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# Board structure, controlling ownership, and business groups: Evidence from India<sup>☆</sup>



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### ABSTRACT

We examine the impact of controlling founder ownership (CS) and business groups (BGs) on firm board structure for Indian firms, where most of the firms are inter-connected. We argue that due to inadequate legal protection, CS and BGs should influence the board structure of Indian firms. Our empirical evidence finds a U-shaped relationship between board independence and CS. We show that firms affiliated with business groups have lower board independence compared to standalone firms. We also find that investors value CG reforms related to board independence.

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## 1. Introduction

The role of firm boards as an important internal control mechanism is well established in the finance literature. Consequently, in a diffused ownership context, such as the USA and the UK, determinants of board structure have received extensive attention both in the policy discussion on corporate governance as well as in academia (Raheja, 2005; Harris and Raviv, 2008; Adams and Ferreira, 2007; Lehn et al., 2009; Boone et al., 2007; Coles et al., 2008; Guest, 2008). We examine determinants of board structure for an emerging nation, India, where concentrated founder ownership (henceforth, controlling ownership) and the prominent role of business groups are two of the most distinct characteristics of firms (Claessens et al.,

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2000). We therefore consider that these characteristics may raise vital questions related to the role of the board in ensuring adherence to corporate governance mechanisms,<sup>1</sup> because these characteristics are norms rather than exceptions for emerging markets.

We develop two arguments pertaining to controlling ownership. The first argument is related to the alignment effects. Concentrated ownership gives incentives and capacity to a controlling owner to discipline managers, and thus, it mitigates *the principal-agent conflicts* (Davis et al., 1997; Anderson and Reeb, 2003). Therefore, these firms should have a smaller board but strong governance. More explicitly, it should have higher board independence to send a signal to the market that the interests of small shareholders are properly safeguarded (Peasnell et al., 2003). The second argument is associated with the entrenchment effects of controlling owners, originated by a separation of ownership and control. The problem of separation of ownership and control is further exacerbated for Indian firms, where controlling owners control firms more than their equity ownership through cross-holding ownerships (Claessens et al., 2002). In this case, we hypothesize that controlling owners, for expropriation, have incentives to appoint a board of directors that is predetermined to support owners' decisions instead of monitoring them. Thus, controlling owners can recruit a higher proportion of their representatives in firm boards leading to weak corporate governance (less board independence). Overall, an understanding of how board structure is determined in the presence of controlling owners is an important question that needs to be answered. The Indian institutional framework represents an ideal setting to examine this question because it features relatively weak investor protection along with a high controlling ownership concentration—characteristics common to many countries (Claessens et al., 2000).

Furthermore, most Indian firms are owned by business groups. Therefore, even though they are legally independent, they are actually inter-connected through formal or informal means (Khanna and Palepu, 2000). In many cases, controlling owners control firms through complicated pyramidal and cross-holding ownerships. These ownership structures allow controlling owners to own low-equity ownership while retaining tight control of the firm, creating a separation of control and ownership (Burkart et al., 2003). Furthermore, most of these firms are owned by family members, and they play a central role in decision making and are associated with a vibrant internal transfer of resources from one firm to another for private benefits (Friedman et al., 2003; Cheung et al., 2006; Gopalan et al., 2007; Khanna and Yafeh, 2007; Bae et al., 2008). Consequently, minority shareholders suffer because there is a deficiency of transparency shown by managers in handling their concerns (Khanna and Yafeh, 2007). One would thus expect that the role of firm boards is of vital importance in such environments. Nevertheless, to the best of our knowledge, there is no study that explains the impact of business groups on board structure. Hence, an empirical study specific to Indian business groups in terms of its effects on board structure may enhance our understanding of the determinants of board structure.

Using large sample of Indian firms over 2002 to 2012, we find that controlling ownership is positively related to board size. However, this relationship turns negative when the ownership of controlling owners crosses a minimal level of ownership, consistent with the idea that larger boards are considered less effective (Yermack, 1996). We further find a significant nonlinear relationship between board independence and controlling ownership. This curve is initially downward and then moves upward once ownership exceeds a certain threshold. This is consistent with the view associated with the separation of ownership and control. Therefore, ownership beyond a certain threshold increases the incentive for controlling owners to align interests with smaller shareholders, resulting in higher board independence to convey a signal to the market about the commitment of controlling owners.

We next show that business group-affiliated firms have fewer board members and even less board independence compared to standalone firms because the separation of ownership and control is more problematic in these firms due to cross holdings. We also show that while taking a decision with respect to the constitution of their boards, the costs and benefits of a board's monitoring on the firm performance are given due consideration. Our evidence supports that when the external monitoring mechanism is efficient, the internal monitoring mechanism takes a backseat (Dow and Gorton, 1997; Giroud and Mueller, 2011; Ferreira et al., 2011). For instance, firms with high stock price informativeness and high product market competition have

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<sup>1</sup> Bhattacharyya (2014) argues that in Indian firms, the controlling shareholder, who enjoys significant power, manages the firm through its nominee managers, and the board has less power in the appointment of CEO, directors and senior management. Therefore, the general perception of independent director fails in India because controlling shareholders appoint directors, including independent directors.

smaller and less-independent boards. The relationship between board structure and its determinants is many times confounding in nature because of the presence of endogenous relationships in corporate governance (Coles et al., 2008). Admittedly, while one cannot fully resolve concerns of endogeneity with non-experimental data, similar to other studies, we use various econometric methods such as firm-fixed effects and 3SLS to mitigate endogeneity issues—they all confirm our results.

We further examine the impact of regulatory reform *Clause 49*, similar to the Sarbanes–Oxley Act of the USA. This reform required that listed firms should have a majority of independent directors.<sup>2</sup> Since the reform was broadcasted in the year 2000, but only implemented from 2006, we expect that there should be a significant increase in the proportion of independent directors from 2002 to 2005 to comply. We use a change in regression model and find that the proportion of independent directors was increased by, on average, 7% more during 2002–2005 compared to the other sampled period. Our evidence illustrates that the impact of controlling ownership on board structure becomes weaker for the post-*Clause 49* period compared to the pre-*Clause 49* period. One interpretation of this result is that the *Clause 49* muted the importance of controlling ownership in determining board structure.

We further use modifications in *Clause 49*, announced in October 2004, in which SEBI provided guidelines for the “independence” of independent directors. It states that a non-executive can be considered an independent director only if excluding the receiving director’s remuneration does not have any material pecuniary relationships or transactions with the firm, its promoters, its senior management or its holding company, its subsidiaries, and associated firms. We use this as a natural experiment to understand whether higher board independence increases shareholder value. We expect that if the market values the independence of directors, the market reaction should be more pronounced for firms whose boards are inconsistent with *Clause 49*. As expected, we report a positive market reaction for firms whose boards are inconsistent with *Clause 49*. We also highlight limitations of regulatory intervention and question the uniformity of regulatory efficacy. One reason for the uniformity of regulatory efficacy can be the costs associated with having discretionary regulations. Monitoring each firm is not only costly but is also impractical, and hence, the regulator imposes a standard rule that may be sub-optimal.<sup>3</sup> We consider that if founders with higher ownership are not detrimental to firm value and also encourage good governance because of the alignment effects, a regulatory intervention associated with board structure will be sub-optimal because it increases unnecessary monitoring costs (Raheja, 2005). If so, the market will not perceive the *Clause 49* announcement as value-relevant governance and will respond negatively for these firms. Consistent with this view, we report a negative relationship between the abnormal returns and controlling ownership. Consistent with the expropriation view, we exhibit higher valuation effects for business group firms compared to similar standalone firms. Examination of cross-sectional variation in the announcement effect reveals that this effect is higher for firms whose needs are related to additional monitoring and advising requirements.

In summary, our study argues that one board structure does not fit all firms because board composition varies with firms’ characteristics. Our study contributes to the corporate governance literature in numerous ways. First, our study supports the argument of Fan et al. (2011) that business groups and concentrated (founder or family) ownership affect firm-level corporate governance. We show that a founder with substantial ownership encourages effective governance. To the best of our knowledge, our study is the first to report such findings. Second, we show that a uniform regulatory intervention associated with board structure induces firms to choose a sub-optimal board structure. Third, our study shows a portrait of board structure and its related regulation for one of the largest emerging nations, and therefore, our study broadens the fundamental knowledge of corporate governance for emerging nations<sup>4</sup> (Filatotchev and Boyd, 2009). Finally, we provide, to the best of our knowledge, the first large sample of evidence on the board structure of Indian firms.

The remainder of the paper is organized as follows. Section 2 lays out the institutional framework for the Indian market. In Section 3, we discuss literature related to our selected variables. The next section presents

<sup>2</sup> The board composition of Indian firms depends on whether the chairman of the board is a nonexecutive director or an executive director. If the chairman is an executive director, the minimum number of independent directors should be one-half of the firm board. If the chairman is a nonexecutive director, at least one-third of the board of directors should be independent.

<sup>3</sup> Deb and Marisetty (2010) theoretically show that standard rules can be optimal in some settings. Especially in the case where the costs of monitoring are too high, regulators in stock exchanges are better off imposing uniform price limit rules, even if such rules are undesirable and can have an adverse impact on the firm’s information production.

<sup>4</sup> Studies related to emerging nations have recently been initiated for emerging nations such as Russia (Iwasaki, 2008), China (Chen and Al-Najjar, 2012), and Sub-Saharan Africa (Munisi et al., 2014).

the data description and methodology. Sections 5, 6 and 7 summarize our empirical findings, and in Section 8, we conclude our study.

## 2. Institutional framework for the Indian market

India is the 10th largest<sup>5</sup> economy in the world, and it provides a useful empirical context to examine the corporate governance system of an emerging economy. The Indian legal system follows *English common law*, which provides high safeguards to investor and creditor rights, in theory. Practically, however, India still lags far behind developed nations in providing safeguards to investors (López de Silanes et al., 1998). Moreover, the judicial system, characterized by limited resources and long delays, fails to offer timely enforcement. Bankruptcy resolution is also primarily incompetent, as is evident from the fact that Indian bankruptcy ranks among the lowest in rate of recovery and highest in the duration to resolve (Kang and Nayar, 2004). Despite poor investor protection, the financial market is relatively more developed than that of many nations. In India, there are two leading national stock exchanges, the Bombay Stock Exchange and the National Stock Exchange, where more than 6000 firms are listed. The National Stock Exchange is the third-largest stock exchange in the world in terms of the number of trades, just behind NASDAQ and the New York Stock Exchange (Chakrabarti et al., 2008).

A striking feature of most emerging nations such as India is the dominance of family-owned firms with substantial founder ownership. According to Chakrabarti et al. (2008), approximately 60% of the 500 largest firms (65% of market capitalization) are part of family-owned firms. Within the same firms, 53% of the shareholding is held by “promoters” or founders (p. 10). In addition, there are business groups where family members or simply controlling owners run multiple publicly listed firms. Hence, due to concentrated ownership and the co-insurance provided by one firm to another, firms affiliated with business groups perform better than similar standalone firms (Khanna and Palepu, 2000). Nevertheless, various studies also show that controlling shareholders of business groups exploit minority shareholders through pyramidal ownership and cross-holdings for their private benefits (Bae et al., 2002; Bertrand et al., 2002).

To organize Indian firms in the structured format, every publicly listed firm should comply with the terms of securities regulations as drafted by the Securities and Exchange Board of India (SEBI). The primary objective of the SEBI is to safeguard the interests of small shareholders because their protection is considered one of the most important factors. Therefore, since its formation, the SEBI has played an important role in developing regulation related to corporate governance and investor protection. One of these regulations is *Clause 49* of the listing agreements, which was gradually implemented by SEBI beginning in 2001 (Chakrabarti et al., 2008, p. 14). Most of the compliances of *Clause 49* are similar to those of the US Sarbanes Oxley Act 2002, but there are some notable differences. First, US firms' boards broadly consist of only two classes of directors, outside and inside,<sup>6</sup> but Indian firms typically have three classes of directors, executive, non-executive and independent.<sup>7</sup> The key difference between a non-executive and an independent director is that the latter should not have any pecuniary relationship with the firm apart from a sitting fee. Second, the majority of board of directors are independent directors in US firms, whereas Indian firms' board composition depends on whether the chairman of the board is a nonexecutive or an executive director. If the chairman of the firm board is an executive director, the minimum number of independent directors should be one-half of the firm board. If the chairman is a nonexecutive director, at least one-third of the board of directors should be independent.

## 3. Prior research

We select our variables for explaining board structure from existing works. The conceptual arguments related to the selection of variables are usually based on the idea that boards are structured to maximize shareholder wealth. In the USA, boards of directors are categorized into inside and outside directors. These studies define board independence as the proportion of outside directors (Coles et al., 2008). As mentioned earlier, Indian firms have three categories of directors: executive, non-executive and independent

<sup>5</sup> IMF World Economic Outlook, October 2014; <http://knoema.com/nwnfkne/world-gdp-ranking-2014-data-and-charts>

<sup>6</sup> US stock exchange regulations classify corporate directors into two groups: independent (outside) and non-independent (inside).

<sup>7</sup> Section 149, subsection 6, 12; The Companies Act, 2013, Ministry of Law and Justice, Government of India.

(Narayanaswamy et al., 2012). Consequently, we measure board independence as the proportion of independent directors (as per the definition given in Section 149, subsection 6, Companies Act, 2013).

### 3.1. Controlling ownership

Gaining effective control of a firm allows controlling owners<sup>8</sup> to determine not only how the firm will be operated but also how the firm's profits will be shared among its shareholders. This issue is further exacerbated in an economy where family (founder) members control firms (Anderson and Reeb, 2003) in a weak legal environment (Claessens et al., 2002). In addition, the ownership arrangements of emerging markets, such as pyramidal and cross-holding structures, allow controlling owners to actually possess more control than their equity ownership, creating a separation in control (voting rights) and ownership (cash flow rights) (Bertrand et al., 2002; Porta et al., 1999). One effect of this separation is that controlling owners become entrenched with high levels of control, but with a low level of equity ownership. Therefore, they illustrate only a low degree of alignment with minority shareholders (Burkart et al., 1997, 1998; Bebchuk et al., 2000). Nevertheless, one way to mitigate entrenchment problems is to increase the controlling owner's ownership stake further because ownership beyond a threshold reduces problems associated with the separation of control and ownership (Claessens et al., 2002). In other words, a higher ownership improves the alignment of interests between controlling owners and the minority shareholders and thus reduces the effects of entrenchment (Jameson et al., 2014).

We next discuss the relationship between controlling ownership and board structure. The entrenchment effects argue for weak corporate governance, suggesting a negative relationship between the two. Nevertheless, if a degree of ownership concentration exceeds a particular threshold that is at least needed for effective control and benefits, the alignment effects may mitigate the entrenchment effects. At such a level, controlling owners should promote strong corporate governance to send a signal to the market that small shareholders will be protected and will not be expropriated by controlling owners (Peasnell et al., 2003), leading to a smaller board and higher board independence. Overall, the sum of both effects (alignment and entrenchment effects) suggests a nonlinear *U-shaped* relationship between controlling ownership and the proportion of independent directors. Furthermore, the relative power of controlling owners to influence board structure depends on the magnitude of ownership concentration. We consider that the influence of controlling owners should be more prominent for Indian firms. Because Section 2 clearly mentions that founders are dominant shareholders in Indian firms, they have the ability to control the affairs of a firm by virtue of their controlling rights.

### 3.2. Business group

In emerging nations, firms organize themselves as groups to avoid institutional voids (Khanna and Palepu, 2000). The affiliation of business groups works as an insurance policy to support financially distressed firms, thereby facilitating member firms to share risks (Gopalan et al., 2007). Nevertheless, a substantial number of studies reveal that the complex structure of business groups helps controlling owners expropriate minority shareholders for their private benefits (Bae et al., 2002; Baek et al., 2006; Cheung et al., 2006; Joh, 2003; and Paligorova and Xu, 2012). Therefore, business group firms may select board members who are less likely to be good monitors and are more likely to support their self-dealing behavior, resulting in a lower proportion of independent directors. On the other hand, we believe that, compared to standalone firms, the dominance of pyramidal and cross-holding ownership structures makes it difficult for minority shareholders to understand the motivation of business group firms (Yeh and Woidtke, 2005). Therefore, improved corporate governance can serve as a credible assurance for business groups to build a reputation for non-expropriating minority shareholders, resulting in a higher proportion of independent directors.

Overall, our arguments regarding the impact of business groups on board structure predict conflicting views. We therefore argue that if business group firms have incentives to have better corporate governance, these firms should have higher board independence compared to similar standalone firms. Nevertheless, if business group firms are more likely to support self-dealing behavior, business group firms should have less board independence compared to similar standalone firms.

<sup>8</sup> Porta et al. (1999) find that in Indian firms, the top three shareholders hold approximately 40% of the total shareholdings, while in US firms, the top three shareholders have approximately 20% of the total shareholdings.

### 3.3. Firm complexity

Previous studies have demonstrated that board size and board independence increase with the complexity of a firm's operations. Because these firms are more likely to face more uncertain environments, these firms require more monitoring and advising assistance (Boone et al., 2007; Coles et al., 2008; and Linck et al., 2008). Additionally, the major advantage of having a large board is the great availability afforded of talent to accumulate and process information (Lehn et al., 2009). Hence, we postulate that with an increase in the complexity of a firm, board size and independence should increase. Following previous studies, we proxy firm complexity and advising needs by *firm size* because it is likely that firm complexity increases with *firm size*. Furthermore, Boone et al. (2007) suggest that firm complexity increases with *firm age* and *firm leverage*, and therefore, we include *firm age* and *firm leverage* in our analysis to examine the aforementioned relationship.

### 3.4. Monitoring cost

The inclusion of additional directors adds incremental costs, such as information acquisition, communication, and coordination costs, the cost of free rider problems, and direct wage costs (Adams and Ferreira, 2007; Raheja, 2005). The cost is higher when a firm suffers a greater level of information asymmetry because it is costly to disclose information to many directors (Maug, 1997; Raheja, 2005). Consequently, a firm with higher monitoring costs should have a smaller board size and a lower proportion of independent directors (Adams and Ferreira, 2007; Raheja, 2005).

Following Smith and Watts (1992) and Gaver and Gaver (1993), we consider that monitoring costs are higher for growth firms because these firms are exposed to higher information asymmetry. Thus, we hypothesize that growth firms should have a smaller board and a lower board independence. Fama and Jensen (1983) illustrate that a firm's riskiness also increases monitoring costs. Therefore, we posit that higher firm riskiness reduces board size and board independence. We use the *price to book value* ratio and *stock returns' variance* to proxy for growth opportunities and firm riskiness, respectively.

### 3.5. Private benefits

Previous studies have reported that with an increase in private benefits accessible to the managers, the degree of board monitoring increases as well, consequently increasing board independence (Adams and Ferreira, 2007; Raheja, 2005). We test this relationship by using *free cash flow* as the proxy for private benefits, similar to Jensen (1986).

### 3.6. Institutional ownership

Institutional investors have become active directly through using their ownership rights and indirectly by trading to induce managers to act in their best interest (Cornett et al., 2007). There are a considerable number of studies that focus on the monitoring role of institutional investors (see McConnell and Servaes, 1990; Nesbitt, 1994; Smith, 1996; Del Guercio and Hawkins, 1999). These studies demonstrate that because of a free rider problem, only institutional investors have sufficient incentives to monitor. Nevertheless, Khanna and Palepu (2000) argue that in emerging markets, institutional investors do not actively participate in firm monitoring. Because the monitoring role of institutional investors is based on the inefficacy of diffused ownership, institutional investors with substantial ownership have incentives for active monitoring. Nevertheless, in emerging nations, the ownership concentration of founders/family members leaves fewer incentives for institutional investors to be effectively monitored (Ferreira and Matos, 2008).

Overall, the above discussion implies that institutional ownership may play a significant role in determining board size and board independence; however, this role is moderated by controlling ownership.

### 3.7. Stock price informativeness

Ferreira et al. (2011) develop a model in which price informativeness affects board structure. They identify two sources by which price informativeness can influence board structure. First, external monitoring becomes more effective once stock prices reveal more information. Second, more informative prices bring new



information to independent directors and a better-informed director should be a better monitor. Both arguments point toward a smaller board size and a lower proportion of independent directors.

Morck et al. (2000) document that in emerging nations, weak property rights discourage informed trading, and therefore, stock prices are less informative. Given the scarcity of publicly available firm-specific information, the benefits to price informativeness should be higher (Lang et al., 2004). Here, we postulate that firms with higher price informativeness should have a smaller board and a lower proportion of independent directors.

### 3.8. Industry concentration

Giroud and Mueller (2011) argue that the benefits offered by a firm's governance matters only if the firm operates in a non-competitive industry, because market imperfections are a powerful force to mitigate agency problems between shareholders and managers.<sup>9</sup> It is important to note that emerging markets show a significant variation in product market competition due to their early stages of development and government restrictions on market entry. Therefore, in an emerging market, barriers to trade and entry impede product market competition and their effects on a firm's governance. Here, we hypothesize that a firm's competitiveness as an external monitoring mechanism should substitute board monitoring. Therefore, there should be a negative relationship between industry concentration and board size and the proportion of independent directors.

### 3.9. Firm performance

Guest (2008) shows that firm performance is negatively related to board size and the proportion of independent directors because well-performing CEOs can negotiate for less control over their decisions with the firm board. On the other hand, Adams and Mehran (2005) and Dalton and Dalton (2005) show that good firm performance permits CEOs to employ their own directors, which leads to a positive relationship between firm performance and board size. Thus, we do not emphasize the direction of the board size–firm performance relationship.

## 4. Data and methodology

### 4.1. Data

We obtain firm-specific data from Prowess, a database maintained by the Center for Monitoring Indian Economy (CMIE). We start with all firms listed on the two leading stock exchanges, the Bombay Stock Exchange and the National Stock Exchange, for the period 2002 to 2012. We exclude missing firm-year observation values. Our final sample covers more than 10,000 firm-years representing more than 2000 unique firms.

### 4.2. Modeling

To examine the determinants of board structure, we use the following regression Eq. (1):

$$\begin{aligned} \text{Board Strct} = & \alpha + \beta_1 CS_{it} + \beta_2 BG_i + \beta_3 Size_{it} + \beta_4 ROA_{it} + \beta_5 SIP_{it} + \beta_6 Age_{it} + \beta_7 Std_{it} + \beta_8 Lev_{it} \\ & + \beta_9 FC_{it} + \beta_{10} IO_{it} + \beta_{11} PB_{it} + \beta_{12} HHI_{it} + \text{IndDummies} + \text{YearDummies} + \varepsilon_{it} \end{aligned} \quad (1)$$

Here, firm and year are indexed by  $i$  and  $t$ , respectively. We use a natural log of board size (*Board size*) and the proportion of independent directors as dependent variables (*%IND*). Refer to Table 1 for variable definitions. To measure stock price informativeness, firm-specific returns' variation is used (French and Roll, 1986; Roll, 1988).

<sup>9</sup> See, for example, Alchian (1950) and Hart (1983).

**Table 1**

Variable definition.

Description of variables used in the regression models.

Variables/acronyms	Definitions
Dependent variables	
Board size ( <i>Board size</i> )	Log of the number of board of directors
The number of independent directors ( <i>IND</i> )	The number of independent directors
Board independence ( <i>%IND</i> )	The percentage of independent directors outsider non-executive director
Independent variables	
Controlling shareholder ownership ( <i>CS</i> )	The percentage of promoter ownership
Standard Deviation ( <i>Std</i> )	standard deviation of daily stock returns over a year
Price to book ( <i>PB</i> )	The end of year market value of equity plus book value of debt, divided by total book value of assets
Firm size ( <i>Size</i> )	A natural log of book value of total assets
Return on assets ( <i>ROA</i> )	Profit before interest and taxes divided by total assets
Firm Age ( <i>Age</i> )	A natural log of firm age since incorporation
Institutional ownership ( <i>IO</i> )	The percentage of institutional ownership
Herfindahl Index ( <i>HHI</i> )	The sum of all firms' squared market shares within a industry, where market share for each firm is firm sales divided by total sales for the industry
Leverage ( <i>Lev</i> )	Total borrowing divided by total assets
Business group ( <i>BG</i> )	A dummy variable takes value 1 if a firm affiliated to business group, and otherwise 0 for standalone firms
Free cash flow ( <i>FC</i> )	Free cash flow to firm divided by total assets
Stock prices informativeness ( <i>SIP</i> )	Log of firm-specific returns' variance relative to the market-wide returns' variance. To compute firm-specific returns' variance, the Fama and French's 1993 three factor model is used

We estimate firm-specific returns from the Fama–French three-factor model by using daily data.

$$R_{id} = \alpha + \beta_1 Rm_d + \beta_2 SML_d + \beta_3 HML_d + \varepsilon_{id} \quad (2)$$

Where  $R_{id}$  is the return on stock  $i$  and day  $d$  in excess of the risk-free rate and  $Rm_d$  is the return on market portfolio in excess of the risk-free rate. We use the CMIE composite stock prices index (COSPI) as a proxy of market portfolio.  $SML_d$  is the small-minus-large size factor return, and  $HML_d$  is the high-minus-low book-to-market factor return.<sup>10</sup> We measure firm-specific returns' variation as  $(1 - R^2)$  from the above regression. Following Ferreira et al. (2011), we use logistic transformation of  $(1 - R^2)$ :

$$SIP = \log\left(\frac{1 - R^2}{R^2}\right) \quad (3)$$

Where  $SIP$  measures firm-specific returns' variation relative to market-wide variation.

In our specification, we employ various observed firm-specific measures that determine board structure. Nevertheless, there is a possibility that board structure and firm-specific measures are jointly determined by certain unobservable factors (unobserved heterogeneity), and if board structure impacts firm-specific measures rather than vice versa, we could encounter an identification problem due to inherited endogeneity. To reduce the endogeneity problem, we deploy industry dummies to control for invariant industry effects (Mulherin, 2005) and year dummies to control for time trends in board structure. We follow the four-digit national industry classification (NIC) to define industry. Furthermore, Hermalin and Weisbach (1988) argue that board structure is reasonably invariable, and thus, the residuals of a given firm may be correlated across years for a given firm (time series dependence). We may also expect cross-sectional correlations across all firms for a given year because the same shock as that of Clause 49 would affect all firms in a given year.

<sup>10</sup> The daily returns for the small-minus-big (SMB) and high-minus-low (HML) factors are drawn from French's website: <http://www.iimhd.ernet.in/~ifm/Indian-Fama-French-Momentum/>.



Therefore, to account for time series and cross-sectional correlations in our regressions, we follow Petersen (2009) and estimate cluster standard errors at the year and industry levels.

## 5. Results

### 5.1. Descriptive statistics

Table 2 reports descriptive statistics of the determinants used in this study to examine firm board size and board independence. The mean (median) value of total assets ( $e^{Size}$ ) is Rs. 2079.744 (1881.83) million, and the mean age of Indian firms is 23.34 years. The mean (median) *PB* is 1.96 (1.08), and the mean (median) free cash flow (*FCF*) is 4.73% (5%) of total assets. The mean (median) leverage in this sample is 36% (33%), whereas Linck et al. (2008) report 43.8% (40.9%) for a US sample. The mean (median) value of controlling ownership (*CS*) is 45.80% (49.118%). The mean (median) institutional ownership (*IO*) is 8.62% (2.65%), whereas, Linck et al. (2008) report that the mean (median) value of institutional ownership is 34.16% (29.53%).

The mean (median) value of board size is 10.63 (10). We find that Indian firm boards are much larger than US boards, with a mean (median) board size of 7.5 (7) in Linck et al. (2008). On average Indian boards have five independent directors that represent, on average, 49% board strength. In contrast, Linck et al. (2008) find that US boards are dominated by outside directors (65.7%). Therefore, we show that there are significant differences between the most common board structures in India and the USA.

Table 3 reports a Pearson pair-wise correlation matrix between variables. Overall, our variables are highly correlated with board size and independence. The correlation between firm size (*Size*) and institutional ownership (*IO*) is the highest (0.63).

### 5.2. Univariate results

We conduct a preliminary univariate analysis to explore our proposed hypotheses by comparing board size and board independence across various sub-samples. To define a sub-sample, we sort all firms every year by firm-level variables, and we categorize the top 33% firms in the *Large* group, the bottom 33% in the *Small* group, and the remaining firms in the *Medium* group. Table 4 presents the results. The univariate findings support our hypotheses that higher controlling ownership and business groups reduce the percentage of independent directors (panels A and B). Panels C, D, and F indicate that board size and board independence are higher for large firms, for large leverage firms, and for old firms compared to small firms, low leverage firms, and younger firms. These univariate results are consistent with the view that complex firms, where greater monitoring and advising are required, are more likely to have larger boards and higher board independence.

**Table 2**

Descriptive statistics.

The table reports the mean, median, standard deviation, and the number of observations (*N*) for each variable. The sample consists of all publically listed Indian firms. We exclude financial and government owned firms. All variables are winsorized at bottom and top 1% level. Refer to Table 1 for variable definitions.

Variable	Mean	Median	Std	N
%IND	49	50.01	13.01	10,209
IND	5.18	5.00	2.71	10,209
Board size	10.63	10	4.73	10,209
CS	45.80%	49.18%	21.57%	10,209
Std	0.21%	0.14%	0.29%	10,209
Age	3.15	3.00	0.6	10,209
Size	7.64	7.54	1.98	10,209
ROA	11.19%	10.77%	8.99%	10,209
Lev	36%	33%	28%	10,209
FCF	4.73%	5.00%	11.67%	10,209
IO	8.62%	2.65%	11.97%	10,209
PB	1.96	1.08	2.69	10,209
SIP	1.58	1.44	1.06	10,209
HHI	0.41	0.33	0.32	10,209

**Table 3**

Correlation matrix.

The table reports Pearson correlation matrix. Refer to Table 1 for variable definitions.

Variable	Board size	%IND	Size	ROA	SIP	Age	Std	Lev	FC	IO	PB	HHI	CS
Board size	1												
%IND	<b>-0.12</b>	1											
Size	<b>0.41</b>	<b>-0.07</b>	1										
ROA	<b>0.16</b>	<b>-0.09</b>	<b>0.16</b>	1									
SIP	<b>-0.32</b>	<b>0.05</b>	<b>-0.56</b>	<b>-0.16</b>	1								
Age	<b>0.17</b>	<b>0.03</b>	<b>0.3</b>	<b>0.1</b>	<b>-0.13</b>	1							
Std	<b>-0.2</b>	<b>0.04</b>	<b>-0.33</b>	<b>-0.16</b>	<b>0.3</b>	<b>-0.16</b>	1						
Lev	<b>0.09</b>	0.01	<b>0.12</b>	<b>-0.04</b>	<b>-0.06</b>	<b>-0.07</b>	<b>-0.04</b>	1					
FC	<b>0.09</b>	<b>-0.05</b>	<b>0.09</b>	<b>0.38</b>	<b>-0.03</b>	<b>0.11</b>	<b>-0.06</b>	<b>-0.11</b>	1				
IO	<b>0.3</b>	<b>-0.01</b>	<b>0.63</b>	<b>0.15</b>	<b>-0.33</b>	<b>0.2</b>	<b>-0.18</b>	0.01	<b>0.07</b>	1			
PB	<b>0.15</b>	<b>-0.04</b>	<b>0.15</b>	<b>0.18</b>	<b>-0.06</b>	<b>0.06</b>	<b>-0.11</b>	<b>0.03</b>	<b>0.05</b>	<b>0.2</b>	1		
HHI	<b>-0.08</b>	<b>-0.03</b>	<b>-0.12</b>	0.01	<b>0.06</b>	<b>-0.02</b>	<b>0.03</b>	<b>-0.11</b>	<b>-0.02</b>	<b>-0.05</b>	<b>0.05</b>	1	
CS	<b>0.03</b>	<b>-0.13</b>	<b>0.07</b>	<b>0.12</b>	<b>0.04</b>	<b>0.03</b>	<b>-0.05</b>	<b>0.02</b>	<b>0.09</b>	<b>-0.15</b>	<b>0.09</b>	<b>-0.05</b>	1

The bold correlations are statistically significant at 1% level.

Panel G demonstrates findings related to stock price informativeness (*SIP*). Consistent with Ferreira et al.'s (2011) hypothesis that stock price informativeness and board monitoring are substitutes of each other, we find that firms associated with higher stock price informativeness have a smaller board size and less board independence compared to firms associated with lower stock price informativeness. Consistent with our expectations, we find board size and board independence to be higher in industries with less competition (panel E). Inconsistent with institutional investor monitoring (panel I), we find that board size and the number of independent directors increase with higher institutional ownership; however, the percentage of independent directors declines with higher institutional ownership.

Panel H shows that riskier firms are more likely to have a smaller board size and lower board independence. Panel K illustrates that high-growth firms have a large board size but a lower percentage of independent directors. Our finding is consistent with the *monitoring costs hypothesis*. Consistent with the *private benefit hypothesis* (panel J), we find that firms with higher free cash flow have a lower percentage of independent directors.

### 5.3. Multivariate results: Determinants of board composition

While our univariate results are mostly consistent with our proposed hypotheses, in this section, we discuss our analysis in a multivariate framework.

Table 5 reports the results of regression Eq. (1). In the board size regression, we find that the coefficient of *CS* is positive and economically significant; a standard deviation increase in controlling ownership results in a 6.8% standard deviation increase in board size. We further find that the coefficient of *CS* is negatively related to *%IND*, with approximately similar economic significance as reported for board size. As noted above, the motivation of selecting strong or weak governance by controlling owners varies after a certain level of ownership, so we next examine the nonlinearity of controlling ownership and include a square value of *CS* in the regression model (Eq. (1)). As expected, for board independence (*%IND*), the coefficient of *CS* and  $CS^2$  is negative and positive, respectively, and these results are significant at the 5% level. This implies that, initially, a controlling owner chooses weak corporate governance to expropriate minority shareholders. However, the ownership stake after a threshold induces the controlling owner to promote strong corporate governance because if the controlling owner expropriates minority shareholders while holding a substantial stake, the market will discount stock prices (Gompers et al., 2003), resulting in lower valuation of the controlling owner. Consistent with the view that controlling owners have incentives and capacity to monitor managers, we report a negative coefficient of  $CS^2$  for board size.

The negative and significant coefficient of business group (*BG*) indicates that board size and board independence are lower among group firms. This finding is consistent with Khanna and Yafeh (2007) and Masulis et al. (2007), which firms affiliated with business groups are exposed to poor corporate governance. We further find that the coefficients of firm size, leverage, and firm age are positive and significant at the 1%

**Table 4**

Univariate analysis.

The table reports univariate analysis. We report the number of directors (*Board size*), the number of independent directors (*IND*), and percentage of independent directors (*%IND*) by three groups. We formulate these groups based on firm-level variables. Each year, we sort all firms by firm-level variables, and grouped the top 33% firms in Large group, bottom 33% firms in Small group, and remaining firms in Medium group. The difference is large minus small. Refer to Table 1 for variable definitions.

Rank	Board size	Independent directors	%Independent directors	Board size	Independent directors	%Independent directors
Panel A—Controlling ownership			Panel B—Business group vs. standalone			
Small/standalone	8.63	6.21	52.1	11.93	5.82	49.02%
Medium/BG	10.43	5.00	50	9.61	4.67	49.25%
Large	12.45	4.25	48.48			0.23%
Difference	−3.82 <sup>****</sup>	1.96 <sup>***</sup>	3.62 <sup>***</sup>	−2.32 <sup>***</sup>	−1.15 <sup>***</sup>	0.9 <sup>***</sup>
t-value	37.75	25.25	7.59	−25.29	−21.81	−4.56
Panel C—Firm size			Panel D—Leverage			
Small	8.66	4.33	48.49%	10.27	4.94	49.00%
Medium	10.43	5.00	48.32%	10.61	5.19	49.27%
Large	12.79	6.19	50.64%	10.99	5.4	49.18%
Difference	4.12 <sup>**</sup>	1.86 <sup>***</sup>	2.15 <sup>***</sup>	0.72 <sup>***</sup>	0.46 <sup>***</sup>	0.18%
t-value	37.76	28.59	6.89	6.25	6.88	0.57
Panel E—Herfindahl Index			Panel F—Age			
Small	11.06	5.43	49.31%	9.81	4.79	49.42%
Medium	10.53	5.15	49.38%	10.32	4.96	48.54%
Large	10.29	4.94	48.76%	11.74	5.78	49.49%
Difference	−0.77 <sup>***</sup>	−0.49 <sup>***</sup>	−0.55 <sup>*</sup>	1.94 <sup>***</sup>	0.99 <sup>***</sup>	0.07%
t-value	−6.77	−7.42	−1.8	16.91	14.91	0.21
Panel G—SIP			Panel H—Std			
Small	12.03	5.85	49.82%	12.14	5.83	49.85%
Medium	10.73	5.19	48.73%	10.31	5.04	49.30%
Large	9.12	4.48	48.91%	9.43	4.66	48.30%
Difference	−2.91 <sup>**</sup>	−1.37 <sup>***</sup>	−0.91 <sup>***</sup>	−2.71 <sup>***</sup>	−1.17 <sup>***</sup>	−1.55 <sup>***</sup>
t-value	−26.66	21.33	2.95	−24.07	−17.82	5.01
Panel I—Institutional ownership			Panel J—Free cash flow			
Small	9	4.43	50.03%	10.05	4.98	50.02%
Medium	10.58	5.08	48.61%	10.77	5.26	49.10%
Large	12.31	6.01	48.80%	11.06	5.29	48.34%
Difference	3.31 <sup>***</sup>	1.58 <sup>***</sup>	−1.23 <sup>***</sup>	1.02 <sup>***</sup>	0.30 <sup>***</sup>	−1.68 <sup>***</sup>
t-value	30.27	24.39	−4.02	9.02	4.73	−5.49
Panel K—Price to book						
Small	9.56	4.77	50.22%			
Medium	10.79	5.23	48.90%			
Large	11.51	5.52	48.34%			
Difference	1.95 <sup>***</sup>	0.75 <sup>***</sup>	−1.88 <sup>***</sup>			
t-value	16.5	5.73	−4.56			

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

level. Our results are consistent with *the monitoring hypothesis (the scope of operations hypothesis)*, which predicts that board size and board independence increase with the scope and complexity of the firm's operations. Consistent with our expectation, we find that the coefficient of *Std* is negative and statistically significant. This implies that the monitoring costs attributable to firms' riskiness reduce board size and board independence. We also find that the coefficient of stock price informativeness (*SIP*) is negative and statistically significant. This finding suggests that when stock prices transmit more firm-specific information, then firms tend to select a smaller board size and fewer independent directors. Consistent with Giroud and Mueller (2011), we illustrate that the coefficient of product market competition (*HHI*) is negative and significant at the 1% level, implying that product market competition acts as a substitute for internal monitoring. The negative

**Table 5**

Determinants of board structure.

The table shows the determinants of board structure. IE and YE are industry and year fixed effect. All variables are winsorized at bottom and top 1% level. Refer to Table 1 for variable definitions.

Variable	Board size		%IND	
Intercept	1.78***	1.46***	0.52***	0.53***
CS	36.45	31.97	27.43	26.05
	0.06***	0.49***	−0.06***	−0.18***
CS <sup>2</sup>	3.19	6.52	−9.93	−4.82
		−0.40***		0.08**
BG		−5.21		2.31
	−0.05***	−0.03***	−0.01***	−0.01***
Size	−6.27	−4.16	−2.93	−3.65
	0.07***	0.08***	0.01***	0.01***
ROA	21.42	27.38	5.58	3.63
	0.19***	0.17***	−0.06***	−0.03***
SIP	4.81	3.80	−3.57	−3.17
	−0.03***	−0.02***	−0.01**	−0.01**
Age	−7.82	−5.22	−2.41	−2.21
	0.02***	0.02***	0.02***	0.01***
Std	3.13	3.73	6.33	5.79
	−7.22***	−1.95**	0.33	0.37
Lev	−5.86	−2.25	0.68	0.91
	0.03**	0.01	0.01*	0.01*
FC	2.41	1.17	1.73	1.66
	−0.01	0.01	−0.01	−0.00
IO	−0.31	0.79	−1.07	−0.60
	0.12***	0.11***	0.03**	0.00
PB	3.14	2.81	1.97	0.10
	0.03**	0.01**	−0.01	0.00
HHI	2.31	2.01	−0.41	0.34
	−0.18***	−0.14***	−0.01	−0.02
IE	−5.08	−3.18	−0.63	−0.61
	Yes	Yes	Yes	Yes
YE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.46	0.48	0.13	0.15
N	10,209	10,209	10,209	10,209

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

and significant coefficient of firm performance (*ROA*) related to board independence (*%IND*) is consistent with [Hermalin and Weisbach's \(1998\) bargaining hypothesis](#), which postulates that a firm's poor performance leads to adding a higher number of independent directors.

#### 5.4. Robustness tests

In this section, we perform a series of additional tests to provide robustness to our analysis.

Despite the control of industry and year fixed effects, endogeneity caused by unobserved factors at the firm level may be problematic. Admittedly, while one cannot fully alleviate issues of reverse causality and omitted variable bias with non-experimental data, we take a number of steps to address and mitigate them. First, we reran Eq. (1) with firm fixed effects. Panel A of Table 6 reports the findings. The firm fixed effects results are similar to the reported results in Table 5. Previous studies show that most of the variation in firms' board structure occurs due to cross-sectional rather than time series variations ([Coles et al., 2008](#); [Guest, 2008](#)). Thus, it is expected that the firm-fixed effects model will reduce statistical power.

Second, we use the three-stage least squares regression (3SLS) to assuage reverse causality concerns. We use board size and board independence as dependent variables. Prior studies, however, show that all of these variables influence firm performance and growth ([Demsetz and Lehn, 1985](#); [Hermalin and Weisbach, 1988](#);

**Table 6**

Robustness analysis.

The table presents the robustness analysis for determinants of board structure. Panel A shows results for Firm fixed results. In panel B, we present results, where we use count regression for the number of board size (*Board size*). We use Tobit regression for percentage of independent directors (*%IND*). Panel C shows results for 3SLS analysis. IE, YE, and FE are industry, year fixed, and firm effect, respectively. All variables are winsorized at bottom and top 1% level. Refer to Table 1 for variable definitions.

	Panel A		Panel B		Panel C	
	Board size	%IND	Board size	%IND	Board size	%IND
<i>Intercept</i>	2.98***	0.21**	1.88***	0.52***	1.15***	0.50***
	13.28	2.52	39.1	27.45	14.58	21.88
CS	0.01*	−0.01**	0.05***	−0.06***	0.08**	−0.10***
	1.97	−2.16	3.13	−9.91	2.34	−9.93
CS <sup>2</sup>	−0.14*	0.02**	−0.04**	0.04***	−0.04**	0.08**
	−1.68	2.01	−2.25	3.45	−2.31	2.35
BG	−0.18	−0.27***	−0.05***	−0.01***	−0.05***	−0.01***
	−0.79	−3.13	−6.54	−2.89	−6.27	−2.93
Size	0.02***	0.01***	0.06***	0.01***	0.79***	−0.01
	2.7	2.84	19.34	5.54	11.8	−0.13
ROA	0.08**	−0.03*	0.16***	−0.05***	0.72***	−0.04
	2.16	−1.85	3.93	−3.57	5.51	−0.93
SIP	−0.02***	−0.01**	−0.03***	0.01	−0.07***	0.01
	−6.56	−2.01	−8.39	0.38	−4.1	1.51
Age	−0.29***	0.03***	0.02***	0.02***	0.08***	0.01***
	−8.26	2.17	2.66	6.24	8.3	3.73
Std	−9.02***	−0.29	−9.05***	0.32	11.23***	2.82
	−8.61	−0.74	−6.19	0.68	8.29	0.71
Lev	0.05***	−0.01***	0.03**	0.01*	0.08***	0.01
	3.92	−2.62	1.99	1.75	4.54	1.15
FC	−0.08***	−0.01	−0.03	−0.01	0.10*	−0.01
	−3.47	−0.59	−1.03	−1.06	1.86	−0.54
IO	0.28***	0.01	0.10***	0.03**	0.22***	−0.00
	5.94	0.63	2.86	1.97	3.51	−0.06
PB	−0.00	0.00	0.01***	−0.00	−0.00	−0.01*
	−0.77	1.21	3.15	−0.34	−0.33	−1.84
HHI	−0.13***	−0.01	−0.22***	−0.01	−0.03*	−0.01*
	−4.96	−0.54	−6.02	−0.63	−1.64	−2.47
FE	Yes	Yes	No	No	No	No
YE	Yes	Yes	Yes	Yes	Yes	Yes
IE	No	No	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.76	0.63			0.46	0.13
N	10,209	10,209	10,209	10,209	10,209	10,209

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

Coles et al., 2008), whereas we use firm performance (*ROA*) and growth (*PB*) to determine board size and board independence. To alleviate the reverse causality issue, we first estimate simulation equations in *ROA*, *PB*, board size, and the percentage of independent directors. This approach is similar to that of Coles et al. (2008), who estimate Tobin's Q, board size, board composition, and CEO ownership using three-stage least squares (3SLS). We also include a lag value of *ROA* and *PB* in *ROA* and *PB* regression equations, respectively, to reduce persistence effects. These results are reported in panel B of Table 6. For brevity, we do not report the *ROA* and *PB* regression results. These results are qualitatively very close to the original estimates in Table 5, and they confirm our findings that controlling ownership has a non-linear *U-shaped* relationship with the proportion of independent directors and that business group is negatively related to board size and board independence.

Previous studies (Coles et al., 2008; Guest, 2008; Linck et al., 2008) measure board size by the number of directors, whereas we use a log of the number of directors. To compare our study with previous studies, we also use the number of directors as a dependent variable. However, the implicit assumption in the OLS regression is that the dependent variable should be continuous. The OLS estimator of a regression model

with dependent variables as counts may become inconsistent.<sup>11</sup> To mitigate this problem, we use count regression, where the dependent variable is the number of directors. We also use a Tobit estimator for the %IND variable because the value of %IND falls between 0 and 1. The estimated results are summarized in panel C of Table 6. The findings of this analysis are also consistent with Table 5.

### 5.5. Summary

We report a nonlinear *U-shaped* relationship between the controlling ownership and the proportion of independent directors. Related to emerging markets, we find that firms affiliated with business groups tend to have smaller boards and more board independence. We further find that the major determinants of board structure are related to the benefits and costs of monitoring and advising. We also report that the external market control mechanisms, i.e., stock price informativeness and product market competition, matter for the optimal board structure. Our results are robust to various econometric methods. Our analysis also suggests that Indian firm boards are not designed randomly, because our models explain up to 50% of their variation.

## 6. Subsample analysis

### 6.1. Controlling shareholder ownership concentration and board structure

Durnev and Kim (2005) suggest that corporate governance improves with ownership concentration. Thus, it is expected that determinants of board structure may vary with the degree of controlling ownership concentration. Correspondingly, we re-estimate regression Eq. (1), where every year, we sort all firms based on CS. Thereafter, we divide firms into three groups: the top 33% firms are grouped in *High CS*, the bottom 33% in *Low CS*, and the remaining firms in *Medium CS*.

Table 7 reports these analysis results in three panels. Panel A reports results for *Low CS*, panel B shows findings for *Medium CS*, and panel C presents results for *High CS*. The overall findings are consistent across all CS groups. However, we find some notable differences for the percentage of independent directors (%IND). First, we find that firm performance (ROA) is negative and significant only for the *low* controlling ownership group, whereas it is not significant for other groups. This finding is consistent with the view that the proportion of independent directors increases in poorly performing firms only when the controlling shareholders do not have substantial ownership. Not surprisingly, we find that the influence of controlling ownership (CS) on firm board size and board independence exists only when controlling shareholders have a major portion of ownership (panel C). We further find that the coefficient of *IO* is positive and significant only for the *Low* controlling ownership group (panel A). This finding is consistent with the opinion that institutional investors are more likely to join firm boards when controlling shareholders have low concentration. Our economic significance estimates suggest that firm size (*Size*) is an important variable because it explains the maximum variance of firm board size and board independence irrespective of the controlling owners' concentration.

### 6.2. Business groups vs. standalone firms

In this subsection, we examine whether the behavior of determinants varies between firms affiliated with business group and standalone firms. Table 8 reports the findings in two panels. Panel A reports the results for standalone firms, and panel B shows the findings for business group firms.

Consistent with the argument that the problem of separation and control is more problematic in business group firms (Bertrand et al., 2002), we show that the coefficients of CS and CS<sup>2</sup> are negative and positive, respectively, for board independence (%IND) only for business group firms. We also find that for standalone firms, the coefficient of *IO* is positively related to %IND, whereas for business group firms, it is negatively related to %IND. This implies that institutional owners prefer to be a part of standalone firm boards rather than business group firms due to their higher degree of managing benefits. In general, the explanatory power of models related to standalone firms is higher compared to firms affiliated with business groups.

<sup>11</sup> Cameron and Trivedi (1996) may be referred to for the use of count regression in financial data.



**Table 7**

Subsample analysis—controlling shareholder concentration.

The table presents determinants of board structure for CS effects. Every year, we sort all firms based on CS. Thereafter, we divide firms into three groups; the top 33% firms is grouped in *Low CS*, bottom 33% firm in *High CS*, and remaining firms are grouped in *Medium CS*. Panel A shows results for *Low CS* firms. In panel B, we present results for *Medium CS* firms, and panel C reports results for *High CS* firms. IE and YE are industry and year fixed effect. All variables are winsorized at bottom and top 1% level. Refer to Table 1 for variable definitions.

	Panel A: Low		Panel B: Medium		Panel C: Large	
	Board size	%IND	Board size	%IND	Board size	%IND
<i>Intercept</i>	1.837*** 21.01	0.476*** 13.32	1.728*** 14.52	0.550*** 12.21	1.632*** 18.15	0.544*** 15.68
CS	0.033 0.81	−0.012 −0.73	0.191* 1.61	−0.054 −1.2	0.132* 1.74	−0.092*** −3.12
BG	−0.060*** −3.87	−0.001 −0.19	−0.053*** −3.61	−0.011** −2.02	−0.053*** −3.94	−0.016*** −3.01
Size	0.069*** 12.76	0.009*** 4.27	0.072*** 11.79	0.004* 1.81	0.063*** 11.07	0.008*** 3.42
ROA	0.274*** 4.04	−0.124*** −4.48	0.187*** 2.48	−0.045 −1.59	0.11 1.53	0.01 0.35
SIP	−0.015** −2.08	−0.005* −1.65	−0.030*** −4.22	0.001 0.49	−0.040*** −5.84	0.005** 1.92
Age	−0.030*** −2.39	0.026*** 5.08	0.022* 1.94	0.009** 2.11	0.066*** 6.18	0.014*** 3.28
Std	−5.588*** −2.79	0.073 0.09	−8.533*** −3.84	−0.859 −1.02	−8.418*** −3.48	1.751* 1.88
Lev	0.026 1.15	0.004 0.47	0.024 1.03	0.020*** 2.34	0.055*** 2.49	−0.004 −0.53
FC	−0.049 −0.97	−0.015 −0.71	0.069 1.22	0.016 0.76	−0.002 −0.04	−0.02 −1.04
IO	0.161*** 2.89	0.048** 2.09	0.028 0.38	−0.003 −0.11	0.041 0.42	0.026 0.7
PB	0.005** 2.05	0.001 1.01	0.004 1.51	0.000 0.19	0.002 0.84	0.000 0.33
HHI	−0.224*** −3.11	0.024 0.81	−0.216*** −3.42	−0.031 −1.27	−0.162** −2.58	−0.003 −0.14
IE	Yes	Yes	Yes	Yes	Yes	Yes
YE	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.17	0.43	0.21	0.39	0.22	0.36
N	3365	3365	3370	3370	3369	3369

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

## 7. Additional analysis

### 7.1. The impact of Clause 49 on board structure

We next examine the impact of *Clause 49* on board structure and use a change model where the annual changes in board structure i.e., board size, and the percentage of independent directors, along with firm-specific variables, are used as independent variables. We use a change in regression model because it has two advantages. First, this regression is generally less likely to illustrate spurious relationships between the variables than regressions using level variables.<sup>12</sup> Second, by using changes in board structure rather than levels, we also control systematic changes in board structure due to *Clause 49* that may confound our findings. Although measuring the impact of *Clause 49* is beyond the scope of this study, to capture impact reforms, we include a dummy variable that takes a value of 0 or 1 for the period prior to and after the implementation of *Clause 49*, i.e., before and after 2006, respectively.

<sup>12</sup> Chung et al. (2010) argue that year-to-year changes in variables more strongly measure causal relations than the levels of these variables because the levels of many variables may be cross-sectionally correlated without any direct causal link.

**Table 8**

Subsample analysis—standalone vs. business group.

The table presents determinants of board structure for firm affiliation. Panel A shows results for standalone firms and panel B reports for business group firms. All variables are winsorized at bottom and top 1% level. IE and YE are industry and year fixed effect. Refer to Table 1 for variable definitions.

	Panel A—Standalone firms		Business group firms	
	Board size	%IND	Board size	%IND
<i>Intercept</i>	1.81***	0.50***	1.70***	0.49***
	27.03	19.2	20.31	15.02
<i>CS</i>	0.25**	−0.03	0.63***	−0.22***
	2.18	−0.50	7.14	−5.11
<i>CS</i> <sup>2</sup>	−0.11*	−0.035	−0.59***	0.14***
	1.65	−0.53	−6.26	3.11
<i>Size</i>	0.07***	0.01***	0.06***	0.01***
	14.6	3.94	15.31	3.47
<i>ROA</i>	0.27***	−0.06***	0.18***	−0.05***
	4.03	−2.24	3.65	−2.65
<i>SIP</i>	−0.04***	−0.01	−0.02***	−0.01
	−6.61	−0.04	−4.88	−0.11
<i>Age</i>	0.02*	0.02***	0.02**	0.01
	1.74	5.68	2.43	1.22
<i>Std</i>	−3.54	2.13**	−7.85***	0.32
	−1.36	2.11	−5.66	0.59
<i>Lev</i>	0.02	0.01	0.05***	0.01
	0.98	1.47	2.94	0.67
<i>FC</i>	0.01	0.03	−0.03	−0.02
	0.16	0.23	−0.99	−1.26
<i>IO</i>	0.06	0.08***	0.19***	−0.04***
	1.23	3.91	3.51	−2.03
<i>PB</i>	0.01**	−0.01**	0.00	0.00
	2.58	−2.14	0.41	1.14
<i>HHI</i>	−0.28***	−0.03	−0.11***	0.02
	−5.26	−1.24	−2.21	0.96
<i>IE</i>	Yes	Yes	Yes	Yes
<i>YE</i>	Yes	Yes	Yes	Yes
<i>Adjusted R</i> <sup>2</sup>	0.4	0.2	0.38	0.16
<i>N</i>	4783	4783	6065	6065

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

The results (see Table 9) show that the coefficient of the change in CS (*Change\_CS*) is negative and significant for %IND and board size, indicating that an increase in controlling ownership decreases the demand for board monitoring. We further find that the coefficient of *Change\_CS\*Post Clause 49* is positive but is significant only for *Change\_%IND*. This implies that the effect of controlling ownership decreases after the implementation of *Clause 49* because *Clause 49* induces firms to have greater board independence, resulting in a weaker relationship between board structure and controlling ownership. The negative and significant coefficient of *Post Clause 49*, particularly for *Change\_%IND*, shows that the proportion of independent directors increases before the implementation of *Clause 49*. Because recommendations were made public 2 years prior to implementation, most firms must have adjusted their board to be in line with recommendations. We find no significant impact of *Clause 49* on the number of independent directors and board size.

Furthermore, because the recommendations of *Clause 49* came in October 2004 and it was implemented from January 2006, it is expected that for the 2004–2005 period, there should be a significant increase in the percentage of independent directors compared to the other sample period because of compliances. Consistent with this view, in an unreported analysis, we find that the percentage of independent directors increases more, on average, than 3.4% for 2004–2005 compared to the other sample period.

**Table 9**

The impact of regulation on board structure.

This table reports regressions of annual changes in *Board size*, %IND, on event years surrounding the *Clause 49* reform, and changes in firm characteristics. All variables are winsorized at bottom and top 1% level. IE and YE are industry and year fixed effect. Refer to [Table 1](#) for variable definitions.

Variable	Change_size	Change_%IND
Intercept	−0.018	0.027*
	−0.280	1.650
Post Clause 49 dummy	−0.029	−0.021**
	−0.750	−2.080
Change_CS	−0.774	−0.263*
	−1.380	−1.820
Change_CS*Post Clause 49 dummy	0.712	0.233*
	1.260	1.600
BG	0.009	−0.014
	0.160	−0.970
BG*Post Clause 49 dummy	−0.031	−0.014
	−0.540	−0.970
Change_Size	0.132***	−0.003
	7.480	−0.610
Change_IO	0.004***	−0.000
	3.760	−0.550
Change_SIP	−0.086***	−0.004***
	−16.000	2.600
Change_Std	−19.355***	−0.023
	−12.430	−0.060
Change_Lev	0.086***	−0.016***
	5.040	−3.690
Change_FC	−0.033	0.006
	−1.590	1.050
Change_PB	0.001***	0.002***
	3.790	3.95
Change_HHI	0.021	0.031
	1.21	1.35
IE	Yes	Yes
YE	Yes	Yes
Adjusted R <sup>2</sup>	0.030	0.070
N	8750	8750

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

## 7.2. The valuation effects of Clause 49

In this section, we examine the reform of *Clause 49* that was passed on October 29, 2004. Under this reform, a non-executive can be considered an independent director only if the following hold: (1) excluding the receiving director's remuneration does not have any material pecuniary relationships or transactions with the firm, its promoters, its senior management or its holding company, subsidiaries and associated firms; (2) he is unrelated to promoters or management at the board level or at one level below the board; (3) he has not been an executive of the company in the immediately preceding three financial years; (4) he is not a partner or an executive of the statutory audit firm or the internal audit firm that is associated with the firm and has not been a partner or an executive of any such firm for the last 3 years, which also applies to legal firm(s) and consulting firm(s) that have a material association with the entity; and (5) he does not hold substantial shares of the firm, i.e., 2% or more of the block of voting shares. SEBI also mandated that every listed firm should have at least one-half independent directors if the firm's chairman is a non-independent director; otherwise, the firm board should have at least one-third independent directors. The aim of this reform was to enhance the independence of independent directors. We expect that if the independence of independent directors matters and if the proposed regulation is optimal to shareholders' value, the market reaction should be more pronounced for firms whose boards are inconsistent with *Clause 49*. We

further propose that if our selected variables successfully explain cross-sectional differences in board independence, the stock price reaction should also vary with these variables. Overall, this regulatory intervention provides a natural experiment to measure the relevance of our selected variables to explain shareholder value due to board independence.

The *Clause 49* regulation was issued by SEBI on October 29, 2004, and it came into effect on January 1, 2006. We first examine how investors respond to firms whose boards are inconsistent with the *Clause 49* regulation prior to 2004. We measure the market reaction around the issue date of *Clause 49* by the cumulative abnormal returns (CARs). The CARs are measured by the residual value of the market model. We estimate the market model parameters by  $-220$  to  $-20$  trading days. We use the following regression equation to examine the cross-sectional analysis of CAR:

$$CAR_i = \alpha + \beta_1 \text{Clause 49 dummy} + \beta_2 \text{Size}_i + \beta_3 \text{Age}_i + \beta_4 \text{Lev}_i + \beta_5 \text{ROA}_i + \beta_6 \text{PB}_i + \beta_7 \text{CS}_i + \beta_8 \text{IO}_i + \beta_9 \text{SIP}_i + \beta_{10} \text{HHI}_i + \beta_{11} \text{Std}_i + \beta_{12} \text{BG}_i + \text{IndDummies} + \varepsilon_{it}$$

**Table 10**

The determinants of announcement effects.

The table reports the announcement effects of *Clause 49 regulation*. The dependent variable is the cumulative abnormal returns (CAR) over  $-1$  to  $1$  around the day of *Clause 49 regulation* announcement. The *Clause 49 dummy* takes value 1 if corporate board is inconsistent with *Clause 49 regulation* and otherwise 0. All variables are winsorized at bottom and top 1% level. Refer to [Table 1](#) for variable definitions.

Variable	CAR	CAR
Intercept	0.501***	0.13
	3.758	0.62
Clause 49 dummy	0.113***	1.48***
	3.008	5.45
CS	-3.595***	-1.415
	-3.41	-1.05
BG	0.111***	0.49***
	6.207	6.78
Size	-0.009	-0.03
	-1.081	-1.08
ROA	-0.659***	-0.40***
	-4.285	-2.93
SIP	0.030***	0.05***
	2.634	6.61
Age	0.038***	-0.09**
	2.907	-2.16
Std	-12.150***	15.75***
	-7.392	3.96
Lev	-0.239***	-1.08***
	-4.714	-8.82
FC	0.621***	-1.73***
	7.936	-6.26
IO	-0.003**	-0.001
	-2.01	-1.04
PB	0.010*	14.70***
	1.717	7.85
HHI	-0.589***	-0.68***
	-3.94***	-5.74
CS*Clause 49 dummy		-0.25**
		2.14
BG*Clause 49 dummy		0.38***
		5.12
IE	Yes	Yes
Adjusted R <sup>2</sup>	0.21	0.35
N	1125	1125

\*\*\* Indicates significance at 1% level.

\*\* Indicates significance at 5% level.

\* Indicates significance at 10% level.

where  $CAR_i$  is the cumulative abnormal returns over  $-1$  to  $+1$  day for firm  $i$ . Here, 0 represents the announcement date of *Clause 49* on October 29, 2004. All independent variables are measured at the end of 2003. *Clause 49 dummy* is a variable that takes a value of 1 if the firm board is inconsistent with the *Clause 49* requirement at the end of 2003 and 0 otherwise. The remaining variables are the same as those described in Table 1.

Table 10 reports the results of this analysis. The coefficient of the *Clause 49 dummy* is positive and statistically significant at the 1% level. This implies that governance reforms related to board independence are really valued by the market. Consistent with the determinants of board structure, we find that the coefficient of *CS* is negative. This implies that when the market feels that its interests are very much aligned with controlling owners, they do not favor regulatory intervention. Sub-optimal intervention, such as an increase in the number of independent directors, increases the superfluous costs to firms. Therefore, firms with higher ownership experience value losses on the announcement of *Clause 49*. The positive coefficient of business group (*BG*) also suggests that business group firms are exposed to weak governance. Therefore, compared to standalone firms, investors have more valuation benefits on the regulation related to board independence for business group firms.

Consistent with the *monitoring hypothesis*, we find that firm size and firm age are positively related to *CAR*, suggesting that investors of complex firms welcome the amendment of the *Clause 49* regulation. Consistent with the *substitution hypothesis*, the external governance, measured by *HHI* and *SIP*, is negatively related to *CAR*, implying that with the existence of external governance, a firm demands less internal governance. The coefficient of institutional ownership (*IO*) is negatively related to *CAR*, showing that because higher institutional ownership reduces *principal-agent conflicts*, corporate governance reform has less value to investors.

We next examine whether the market reactions diverge from our determinants if a firm board does not comply with *Clause 49*. We consider that prior to the public disclosure of *Clause 49*, if a firm board is optimal and is consistent with *Clause 49*, the market should not react much. Consistent with our view, we find that the coefficient of *CS* is insignificant, whereas the coefficient of  $CS \times \textit{Clause 49 dummy}$  is negative and significant. These results suggest that once the firm board complies with the proposed regulation and is optimal, the firm does not incur additional costs to follow the proposed reforms. Nevertheless, if the proposed reforms induce firms to deviate from an optimal board, a cost is imposed, resulting in lower valuation. We next show that investors of business group firms inconsistent with *Clause 49* welcome proposed regulation because it can reduce expropriation risks to minority shareholders.

## 8. Conclusion

Recent studies have examined the determinants of board structure mainly for developed nations such as the USA and the UK. However, little is known about how the board structure is determined in the context of concentrated founder controlling ownership and the presence of business groups. Using a large sample of Indian firms from 2002 to 2012, we extend the corporate governance literature by examining the determinants of board structure for Indian firms, taking into account our belief that concentrated founder ownerships and the presence of business groups should influence board structure. We further argue that the determinants of board structure in emerging markets that have lower degrees of external corporate mechanisms (such as weak investor protection) should differ when compared with those of developed nations. Thus, we firmly believe that from the point of view of understanding the determinants of board structure for emerging nations, our findings are very important because they provide guidance on how legislators, regulators, and law-enforcement officers can move ahead to ensure quality corporate governance.

We hypothesize that concentrated ownership should motivate controlling owners to favor weak governance because it will help them exploit minority shareholders. However, once controlling ownership crosses a minimal level of ownership, the interest of controlling owners should align with minority shareholders and, therefore, should promote strong governance. Consistent with this view, our empirical investigation supports and shows a U-shaped relationship between controlling ownership and board independence. We further find that firms affiliated with business groups require lesser board independence compared to standalone firms. This shows the domination of weak governance in business group firms. Consistent with US studies, we find that board size and board independence are positively influenced by greater advising and monitoring needs and negatively influenced by higher monitoring costs. Consistent with the view that external corporate governance can be a replacement of internal governance, we find that competitive firms require a smaller

board size and less board independence. Likewise, stock price informativeness reduces the demand of bigger firm boards along with board independence. We further examine the valuation effects around the announcement of the *Clause 49* regulation, where the Indian regulator mandated an increase in the proportion of independent directors. We find that investors definitely value board independence.

Overall, our results are robust to various econometric methodologies. Consistent with US studies, we conclude that Indian firm boards are not randomly organized, because the regression models explain a significant portion of the board structure's variation. Our findings are also relevant to policy makers because an understanding of how firm boards are determined elevates the possibility to evaluate the prevailing and proposed reforms in the board selection process. We further advise that when devising corporate governance reforms, policy makers should consider controlling ownership and firms' organizational structure (business group). Furthermore, the policy makers should not impose one board structure on all firms, because the board structure varies with firms' characteristics. However, regulatory norms requiring higher board independence are relatively new in Indian firms. Hence, it is possible that firms will have appointed directors who are in some way connected to controlling owners (family or otherwise) to fulfill regulatory compliances, resulting in less independence of independent directors. We thus consider that future research can be extended to measure the degree of independence of independent directors in the presence of concentrated controlling ownership.

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