance. A number of authors adopted profit margin in their works (refer to Parker et al., 2002; Li et al., 2015; Shahwan, 2015; Udin et al., 2017). Another ratio based around the sales criteria is the sales growth ratio which compares the change in sales for the current year in relation to the previous year. Parker et al. (2015), Shahwan (2015), Eulaiwi et al. (2017) and Udin et al. (2017) introduced this ratio as a control variable in their works.

A few financial ratios have also been taken from the cash flow statement (CFS). Since the CFS is prepared on the cash basis, instead of an accrual basis, it reports the actual flow of cash less accrual income and accrual expenses. We have adopted two ratios, namely the dividend payout ratio and change in cash ratio for our research work. Studies by Donker et al. (2009) and Udin et al. (2017) deployed the dividend payout ratio to account for how much cash the firms pay back to the shareowners from the overall income received. The second financial ratio namely, change in cash to total assets

indicates the cash a firm can generate in relation to its size. The trend over the years with respect to this ratio could provide important signals regarding a firm's growth. For instance, if a firm's change in cash ratio is declining, then they may eventually turn into cash problems. Donker et al. (2009) used change in cash ratio in their work.

Over and above these control variables, industry dummies were introduced as well to account for industry variations, since the data for the current study ranges from 13 different industries [refer to work of Manzanque et al. (2016b) and Udin et al. (2017)].

**Table 1** Dataset construction and distribution by industry

<i>Panel A: Dataset construction steps</i>	<i>Number</i>	<i>%</i>
<i>Initial number of firms</i>	<i>500</i>	<i>100</i>
(-) Banks	35	7
(-) Financial service providers	40	8
(-) Insurance	1	0.2
(-) Real estate	31	6.2
(-) Investment firms	3	0.6
(-) Credit rating agencies	3	0.6
(-) Data unavailable	24	4.8
<i>Final dataset</i>	<i>363</i>	<i>72.6</i>
<i>Panel B: Classification of firms on the basis of their industries</i>	<i>Number</i>	<i>%</i>
<i>Industry</i>		
Agriculture, forestry and fishing	1	0.272
Mining and quarrying	1	0.272
Manufacturing	238	64.850
Electricity gas, steam and air conditioning	13	3.542
Construction	9	2.452
Wholesale and retail trade, repair of cars	21	5.722
Transportation and storage	20	5.449
Accommodation and food service activities	4	1.089
Information and communication	44	11.989
Professional, scientific and technical activities	7	1.907
Administration and support service activities	3	0.817
Human health and social work activities	5	1.362
Art, entertainment and recreation	1	0.272
<i>Total</i>	<i>363</i>	<i>100</i>

### 3 Data and methodology

This section presents the data and methodology in detail. In Subsection 3.1, we first describe our dataset of 363 firms. The next Subsection 3.2 expounds on why we have chosen to adopt a synthetic measure to gauge the level of financial distress among the Indian listed firms. Lastly, we explain the statistical techniques adopted in Subsection 3.3.

### 3.1 Data

In order to test the above hypotheses, we first build a sample of firms. There are many Indian indexes of listed firms constructed on the basis of market capitalisation, investment strategy, volatility, and sectoral indexes as well. Out of all, we emphasise on BSE 500 index as it encapsulates around 93% of the market capitalisation. Next, to ensure the homogeneity of the dataset, we did not consider the financial firms. Therefore, firms dealing in the real estate, insurance and investment sector, banks, and the financial service providers along with credit rating agencies were excluded. The same has been depicted in Panel A of Table 1. We further removed 24 firms due to the unavailability of data on the selected corporate governance variables and thus have a final dataset of 363 firms.

It is important to understand which industries dominate our dataset. Therefore, we categorised the final list of firms according to their industries and found that our dataset comes from 13 different industries. As evident in panel B of Table 1, around 65% of the firms are from the manufacturing industry. Conversely, the lowest number of firms come from three different industries, totalling one from each.

We hand-collected data on the corporate governance variables from the annual corporate governance reports of the firms. Financial data was obtained from the CMIE Prowess database.

### 3.2 Financial distress: the synthetic measure

Different authors have utilised various versions of the financial distress definition based on the type of data available with them. In the Indian context, none of the regulatory authorities or bodies has officially published any legal definition of financial distress till date. Also, there is a scarcity of reliable databases that maintain records of bankrupt firms.<sup>5</sup>

We also observed that prior to June 2017, either a few distressed cases were reported or there were rare exits of firms. Hence, in order to realise the general level of financial distress in our dataset, we adopted a synthetic measure suggested by Bhattacharjee and Han (2014). The measure deems a firm to be financially distressed if all three below listed requirements are met,

- interest cover  $< 0.7$  (in the current year or previous year)
- decline in fixed assets (in the current year or next year)
- decrease in share capital (in the current year and next year).

The base of this measure revolves around the interest coverage ratio. It is calculated as Earnings before interests and taxes to interest expense, which indicates the firm's repayment capacity or solvency status. The ideal cut-off of the ratio is 1, and the higher the ratio is, the less a firm is troubled because of its debt expenses.

Nevertheless, a low interest cover could also result due to capital accumulation through borrowings. This substantially builds up the fixed assets of the firm. Likewise, a low interest cover could also be attributable to debt equity swaps. But this sort of retirement of share capital usually does not go along with a concurrent decline in fixed assets. Therefore, the interest cover measure is combined with two other criteria. These two helps to identify a shrinking firm, as they have been taken from both sides of the

balance sheet (from assets side, there is a decline in fixed assets value and from the liabilities side, it is decline of value in share capital). Accordingly, a firm would be deemed as financially distressed in a given year if all these three conditions are met.

**Table 2** Financial Distress Incidence Rate

<i>Year</i>	<i>Per year distressed firms (1)</i>	<i>Incidence rate (1)</i>	<i>Per year distressed firms (1.5)</i>	<i>Incidence rate (1.5)</i>
2015	6	0.01	11	0.03
2016	12	0.03	14	0.03
2017	17	0.04	19	0.05
2018	14	0.03	18	0.04
Total cases	49	0.11	62	0.15

Note: Total number of firms remains the same all throughout, i.e., 363 firms.

Based on the above measure, from 1,452 firm-year observations spanning over a 4 year period, we obtained 49 instances of financial distress. The same is depicted in Table 2. We also calculate the incidence rate per year by dividing the distressed firms against the total number of firms.

### 3.3 Statistical technique

The financial distress theme has featured several statistical techniques. However, in spite of the availability of various other techniques, the logit model and MDA have been extensively preferred (Hafeez and Kar, 2018). This article applies the logit model and the rationale to go for the same is due to the nature of our data.

The logit model not only gives a measure of how relevant an independent variable is (coefficient size), but it also conveys information on the direction of the association between the dependent and the independent variables. Besides, it does not necessitate the requirement of an equal proportion of sample sizes in the two samples.

Ohlson (1980) was the first to apply the logit model to the theme of financial bankruptcy. The logit model is one of the discrete choice tree models featuring a binary dependent variable. Given a set of predictors, it assumes that there would be a certain likelihood of the firm defaulting. This is indicated in terms of the probability of the event taking place. The binary dependent variable receives the value 0 in the case of a healthy firm and 1 for a distressed firm.

$$P(y) = \frac{1}{1 + e^{-z}} \tag{1}$$

where

$P(y)$  probability of the occurrence of the event  $y$ .

$$Z = B_0 + B_1X_1 + B_2X_2 + B_3X_3 + \dots + B_nX_n + \varepsilon$$

where,  $B_i$   $i = 0, 1, \dots, n$  are the estimated parameters,  $X_j, j = 1, \dots, n$  are the independent or predictor variables, and  $\varepsilon$  is the error term.

$B_1 X_1 + B_2 X_2 + B_3 X_3 + \dots + B_n X_n$  = regression coefficient multiplied by the value of the predictor.

## 4 Results

We first look out for the descriptive statistics, correlation and also tolerance and variance inflation factor values as part of our preliminary tests. These are presented in Tables 3–6.

Table 3 provides a screenshot of the descriptive statistics with respect to the corporate governance variables. On average, our dataset has a board size of nine directors; a chairman and a CEO hold on average five and three positions of outside directorships, respectively. With respect to the ownership statistics, around 55% is owned by promoters while the rest 45% is owned by non-promoters. Also, a number of corporate governance variables namely board size, chair concurrent position, CEO concurrent position and firm size report a low standard deviation, which implies that the values in the dataset, on average are closer to the mean of the dataset.

The corporate governance variables are skewed right (positively skewed), except for Domestic promoters. It implies that the right tail of the distribution is longer than the left and that most values are clustered around the left tail of the distribution. Their mean values are also greater than the median. For variables such as board size, a positive skewness also indicates that there are more small board sizes than large board sizes in the dataset. Domestic promoters, on the other hand, is left skewed. Its left tail of the distribution is longer than the right, and most values are clustered around the right tail of the distribution. The left skewness signifies that more firms are having higher ownership of domestic promoters than firms having lower ownership of domestic promoters.

Similarly, with respect to the kurtosis of the variables, only domestic promoters have a platykurtic value (less than 3). All of the other variables have a leptokurtic distribution which implies that these variables have a higher peak around the mean value and have heavier tails. A number of corporate governance variables are dummy variables. Table 3 also lists out the number of observations in 0 and 1 categories for those variables.

Table 4 presents the descriptive statistics of the financial ratios considered. All the financial ratios reported a mean value between 0 to 1 except for the liquidity ratio. The average value of the liquidity ratio is 3,014 which is a bit higher than the ideal value of this ratio around 2. With respect to the median, all the variables are skewed to the right with their median values around zero, except again for the liquidity ratio. The standard deviations of four out of six financial ratios lie close to 0, which indicates that the data points tend to be close to the mean of the dataset. However, the liquidity and profit ratio have a standard deviation of 12,244 and 2,773 respectively which shows a broad variation among the data points.

With regard to skewness, four financial ratios are right skewed (positively skewed), and the payout and sales growth ratio are left skewed (negatively skewed). These right skewed variables have a longer right tail than the left. It indicates that most values in these variables are clustered around the left tail of the distribution. Their mean values are also greater than the median. For financial variables such as liquidity, a positive skewness also indicates that there are more firms in the dataset with low liquidity than firms having high liquidity. Moreover, all the financial ratios are leptokurtic, which indicates that they have higher peaks around the mean and heavier tails.

Next, we check for the possibility of multicollinearity through the correlation matrix and also by calculating the variance inflation factors (VIF) and tolerance of individual variables, which are presented in Tables 5 and 6, respectively.

**Table 3** Descriptive statistics (corporate governance variables)

<i>Variables</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std. dev.</i>	<i>Skewness</i>	<i>Kurtosis</i>
Board size	9.446	9	4	19	2.455	0.494	3.235
Chair conc	4.643	4	0	31	4.128	1.175	5.124
CEO conc	3.339	2	0	36	3.933	2.188	11.540
Size	10.743	10.572	7.542	15.865	1.362	0.744	3.598
Dom promo	43.983	49.46	0	94.09	24.083	-0.548	2.339
For promo	11.455	0	0	81.84	22.810	1.851	4.891
NPI	23.446	20.965	0.11	67.54	12.925	0.696	3.138
NPNI	20.813	17.69	0.97	90.7	12.823	1.233	5.248
Ind dirs							
NEDs							
Duality							
Female dir							
Own str							
Lineage							
Family board							
BSE NSE							
Stk opt							

Ind dirs Dummy variable ("0", when the criteria of ind dirs is fulfilled, and "1" otherwise) 0= 1,416, 1= 36.  
 NEDs Dummy variable ("0", when the criteria of NEDs is fulfilled, and "1" otherwise) 0= 1,087, 1= 365.  
 Duality Dummy variable ("0", when the CEO and the chairman are different, and "1" otherwise) 0= 1,017, 1= 435.  
 Female dir Dummy variable ("0", when the criteria of having at least one female director on board is fulfilled, and "1" otherwise) 0= 1,402, 1= 50.  
 Own str Dummy variable ("0", for private listed firms, and "1" otherwise) 0= 1,328, 1= 124.  
 Lineage Dummy variable ("0", when there is no lineage, and "1" otherwise). 0= 454, 1= 998.  
 Family board Dummy variable ("0", when there is no family member on board, and "1" otherwise). 0= 630, 1= 822.  
 BSE NSE Dummy variable ("0", if the firm is listed on both BSE and NSE, and "1" otherwise). 0= 1,431, 1= 21  
 Stk opt Dummy variable ("0", if there is no provision of employee stock options, and "1" otherwise). 0= 854, 1= 598.

**Table 4** Descriptive statistics (financial ratios)

<i>Variables</i>	<i>Mean</i>	<i>Median</i>	<i>Minimum</i>	<i>Maximum</i>	<i>Std dev</i>	<i>Skewness</i>	<i>Kurtosis</i>
Liq	3.014	1.715	0.049	361.666	12.244	22.738	594.627
Debt	0.433	0.391	0.000	6.066	0.315	6.826	97.542
Pr margin	0.153	0.088	-58.22	77.176	2.773	9.777	562.894
Payout	0.256	0.183	-14.555	15.435	0.850	-0.730	166.410
Ch cash	0.014	0.000	-0.816	12.620	0.361	31.175	1.048.323
Sales gr	0.023	0.073	-12.477	0.916	0.470	-16.231	380.625

With respect to the correlation matrix, two relationships have shown high correlation (0.75 each). The variables, family on board and lineage have reported a high positive correlation. Indeed, the presence of family members on board would also lead to a situation wherein the firm follows the practice of lineage. Hence, a positive relationship between these two variables. The second significant relationship showing a high but negative correlation is between domestic promoters and foreign promoters. Between these two types of promoters, if one increases, the other type necessarily decreases. Therefore, a negative relationship arises between the two.

We further calculate the variance inflation factor and the tolerance of these factors and see how they respond individually. Multicollinearity is a concern if the individual variable has a VIF value of more than 5. With respect to the tolerance, the respective value should be above 0.2.

Through initial testing, we found that these same four variables were reporting high values with respect to the VIF and tolerance as well, thus raising the issue of multicollinearity. Hence, we systematically tried to drop each of these four variables and check which model gives better significant and meaningful results. In the end, by dropping the variables domestic promoters and family on board, the other two variables yielded considerable results and also there were no high correlation or VIF and tolerance obtained (see Table 6). Thus, we proceed by taking into account the two variables namely foreign promoters and lineage.

#### 4.1 *Logit model results*

We present and analyse our main results in this subsection. It is mentioned that the cut-off for our dependent variable, financial distress which is based on the EBIT/interest expense ratio is taken as 1. To authenticate the robustness of our results, we vary this ratio to a different cut-off of 1.5.

According to the results presented in Table 7, four corporate governance variables, i.e., CEO chair duality, ownership structure, lineage and chair concurrent position, two financial ratios namely liquidity and debt and one control variable namely, non-promoter institutions are found significant in explaining the level of financial distress in our dataset.

**Table 5** Correlation matrix

Variables	Board size	Ind dirs	NEDs	Duality	Chair conc	CEO conc	Female dir	Own str	Lineage e	Family board	BSE NSE	Stk opt	Size	Dom promo	For promo	NPI	NPNI	Liq	Debt	Pr margin	Payout	Ch cash	Sales gr
Board size	1																						
Ind dirs	-0.039	1																					
NEDs	0.109	0.081	1																				
Duality	0.059	0.031	0.023	1																			
Chair conc	0.061	0.001	0.020	-0.082	1																		
CEO conc	0.028	-0.002	0.005	0.122	0.585	1																	
Female dir	-0.019	0.067	0.012	0.057	0.005	0.000	1																
Own str	0.185	0.284	0.101	0.321	-0.113	-0.057	0.145	1															
Lineage	-0.149	0.097	0.020	0.090	0.017	-0.090	0.029	0.206	1														
Family board	-0.134	0.121	0.007	-0.000	0.007	-0.180	0.051	0.267	0.758	1													
BSE NSE	-0.069	0.017	-0.017	0.021	0.003	0.021	-0.022	-0.037	0.007	-0.010	1												
Stk opt	0.042	-0.106	0.015	-0.067	0.021	-0.010	-0.035	-0.100	-0.006	0.004	-0.054	1											
Size	0.235	0.084	0.074	0.121	-0.015	-0.008	0.024	0.317	0.127	0.125	-0.056	0.034	1										
Dom promo	0.047	0.041	-0.024	0.151	-0.051	0.093	0.073	0.238	-0.165	-0.208	0.004	-0.032	0.037	1									
For promo	-0.102	-0.024	-0.017	-0.139	0.0085	-0.142	-0.044	-0.145	0.170	0.210	0.039	-0.023	-0.011	-0.759	1								
NPI	0.168	-0.063	0.075	-0.029	0.063	0.036	0.049	-0.062	-0.068	0.018	-0.088	0.081	0.181	-0.278	-0.158	1							
NPNI	-0.071	-0.000	0.001	-0.010	0.022	0.042	-0.015	-0.152	0.066	-0.004	0.013	0.029	-0.237	-0.245	-0.183	-0.195	1						
Liq	-0.037	-0.014	-0.030	0.020	0.090	0.091	-0.017	-0.012	0.038	0.056	0.375	0.027	-0.112	0.020	0.004	-0.010	-0.035	1					
Debt	0.043	0.029	0.055	0.072	0.021	0.037	0.010	0.054	-0.018	-0.055	0.016	-0.014	0.131	0.005	0.031	0.007	0.064	-0.142	1				
Pr margin	0.017	-0.004	0.044	0.053	-0.032	-0.027	-0.006	0.109	0.009	0.017	-0.004	-0.039	0.030	0.057	-0.004	0.000	-0.101	0.016	0.246	1			
Payout	0.068	-0.002	0.012	0.033	0.053	0.041	0.009	0.038	0.007	-0.013	-0.022	-0.008	0.000	-0.047	0.040	0.026	-0.027	0.001	0.071	0.001	1		
Ch cash	-0.068	-0.006	-0.020	0.049	-0.040	-0.033	-0.008	-0.016	0.024	0.033	-0.007	0.018	0.075	-0.072	0.104	-0.042	-0.005	0.004	0.197	0.003	-0.020	1	
Sales gr	0.049	-0.022	0.001	-0.009	-0.030	-0.043	-0.028	-0.001	-0.053	-0.053	0.006	-0.012	0.010	-0.015	-0.002	0.071	-0.037	-0.047	0.073	-0.061	0.000	0.009	1



**Table 6** Tolerance and VIF

<i>Variables</i>	<i>Tolerance</i>	<i>VIF</i>
Board size	0.801	1.248
Ind dirs	0.886	1.128
NEDs	0.961	1.041
Duality	0.819	1.221
Chair conc	0.603	1.659
CEO conc	0.577	1.733
Female dir	0.910	1.099
Own str	0.602	1.661
Lineage	0.398	2.515
Family board	0.360	2.779
BSE NSE	0.837	1.195
Stk opt	0.961	1.041
Size	0.745	1.342
For promo	0.786	1.272
NPI	0.819	1.221
NPNI	0.806	1.240
Liq	0.811	1.233
Debt	0.921	1.086
Pr margin	0.960	1.042
Payout	0.985	1.015
Ch cash	0.965	1.036
Sales gr	0.981	1.019

The first significant variable of our study is CEO chair duality. Results suggest that if the two positions are filled by two different directors, that would lower down the financial distress likelihood of the firms. If duality is followed, both the positions would increase monitoring effectiveness while also avoiding concentration of power in one hand. This result further strengthens the argument of the agency theory which propounds for the duality in these two important positions. Authors such as Elloumi and Gueyie (2001) and Ciampi (2015) which have worked on Canadian and Italian datasets have reported similar results.

The second significant variable is ownership structure. As per the results, the government-owned firms were less prone to be in financial distress as compared to private firms. This finding is consistent with the works of Abdullah (2006), Wang and Deng (2006), Zeitun and Tian (2001), Li et al. (2015, 2008), Zeitun (2009). Undeniably, the government-owned firms have the backing of safety nets that arises when the firms are in hardships. Some of the safety nets includes loan waivers, short term credit discounts, and guaranteed sponsorships among others. On the other hand, private firms do not have such relaxations. Also, at the time of financial crunch, the state governments stand relentlessly with the government firms, which is rare in the case of private firms.

**Table 7** Logit results

<i>Variables</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>Z-statistic</i>	<i>Probability</i>
C	-3.524	1.538	-2.291	0.021
Liq	-0.438	0.174	-2.513	0.012***
Debt	0.806	0.388	2.078	0.037**
Pr margin	-0.188	0.197	-0.956	0.338
Payout	0.121	0.155	0.780	0.435
Ch cash	-0.314	1.543	-0.204	0.837
Sales gr	-0.107	0.206	-0.521	0.602
Board size	-0.040	0.068	-0.596	0.550
Ind dirs	0.783	0.874	0.896	0.370
NEDs	0.180	0.362	0.497	0.618
Duality	0.689	0.342	2.013	0.044**
Chair conc	-0.110	0.062	-1.778	0.075*
CEO conc	-0.063	0.066	-0.949	0.342
Female dir	0.648	0.698	0.929	0.352
Own str	-2.018	0.865	-2.330	0.019***
Lineage	0.818	0.426	1.916	0.055**
BSE NSE	1.051	1.298	0.809	0.418
Stk opt	0.178	0.324	0.549	0.582
Size	0.116	0.131	0.885	0.375
For promo	-0.011	0.008	-1.380	0.167
NPI	-0.034	0.015	-2.216	0.026**
NPNI	0.010	0.011	0.954	0.339
McFadden R-squared				0.190
S. D. dependent var				0.180
Akaike info criterion				0.270
Schwarz criterion				0.354
Hannan-Quinn criterion				0.301
Restr. deviation				428.437
LR statistic				81.460
Prob (LR statistic)				0
Mean dependent var				0.033
S. E. of regression				0.173
Sum squared resid				42.90
Log likelihood				-173.489
Deviance				346.977
Restr. log likelihood				-214.219
Avg. log likelihood				-0.119

Notes: \*\*\*, \*\* and \* denotes significance at the 1%, 5% and 10% levels respectively.

**Table 8** Logit results (with EBIT/Interest expense cutoff as 1.5)

<i>Variables</i>	<i>Coefficient</i>	<i>Std. error</i>	<i>Z-statistic</i>	<i>Probability</i>
C	-3.335	1.358	-2.455	0.014
Liq	-0.452	0.158	-2.854	0.004***
Debt	0.666	0.363	1.837	0.066*
Pr margin	-0.171	0.185	-0.927	0.353
Payout	0.109	0.103	-1.053	0.292
Ch cash	-1.978	2.962	-0.667	0.504
Sales gr	-0.023	0.241	-0.096	0.923
Board size	-0.060	0.061	-0.979	0.327
Ind dirs	0.628	0.854	0.735	0.462
NEDs	0.073	0.331	0.221	0.824
Duality	0.667	0.305	2.185	0.028**
Chair conc	-0.100	0.054	-1.831	0.067*
CEO conc	-0.042	0.057	-0.741	0.458
Female dir	0.815	0.626	1.302	0.192
Own str	-2.282	0.842	-2.708	0.006***
Lineage	0.747	0.368	2.031	0.042**
BSE NSE	0.223	1.271	0.175	0.860
Stk opt	0.038	0.288	0.131	0.895
Size	0.157	0.117	1.346	0.178
For promo	-0.015	0.008	-1.923	0.054**
NPI	-0.029	0.013	-2.187	0.028**
NPNI	0.008	0.010	0.821	0.411
McFadden R-squared				0.180
S. D. dependent var				0.202
Akaike info criterion				0.320
Schwarz criterion				0.404
Hannan-Quinn criterion				0.351
Restr. deviation				512.355
LR statistic				92.586
Prob (LR statistic)				0
Mean dependent var				0.042
S. E. of regression				0.192
Sum squared resid				53.026
Log likelihood				-209.885
Deviance				419.769
Restr. log likelihood				-256.178
Avg. log likelihood				-0.144

Notes: \*\*\*, \*\* and \* denotes significance at the 1%, 5% and 10% levels respectively.

Our results also reveal that firms which follow the practice of lineage are more likely to be in financial distress than firms that do not. A probable reason for the same could be while lineage allows a succession of ownership from one generation to another, by hiring from within the family, it also intercepts the very idea of leading on the basis of merit. It doesn't reward the talented or the competent, rather it endows the next generation as a gift deed. Since leadership by an outsider could reinstate fresh air into the firm and its behaviouristic pattern, devoiding such succession would only entail leadership in the hands of a few, which in the long run, is detrimental to the financial well being of a firm. Succession through merit also allows greater transparency and safety to minority shareholders as tunneling of funds, if any could be further prevented. This result echoes the resource dependency theory which also gives noteworthy relevance to the idea of skill and information sharing and networking.

The fourth and the last significant variable reported from our results is the chair concurrent position. It has a negative association with the likelihood of financial distress implying that the more the chairman holds outside directorships, the better would be for the financial health of his firm. We infer that by holding directorships in other firms, the chairman of a particular firm could enhance his/her experience and networking options which fundamentally improves his leadership skills as well. Additionally, the reporting of the variable chair concurrent position as significant also propounds the essence of the resource dependency theory in the field of financial distress/bankruptcy.

Overall, we accept hypotheses 4, 5, 8 and 9, while rejecting the remaining because of the insignificance reported in our results.

With respect to the financial ratios, only liquidity and debt were found significant in explaining the financial distress likelihood of firms. While liquidity held a negative relationship with the financial distress levels, the latter reported a positive relationship. Understandably, a low liquidity ratio implies low capability of the firm to pay its obligations because it has a large proportion of short term debt relative to the value of its short term assets. An increasing ratio would give the firm more power to meet its short term debt covenants and thus reduce the distress level in the firm. Liquidity ratio has also been found significant in the works of Elloumi and Gueyie (2001), Parker et al. (2002) and Shahwan (2015). The other significant financial ratio reported was debt. It is a measure of a firm's assets, that are financed by debt, rather than equity. Hence, a high debt ratio implies more leverage. Through the positive relationship of debt ratio with the financial distress likelihood, we infer that the higher the debt is, the higher would be the financial distress in the firms. Studies by Elloumi and Gueyie (2001), Wang and Deng (2006) and Luqman et al. (2018) have also reported its significance.

Among the control variables, only non-promoter institutions reported significance. The presence of non-promoter institutions namely mutual funds, banks, financial institutions, insurance companies, foreign institutional investors and venture capital funds holds a negative association with the likelihood of financial distress. We infer that their presence exerts a strong influence by demanding higher transparency, which keeps the board's activities in line with the organisational goals. Similar results have also been reported in the works of Daily and Dalton (1994), Shleifer and Vishny (1997), Chung et al. (2005), Wang and Deng (2006) and Mangena and Chamisa (2008).

## 4.2 Robustness check

We substantiate our results through the following robustness tests. Table 8 presents the logit results with financially distressed firms defined as those with an interest cover of 1.5, instead of 1. The test reveals similar results with an addition of a new significant variable namely, foreign promoters. It has a negative association with the likelihood of financial distress. Certainly, the presence of foreign owners on the board and the influx of foreign funds into the Indian listed firms keep a check on the activities of the management and demands greater transparency which in turn may ensure that they are strictly in line with the organisational goals. This finding is consistent with the works of Zeitun and Tian (2007) and Abdullah (2006).

## 5 Conclusions

The current paper serves to address the research question about which board structure variables could help elucidate the financial distress likelihood among the Indian listed firms. SEBI issued sweeping amendments in 2014 in order to streamline the Indian corporate governance scenario. These amendments are the basis of this study. We examined four years' data on 363 Indian listed firms. Ten board structure variables namely the board size, presence of independent directors, non-executive directors and female members, along with CEO-chairperson duality, chair concurrent position, CEO concurrent position, ownership structure, lineage, family members on board were tested against the likelihood of financial distress. Additionally, we included six financial ratios, seven other corporate governance variables and industry dummies as control variables into our analysis.

In particular, the variables CEO-chair duality, ownership structure, lineage and chair concurrent position were found important in explaining the financial distress levels of the firms in our dataset, while other board structure variables considered were statistically insignificant. These variables are robust to the findings of the agency theory and resource dependency theory. It must also be mentioned that corporate governance variables reported significant in this study based on an emerging economy, are also similar to those reported in studies based on advanced economies.

Through our empirical testing, there are a few recommendations for the owners/shareholders, the management, investors and the regulators. The owners/shareholders could merit if the two key positions of the CEO and the chairman should be separately held by two different individuals. This would not only remove autocracy and amalgamation of power in one hand but will also ensure division of roles and responsibilities leading to greater accountability. This result resonates the recommendations of the Kotak Committee (2017), which has now been made mandatory for listed firms to be followed from the year 2022 onwards. Second, our results report that firms which practice lineage would be more prone to financial distress. Hence, the owners/shareholders of the firms should hire qualified professionals and proceed with outside succession. The study also has implications for the management of the firms. Against the backdrop of our results, we suggest that the chairman of a firm can hold outside directorships as that enriches their experience and networking opportunities, which is beneficial for the financial health of their firms. If the control and the management are separated, they could be on board for multiple firms while the CEO (part

of the management team) could solely focus on their firm. Additionally, our results also indicate that the variable ownership structure is significant. The regulators can take a cue from this finding. We are aware of the safety nets that are there for the central/state-owned firms. The regulators should formulate such measures for the private firms as well. Their stability would ensure trust in FIIs and FDIs, which could result in an increased flow of funds. For the prospective investors, this study could be of importance when they focus beyond the financial numbers. By all means, these variables alone cannot be a perfect substitute for the financial ratios and the financial results, but the existence of such corporate governance variables in the board structure shall provide a positive indication towards the firm culture and its financial healthiness.

Like other research, we insist on not standardising these results to the corporate governance scenarios of other economies. This is because India is particularly characterised as having a nascent corporate governance scenario and a weak compliance behaviour by the firms. Consequently, we suggest that future research may consider the impact of new amendments adopted by firms from the financial year of 2019 onwards on financial distress levels. A comparative study could also be done between the 2014 and 2019 corporate governance amendments. Also, use of the performance of alternative proxies for measuring financial distress and board structure composition could be examined.

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## Notes

- 1 After the enactment of the Companies Act (2013); SEBI through an official circular, in April 2014, amended Clause 49 of the listing agreement to bring it in conformity with the new act. These recommendations, aimed at uplifting the corporate governance standards in India, are divided into mandatory and non-mandatory requirements. The companies were given 6 months to adopt the new amendments and comply from October 2014.  
SEBI issued the requirement of a separate section on corporate governance in the annual reports of the company, with a detailed compliance report on corporate governance. Moreover, in case of non-compliance with any of the mandatory requirements, the firms' have to state the reasons thereof. In the case of adoption of the non-mandatory requirements, the firms have to state the extent to which those requirements were adopted.  
Our work is based on these suggested amendments. We deem 2014 as the year of transition, and hence the time period post the compliance date, i.e., October 2014 was considered, specifically from April 2015 till April 2019. Data was extracted from the Prowess IQ database.
- 2 The corporate governance scenario, even in the most reputed Indian listed firms has been questionable on a number of dimensions and occasions. A 21 member committee was set up in June 2017, on the direction of SEBI to be headed by banker Uday Kotak. The aim was to recommend suggestions that would cause a major overhaul to the corporate governance norms governing the Indian listed firms. The report contained recommendations pertaining to a plethora of regulatory changes in order to align the Indian corporate governance norms with the best global practices, while also being premised on local business realities unique to India.
- 3 Broadly, these amendments were targeted towards the composition of the board of directors, hiring of the independent directors, performance evaluation of the board, compensation disclosures in the corporate governance reports, whistleblower mechanism, and related party transactions. These also involved the constitution of various committees like the audit committee, nomination and remuneration committee, stakeholders relationship committee and the risk management committee.
- 4 Regulation 20 under Chapter IV of SEBI (listing obligations and disclosure requirements) Regulations, 2015 mandates that the chairperson of the Stakeholders Relationship Committee shall be a non-executive director.

- 5 The newly scripted 'Insolvency and Bankruptcy Code, 2016' was rolled into functioning by the current government. The code mandates the National Company Law Tribunal (formed under the provisions of the Companies Act, 2013) to make decisions on matters related to insolvency and liquidation of corporate entities. In this aspect, the country's central bank Reserve Bank of India during June and August 2017, released two lists of big loan defaulters identifying 12 and 26 bankrupt firms in each list. Considering only the 38 firms in total could be relatively low, as the literature suggests. Apart from that, the Ministry of Corporate Affairs, Government of India also publishes a defaulters list of private firms. However, these private firms are not in a compulsion to file their annual accounts. Thus, the availability of their financial data in the public domain is also unsure.