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ORIGINAL ARTICLE

Board composition, ownership structure and firm performance: New Indian evidence

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Abstract
This paper studies the impact of board composition and ownership structure on accounting as well as market performance of Indian firms in presence of certain unique statutory provisions relating to independent directors and limits on ownership concentration. The study uses a sample of 265 non-finance, non-banking and non-PSU Indian companies of S&P 500 index and applies OLS models initially. Having identified evidence of a possible feedback loop, the study then employs instrumental variables and 2 SLS models to explore how firm performance is impacted by ownership concentration and board composition after controlling for firm-level and industry-level characteristics. A series of robustness tests are used to substantiate the findings from the main analysis. A two-way relationship and 'nonlinearity' are recorded between market performance and ownership concentration. The study shows that a moderate-to-high ownership concentration between 25 and 75%enhances firm performance and very low level of concentration adversely impacts the same. Performance is positively impacted by board size but not by board independence. The findings of the study become particularly important for legislators and investors in the backdrop of SEBI's regulations fixing a maximum limit on promoter's shareholding and existence of a minimum external directors in the board for listed Indian companies that might have an implication on firm performance from liquidity, agency and information asymmetry perspective. The study documents that an optimal shareholding concentration and large board size with internal directors rather than a high percentage of independent external directors leads to value creation in Indian context. The paper provides new insights onto the relationship between board composition, ownership structure and firm performance in the backdrop of regulations brought out by SEBI in this behalf. The findings of the study have varying degree of application in common law origin countries with strong regulatory framework for investors' protection.

Keywords Ownership concentration · Board size · Independent directors · Tobin's Q · Return on assets

JEL Classification G12 · G30

Introduction

This paper investigates the effect of ownership structure and board composition on the financial performance of Indian firms in the presence of some unique regulatory provisions by SEBI,[1] the Indian capital market regulator. SEBI prescribes a maximum permissible ownership by promoter shareholders to 75% for listed Indian firms. It also prescribes that the board of directors of a listed Indian firm is required to have a combination of inside and outside directors, with

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[1] The Securities and Exchange Board of India (SEBI) were established in 1992 by the Central Government under the SEBI Act, 1992. It is a quasi-legislative, quasi-judicial and quasi-executive body to protect the interests of investors of the listed firms, promote and regulate the securities market and matters connected therewith or incidental thereto.

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not less than 50% (33.33%) consisting of outside directors where the chairman is an insider (outsider). The concentration of shareholding of the Indian firms through chain and crossholding has been well documented by Ganguli and Agrawal (2009). Besides illiquidity of shares in the capital market ownership concentration creates expropriation of minority shareholders by keeping the corporate resources out of reach of the latter. Thus, too much concentration acts as deterrent for value discovery due to: (a) illiquidity and (b) agency problem arising from conflict of interest between corporate insiders and outside investors. Given the context, SEBI perceives that dilution of holding to some extent and presence of significant proportion of independent directors in the board might have a role in addressing 'agency problem' by influencing the managers to act in the best interest of the investors and take value enhancing decisions specially in the context of concentrated shareholding.

Perhaps the above theoretical framework encourages SEBI to promulgate legislation for minimum public shareholding (Didwani 2017) and adequate independent directors in the composition of the board of Directors. The legislative intervention curbing too much concentration of ownership coupled with influence of the independent directors should enhance—(a) market performance, and (b) accounting measure of performance of the firms through better monitoring and disciplining the corporate insiders. In the backdrop of the above theoretical underpinning and consequent SEBI's regulation, the study, using a sample of 265 Indian firms, with continuous data, from 2009 to 2013, empirically demonstrates that the performance of Indian the firms (both stock market performance and accounting performance) do get impacted significantly by moderate-to-high ownership concentration (but not too high) and board size, whereas independent directors does not appear to play any decisive role in performance enhancement. The observed patterns are robust even after controlling for various firm-level parameters and industry characteristics.

Enron and World com debacle followed by the global financial crisis of 2008 has resulted in renewed interest of finance researchers on corporate governance issues and its impact on firm performance. Most of such researches have focused on the developed economies (Holderness 2009). Holistic studies encompassing the role of ownership structure and board composition on corporate performance in emerging markets are few and far between. In particular, India's position as an emerging economy deserves particular attention-because, as a common law origin country (La Porta et al. 1998) coupled with plethora of regulations protecting investors' rights, corporate governance practice in India should be better than her counterparts. However, there is no denying the fact that countries with weak law enforcement mechanisms, emanating from inordinate delay in justice delivery system, intensifies the role of other internal governance mechanisms in reducing agency costs for shareholders (La-Porta et al. 2000), which could just be the case in India. All major capital market economies have devised governance system consisting of legal and other multi-layered mechanism to discipline the managers so that they act substantially in the best interest of the shareholders and other stakeholders. Purely from corporate finance angle, the main aim of the system is to mitigate conflict of interest between managers and the stockholders. Direct legal measures that consist of corporate governance codes (e.g. Sarbanes–Oxley Act of 2002 in the US) introduced in developed capital market economies over last 20 years, mainly pertaining to board composition, audit committee etc., focus on the assumption that a strong independent board can monitor the CEO and his team effectively to enhance corporate performance.

In India, among other legislative measures incorporated in various statutes, SEBI introduced clause 49 in 2005[2] incorporating various corporate governance measures to be adopted by the firms as a part of listing agreement with stock exchanges. Globally one of the most favoured internal mechanisms, not being code-based, to address collective action problem of the investors, is concentration of ownership in the hands of a few large shareholders (Shleifer and Vishny 1997). The argument in favour of such an approach is that the ownership concentration provides large investors with sufficient incentive as well as power to discipline management, and thus improves firm performance by decreasing monitoring costs. However, a counter argument posits that concentrated holding might have the potential of creating illiquidity in the stock market and collusion between large shareholders and managers in a manner detrimental to the interest of minority shareholders (Claessens et al. 2004). This probably was the reason which caused the Indian regulator SEBI to issue a circular, in June 2010,[3] that all Indian companies listed in stock exchanges must have at least 25% public shareholding. Historically, in India huge concentration of shareholding in the hands of promoters is witnessed (Ganguli and Agarwal 2009). However, SEBI's recommendation in terms of the above circular implies that for listed Indian firms, the promoters' shareholding cannot exceed 75% of the outstanding shares. Any existing company having promoters' shareholding exceeding 75% must bring down the shareholding by: (a) issuing shares to public, or (b) sale by promoters through prospectus or on the floor of the stock exchange or (c) by issue of right or bonus shares to the public to the exclusion of the promoters.

[2] Pursuant to powers conferred by the Securities and Exchange Board of India Act, 1992 read with Securities Contract (Regulation) Act, 1956.

[3] The recommendations of this circular were supposed to be implemented by all companies before July, 2013.

Another important corporate governance variable believed to impact firm performance is the board composition, in terms of proportion of independent directors. SEBI's regulation in this context, (Clause-49, Listing Agreement, 2004–05) with respect to number of independent directors prescribes that the board of directors of a company must have less than 50%(33.33%) outside directors where the chairman is an insider (outsider). The reason behind this regulation is the potential role independent directors can play to help mitigate expropriation of the minority shareholders by the insiders.

Extant corporate governance literature, particularly in the context of developed countries, reveals that both ownership structure and board composition have varying degrees of implications for firm performance and shareholder value creation. (Hermalin and Weisbach 1987; Francis et al. 2012). The findings are consistent with the literature on agency problems which suggest that if ownership structure and board composition (presence of adequate proportion of independent directors) can promote efficiency by reducing agency problem the same should be manifested in enhanced firm performance captured by accounting measures of performance (Demsetz and Villalonga 2001), market-to-book value of assets, (Opler et al. 1999) or Tobin's Q, (Guest 2009). The specific regulations of SEBI mentioned above, with respect to ownership concentration and proportion of independent directors in the board, raises the question whether these regulations are at all instrumental in creating incremental value for Indian shareholders, and, therefore, constitutes the principal significance and motivation of this study.

The methodologies used in our study and findings obtained there from, enrich the existing literature on corporate governance, law and finance, in several ways. *First*, the principal premise of this study, that is, SEBI's specific regulations prescribing higher proportion of independent directors and restrictions on promoter's ownership concentration are somewhat unique within the common law countries. Hence, the findings of our study regarding impact of such regulations on actual firm performance could be of value to regulators and policy makers in other such countries. *Second*, the study considers a possible bi-directional relationship between ownership structure and firm performance (endogeneity effect of ownership structure), and potential nonlinearity between ownership structure and firm performance by using a piecewise regression approach which, to the best of our knowledge have not been used so far in emerging market context. *Third,* previous studies on this issue consider effect of either ownership structure on firm performance (Demsetz and Villalonga 2001), or board size on firm performance (Guest 2009; Mak and Kusnadi 2005). This study considers the combined impact of board composition (both size and proportion of independent directors) as well as ownership structure on firm performance. *Fourth,* from the policy perspective, the study identifies 'threshold' shareholding level by promoters, which triggers best performance from a firm. *Fifth,* in majority of previous studies firm performance is measured by their stock market performance only. We augment that by considering both stock market performance (measured by Tobin's Q) and accounting performance (measured by ROA) following Demsetz and Villalonga (2001). Considering stock market performance in conjunction with accounting performance should provide a more robust picture of the actual firm performance and not a reflection of market perception only.

The remaining part of the paper is organized as follows: Sect. 2 talks about literature review and hypothesis formulation, Sect. 3 discusses the methodology, Sect. 4 presents theempirical results, Sect. 5 presents the results of the robustness testsused, Sect. 6 discusses the resultsand Sect. 7 concludes.

Conceptual framework, prior literature and hypothesis formulation

Board composition and firm performance

The relationship between the board of directors and firm performance is more "varied and complex" than can be covered by any single governance theory (Nicholson and Kiel 2007). Hillman and Dalziel (2003) posit that board of directors serves two important functions: (i) monitoring management on behalf of shareholders (agency theory) and (ii) providing resources (resource dependency theory). Agency theory is based on the premise that there is an inherent conflict of interest between the owners and management of a firm (Fama and Jensen 1983). Thus, a high proportion of outside directors on the board is believed to have a positive impact on the firm performance. (Fama and Jensen 1983; Jensen and Meckling 1976; Shleifer and Vishny 1997). The agency theory view of the positive relationship between board composition and financial performance is also substantiated by numerous other studies. Baysinger and Butler (1985) find that companies perform better if boards include more outsiders. Rosenstein and Wyatt (1990) find that appointment of an outside director leads to an increase in shareholder wealth. Francis et al. (2012) record enhanced performance, if outside directors are truly independent. Some counter evidence is also provided in extant literature. For example, studies utilizing Tobin's Q (Tobin 1969) as a measure of performance (e.g., Agrawal and Knoeber 1996) and market-value-added (e.g., Coles et al. 2001) find that greater representation of outside directors has a negative impact on firm performance. The reason for the same is highlighted in Brick et al. (2006), who posit that firm underperformance under greater

representation by outside directors in the board is the result of 'cronyism' signifying that the apparently 'independent' directors are not independent in the real sense. Other studies, for example Dalton et al. (1998), finds no significant association between board composition and firm performance. In India, the recommendations of the Birla Committee (2001) led to enactment of Clause 49 of the Listing Agreements which recommends that not less than 50(33.33%) per cent of board members should be independent directors where the chairman is an insider (outsider). This regulation in India automatically assumes the need for independent directors in the board for enhancing performance. The intrinsic motivation towards that seems to be unbiased monitoring by external directors to effectively mitigate conflict of interest between insiders and dispersed shareholders. However, the dominance of family owned enterprises and the limited efficiency and access to legal recourse raises the possibility that the independent directors may not be truly independent. However, that is not known for sure and our first hypothesis is derived from this premise. In the Indian context, a recent study by Haldar et al. (2018) finds that independent board directors do not significantly affect financial performance. We hypothesize that a greater proportion of independent directors will minimize any action motivated by self-interest of managers and therefore is associated with high corporate performance (Nicholson and Kiel 2007). Accordingly, we present the following hypothesis.

H1 Performance of Indian firms is positively associated with the proportion of outside directors on the board of directors.

Board size and firm performance

'Resource dependency theory' (Pfeffer 1972; Pfeffer and Salancik, 2003),[4] suggests that a large board of directors with high levels of contacts and links to the external environment would improve a company's access to various resources thus improving firm performance. Van den Berghe and Levraus (2004) argue that expanding the number of directors provides an increased pool of expertise. Thus, larger boards are likely to have more knowledge and skills at their disposal than smaller boards. The resources may include finance and capital (Mizruchi and Stearns 1994), links to key suppliers (Banerji and Sambharya 1996), customers (Frooman 1999), significant stakeholders (Freeman and Evan 1990) and other external contacts (Hillman et al. 2000; and Palmer and Barber 2001). Therefore, the board size is also an important consideration from corporate governance point of view, which might impact firm performance.

In Indian context, the issue has not been adequately addressed. Dwivedi and Jain (2005), Jackling and Johl (2009), finds that larger board size has a weak positive impact on performance of Indian firms, thus supporting the view that greater exposure to the external environment improves access to various resources and thereby positively impacts on performance. In recent times, Garg and Singh (2017) find a weak positive association between board size and firm value. However, in India, there is clearly a lack of qualified inside directors within the firms which are mostly family and this perceived resource inadequacy has to some extent been an impetus for governance reforms by the regulator. Furthermore, the large proportion of family owned firms in India also means that the role of outside directors is minimized, as family firms tend to confine executive management positions to family members. This should limit the pool of potential qualified and talented directorial resources. Given these unique characteristics in the Indian context, we hypothesize that the larger number of members of the board of directors will potentially provide a company with greater resource capabilities. Based on resource dependency theory, the increased pool of expertise should improve firm performance. Our next hypothesis is thus presented as under

H2 There is a positive association between the size of the board and firm performance for Indian firms.

Ownership structure and firm performance

As mentioned in the previous section, ownership structure (degree of insider ownership and ownership concentration) is also posited to have significant impact over firm performance. Some previous studies (Jensen and Meckling 1976; Jensen 1983; Stulz 1988) suggest theoretical reasoning for both positive and negative impact of higher equity ownership by managers on firm performance. Hermalin and Weisbach (1987), Morck et al. (1988), and McConnell and Servaes (1990), among others, empirically examine the effect of insider ownership on firmperformance and posit that insider ownership does not always have a positive effect on performance. Ownership concentration again is claimed to provide the large investors with both sufficient incentive and power to discipline management and thus improve firm performance by decreasing monitoring costs (Shleifer and Vishny 1997). Demsetz and Lehn (1985) documented a linear relationship between ownership concentration and ex-post firm performance measures. Ang et al. (2000) observes that the agency cost is significantly higher when an outsider manages the firm. However, beyond a certain threshold level, increase in ownership concentration may create controlling ambition and capability for large shareholders to

[4] The Resource Dependency Theory highlights the key role played by board directors in providing access to resources (such as information, skills, access to key constituents such as suppliers, buyers, public policy makers, social groups as well as legitimacy) needed by the firm. It states that the directors secure these essential resources to an organization through their linkages to the external environment.

manipulate the firm's decisions for own interests and expropriate minority shareholders (Morck et al.1988). Some studies (Demsetz and Lehn 1985; Agrawal and Knoeber 1996) also report that ownership concentration has no relationship with firm value or even negative relationship (Leech and Leahy 1991). In Indian context, Dwivedi and Jain (2005) reports a nonliner negative relationship between directors' shareholding and firm value. Ghosh (2007) reports that increased managerial ownership leads to improved firm performance, although after a threshold level, the 'entrenchment effect' resulting from managerial private benefits results in a decline in firm valuation, an observation which can be extended to the case of promoter shareholding as well. Given such mixed evidence in empirical research about the impact of ownership concentration on firm performance, we present our next hypotheses as follows:

H3 Performance of Indian firms is positively associated with ownership concentration.

Methodology

Sample and data

The study uses 2009 to 2013 as the time horizon. This is primarily to explore the impact of the SEBI regulation post their introduction. We consider only the S & P 500 index[5] companies to start with, as our sample firms. The reason for choosing only the S & P 500 firms and not all listed firms is as follows: these firms represent 93% of total market capitalization covering 20 major industries.[6] Hence, we thought that this sample should be a good representative of the Indian equity market in general. Moreover, as we track equity market performance as performance measure, the stocks outside this list would be subject to severe illiquidity issues, thus adversely affecting our results.

Our sample includes only non-finance, non-banking and non-PSU companies of S & P 500 index for which data pertaining to all variables are continuously available from 2009 to 2013 (5 years). Thus, we sought to use a balanced panel data. PSU means public sector undertaking denoting companies where government holds more than 50% controlling shares. Such companies, in India, do not necessarily operate on commercial considerations, get fund from governments from budgetary allocations whenever needed and appointments of directors of the companies at times depend on political expediency. Hence, we exclude such companies from our sample. Banking and finance companies are excluded from our sample following standard empirical practices. We get altogether a sample of 265 companies meeting our selection criteria. We collect data for relevant variables detailed in Sect. 4 from 'Prowess' database of Centre for Monitoring Indian Economy (CMIE). We hand pick the data on independent directors and board size also from Prowess and other sources. After all these filtering, our sample comes down to 1325 firms-years (265×5).

Model specification

Morck et al. (1988) use a 'piecewise' linear regression model where they demonstrate that Tobin's Q of firms first rises as ownership concentration increases to 5%, then falls for ownership concentration levels between 5 and 25% and finally rises as ownership concentration continues to increase. Different measures of ownership concentration are used in previous studies. Morcket al. (1988), Loderer and Martin (1997) take shareholding by the directors while Hermalin and Weisbach (1991) consider shares held by CEO and former CEOs still on the board as measure of ownership concentration.

Several studies (Demsetz and Villalonga 2001; Agarwal and Knoebar, 1996 Hermalin and Weisbach 1991) use simultaneous equation model (2SLS) besides OLS for estimation of performance—the argument being that insiders' ownership may be 'endogenously' determined by superior information they (insiders) may possess on firm performance.

In Indian context, we use typically promoters' shareholding as proxy for ownership concentration.[7] We highlight before SEBI's regulations with respect to ownership concentration and proportion of external directors. Our hypotheses are framed to check whether these regulations are at all instrumental in creating incremental value for the shareholders and remain the principal motivation for this study.

Accordingly, we specify our models as detailed below: Given the possibility of an endogeneity problem as high performance may lead to ownership concentration, we use both OLS and 2 SLS regression with an instrumental variable (IV) to show how performance is impacted by ownership

[5] S&P NSE 500 companies are top 500 Indian companies listed in National Stock Exchange (NSE). NSE has in all about 1600 companies listed with a total market capitalization of $2.27 trillion. (https://en.wikipedia.org/wiki/National_Stock_Exchange_of_India). NSE 500 companies constitute close to 93% of this market capitalization.

[6] The industry distribution of sample companies is available with us. We just mention here that they span across 20 industries. However, for the sake of brevity we do not report them separately here. The author(s) may be contacted for the detailed information, if need be.

[7] SEBI defines promoter as "a person or persons who are in overall control of the company or persons who are instrumental in the formulation of a plan or program pursuant to which the securities are offered to the public and those named in the prospectus as promoters". However, a director / officer of the issuer or a person acting merely in professional capacity does not come within the ambit of promoter.

concentration and board composition after controlling for finance and industry-level dummy variables. The models we use are as follows:

$$\text{ROA} = \delta_0 + \delta_1 \text{P\_HOLD} + \delta_2 \text{BD\_SIZE} + \delta_3 \text{BD\_IND} + \delta_4 \text{FM\_SIZE} + \delta_5 \text{LEV} + \delta_6 \text{DD} + \sum_{j=7}^{8} \delta_j \text{INDUS\_DUMMY} \quad (1)$$

$$\text{TQ} = \delta_0 + \delta_1 \text{P\_HOLD} + \delta_2 \text{BD\_SIZE} + \delta_3 \text{BD\_IND} + \delta_4 \text{ROA} + \delta_5 \text{FM\_SIZE} + \delta_6 \text{LEV} + \delta_7 \text{DD} + \sum_{j=8}^{9} \delta_j \text{INDUS\_DUMMY} \quad (2)$$

where

(i) **PERFORM** = firm performance is measured by:

(a) $\text{Tobin's Q(TQ)} = \frac{\text{Market Value of equity shares+book value of preference shares and debt}}{\text{Book Value of Total Assets}}$

(b) Return on Assets: $\text{ROA} = \frac{\text{EBITDA}}{\text{Total Assets}}$, where EBIDTA is the earnings before interest, depreciation tax and amortization and is taken as measure for accounting profitability.[8]

(ii) **P_HOLD** = Promoters' shareholding = used as proxy for ownership concentration. It is measured as the ratio of promoter's shareholding to total shareholding at the end of each financial year during 2009–2013.

(iii) **BD_SIZE** = Size of the board of directors measured by natural log of total number of board of directors in each financial year during 2009–13.

(iv) **BD_IND** = Independence of the board of directors; measured as the ratio of number of independent directors to total number of directors for each year of the study period

(v) **FM_SIZE** = Firm size measured by log of sales

(vi) **LEV** = Firm Leverage measured by the ratio of book value of interest bearing loan to book value of total assets at year end

(vii) **DD** = Dummy variable for a diversified firm = 1 (if the sample firm is diversified, = 0 otherwise)

(viii) **INDUS_DUMMY** = Industry dummy. Here we use three industry dummies here:

(a) **DCS** = Dummy variable for a firm belonging to IT/Software industry = 1 (if the sample firm belongs to IT/software industry, = 0 otherwise). The reason for including this dummy is to capture the impact of intangible assets like human resources not appearing in the balance sheet etc.—being a characteristic distinct from a typical firm.

(b) **DPHARM** = Dummy variable for a firm belonging to Pharmaceuticals industry = 1 (if the sample firm belongs to IT/software industry, = 0 otherwise). Again for a typical pharma firm, with substantial investment in R&D, the proportion of tangible assets can be relatively less compared to an average firm, as R&D expenditure is charged in the income statement as expense pursuant to accounting practice.

Based on the literature (Demsetz and Villalonga 2001 and others), we posit that there could be endogeneity between P_HOLD and the performance variables, as such we use 2SLS regression for estimation where lag of promoter's shareholding (P_HOLDLAG) is used as instrumental variable (IV) in the models. Wooldridge (2009) suggests that the criteria for selecting IV is that it must be such a variable determined outside the structural equation, uncorrelated to error term and correlated to the explanatory variable. P_HOLDLAG satisfies all the criteria. Typically, 2SLS estimate is less efficient than OLS when explanatory variables are exogenous (Woolridge 2013). We perform endogeneity test (Hansuman 1978) in order to find whether 2SLS is at all necessary for our models. Based on the results of the test, we conclude that there does not exist endogeneity between ROA and P_HOLD but the latter is indeed endogenous when Tobin's Q is used as a performance measure. We also test whether there exists any endogeneity between board independence and performance but the result does not indicate existence of any such relation.

To understand the impact of various levels of concentration of ownership on market performance, we also carry out a 'piecewise regression'[9]which is a standard approach adopted in empirical research involving data non-linearity (Gkioulekas and Papageorgiou 2019; Arthur et al. 2019). Here we repeat both models (1) and (2) for various ranges of ownership concentration. This is primarily to explore the possibility of existence of a 'nonlinear' relationship between ownership concentration and firm performance, as identified in other empirical works detailed elsewhere.

[8] We may mention here that accounting information must precede stock market performance (Ball and Brown, 1968). However, the reverse is not true. Hence, when performance is measured by Tobin's Q, we also use ROA as one of the control variables. However, when we measure performance by ROA, Tobin's Q is not used as a control variable.

[9] Real-world data are not always linear. In many cases, it is very difficult to fit a line and get a perfect model on nonlinear and non-monotonic datasets. It is common practice to use 'Piecewise regression' also known as 'segmented regression' under those scenarios. It is a special type of linear regression that arises when a single regression model isn't sufficient to model a data set. Piecewise regression partitions the independent variable into potentially many "segments" and fits a separate line through each one. https://en.wikipedia.org/wiki/Segmented_regression#Example.

Table 1 Descriptive statistics ($N = 1325$)

Variables	Mean	Median	SD
TQ	2.14	1.54	1.93
P_HOLD	0.53	0.52	0.17
BD_SIZE	12	11	3.25
B_IND	0.48	0.47	0.11
ROA	0.16	0.15	0.09
RISK	0.03	0.02	0.03
FM_SIZE	55,550.88	19,142.7	1,825,270.3
LEV	0.15	0.12	0.15

This table shows the descriptive statistics of variables across our pooled sample of 1325 firm years (265 firms over 5 years)

Table 2 Correlation matrix

Variable	P_HOLD	BD_SIZE	B_IND	ROA	RISK	FM_SIZE	LEV	VIF
P_HOLD	1.00	− 0.18	− 0.17	0.06	0.04	− 0.19	− 0.09	1.09
BD_SIZE	− 0.18	1.00	− 0.01	0.00	− 0.05	0.38	0.17	1.22
B_IND	− 0.17	− 0.01	1.00	− 0.03	− 0.05	0.07	0.13	1.05
ROA	0.06	0.00	− 0.03	1.00	0.08	0.02	− 0.37	1.17
RISK	0.04	− 0.05	− 0.05	0.08	1.00	− 0.17	− 0.12	1.05
FM_SIZE	− 0.19	0.38	0.07	0.02	− 0.17	1.00	0.09	1.23
LEV	− 0.09	0.17	0.13	− 0.37	− 0.12	0.09	1.00	1.22

This table shows the correlation coefficients of independent variables across pooled sample of 1325 firm years

Empirical results

Table 1 shows descriptive statistics of our sample while Table 2 shows the correlation coefficients between the relevant variables.

From Table 1, we find that the firms in our sample exhibit significant concentration of shareholding among the sample firms. The mean and median promoters' shareholding considering all 1325 observations is around 53% and 52%, respectively, with 59% of the sample firms have promoters' shareholding exceeding 50% (although we do not report that in the table). This high concentration of shareholding by the insiders is consistent with the findings of La Porta et al. (1999) and Ganguli and Agarwal (2009). Holderness (2009) observes that high dispersion of shareholding even in US context is a myth.

Table 2 shows the correlation coefficients between relevant variables. We find that some of the coefficients are significant, but the magnitudes are not large enough to cause multi-collinearity problems in the regression models. We confirm using a VIF factor test and report the VIF numbers in the table.

Table 3 reports the OLS regression results of firm performance (measured in terms of Tobin's Q) on ownership concentration, board-size and board independence for the entire sample along with control variables. We carry out the regressions taking one governance variable as the explanatory variable at a time along with all the control variables as mentioned in the subheadings. Panel D also shows the regression results without the dummy variables. We observe that firm performance is positively affected by ownership concentration, and board-size but unaffected by board independence. This is true for both ROA (accounting performance) as well as Tobin's q market-related performance.[10] For Tobin's-q, we use ROA also as one of the independent variables and find positive impact of that.

Table 4 presents the results of OLS and 2SLS regression models of performance on ownership concentration, board-size and board independence for the entire sample. For the pooled-panel OLS regression, our results are in line with what we observe for regressions conducted taking one corporate variable at a time. For the 2SLS model, the signs and significance of the coefficients are same as OLS results although the magnitudes of the former are higher indicating a stronger relationship in most cases. The larger effect can be due to elimination of simultaneity problem. Overall, for the entire sample, we see strong evidence in support of our hypotheses (2) and (3) but not for hypothesis (1), i.e., firm performance is positively affected by size of the board and ownership concentration but seems to be unaffected by independence of the board measured by proportion of external directors in the board. Among the control variables, we find accounting return (ROA) significantly impacts Tobin's-Q, that is, market value. But leverage has a negative impact on both measures of performance. Though diversification is considered to reduce risk and thereby improve performance, our results do not support the assumption in Indian context.

[10] We may mention that we also carry out regression with respect to ROA as well as TQ as performance variable. The results are similar to using TQ as the performance measure. So, for the sake of brevity we do not report them separately.

Table 3 Panel regression using one governance variable at a time

Panel A: Only P-HOLD and control variables								
Intercept	P_HOLD	ROA	RISK	FM_SIZE	LEV	DD	DCS	DPHARM
0.30 (0.38)	1.36* (0.00)	8.04* (0.00)	− 1.79 (0.20)	0.02 (0.47)	− 2.45* (0.00)	− 0.16 (0.49)	− 0.01 (0.95)	0.58* (0.00)
Panel B: Only board size and control variables								
Intercept	BD_SIZE	ROA	RISK	FM_SIZE	LEV	DD	DCS	DPHARM
0.59 (0.15)	0.38** (0.023)	8.12* (0.00)	− 1.95 (0.17)	− 0.03 (0.33)	− 2.66* (0.00)	− 0.12 (0.60)	− 0.11 (0.58)	0.63* (0.00)
Panel C: Only board independence and control variables								
Intercept	B_IND	ROA	RISK	FM_SIZE	LEV	DD	DCS	DPHARM
1.38* (0.00)	− 0.30 (0.49)	8.19* (0.00)	− 1.87 (0.19)	− 0.01 (0.88)	− 2.52* (0.00)	− 0.10 (0.66)	− 0.11 (0.58)	0.62* (0.00)
Panel D: Without dummy variables								
Intercept	P_HOLD	BD_SIZE	B_IND	ROA	RISK	FM_SIZE	LEV	
− 0.58 (0.27)	1.53* (0.00)	0.46* (0.01)	0.20 (0.65)	8.18* (0.00)	− 1.66 (0.24)	− 0.02 (0.57)	− 2.65* (0.00)	

This table reports the OLS regression results of firm performance (measured in terms of Tobin's Q) on Ownership Concentration, Board Size and Independence for the entire sample along with control variables as detailed in model in text. The numbers in the cells indicate the regression coefficients. We carry out the regressions taking one governance variable as the explanatory variable at a time along with all the control variables as mentioned in the subheadings. Panel D also shows the regression results without the dummy variables. The numbers in the cells indicate the regression coefficients, while the numbers within parenthesis indicate their p-values. *, ** and*** represent significance at 1%, 5% and 10% level, respectively. The model used is:level, respectively. The model used is: $TQ = \delta_0 + \delta_1 P\_HOLD + \delta_2 BD\_SIZE + \delta_3 BD\_IND + \delta_4 FM\_SIZE + \delta_5 LEV + \delta_6 DD + \sum_{j=7}^{8} \delta_j INDUS\_DUMMY$

Table 4 Panel regression

Explanatory variables	OLS		2 SLS
	PERFORMANCE measured by		
	Q	ROA	Q
Intercept	− 0.66 (0.21)	0.09 (0.00) *	− 0.92 (0.08) *
P_HOLD	1.46 (0.00)*	0.03 (0.02)**	1.74 (0.00)*
BD_SIZE	0.49 (0.00)*	0.02 (0.02)**	0.51 (0.00)*
B_IND	0.09 (0.84)	0.01 (0.78)	0.16 (0.72)
ROA	7.94 (0.00)*	–	7.91 (0.00)*
RISK	− 1.90 (0.18)	0.06 (0.38)	− 1.89 (0.18)
FM_SIZE	− 0.01 (0.76)	0.03 (0.07)***	− 0.01 (0.85)
LEV	− 2.59 (0.00)*	− 0.19 (0.00)*	− 2.59 (0.00)*
DD	− 0.21 (0.38)	0.002 (0.08)	− 0.22 (0.35)
DCS	0.01 (0.95)	0.08 (0.00)*	0.03 (0.87)
DPHARM	0.59 (0.00)*	0.03 (0.00)*	0.59 (0.00)*
R^2	0.28	0.19	0.28

This table reports the results of OLS and 2SLS regression models of Performance on Ownership Concentration, Board Size and Board Independence (models 1 and 2 as discussed in text) for the entire sample. The numbers in the cells indicate the regression coefficients, while the numbers within parenthesis indicate their *p* values. *,** and*** represent significance at 1%, 5% and 10% level respectively

Belonging to computer software industry positively impacts micro-level accounting performance but such performance does not influence market value statistically. Belonging to pharmaceutical industry has a positive impact both on accounting return and market value.

With strong evidence of a 'nonlinear' relationship between firm performance and ownership concentration in previous studies (Hermalin and Weisbach 1987; McConnell and Servaes 1990; Morck et al. 1988), we next proceed to check for such a possibility in India. Tables 5 and 6 report the 'piecewise' OLS and 2SLS regression results of model (2), respectively. We may mention here that we find a strong association of TQ with ROA (Table 2) which is further substantiated in the findings of Tables 3 and 4 where we find ROA is positively affecting TQ for both OLS and 2SLS models. We therefore run these models only for TQ but not separately for ROA, as TQ being the market measure of performance will subsume an accounting measure like ROA. We use class intervals of 25%, for PSH and run the models separately for each class. Piecewise regression results both for OLS and 2SLS show that relation between ownership concentration and market performance (TQ) is not monotonic. At lower levels of concentration (0–25%), TQ declines as PSH increases, then TQ increases till the concentration reaches 75% and the increase is statistically significant. Beyond 75% concentration, q increases as concentration increases—but the increase is not statistically significant. Board size is positive and statistically significant till 24.9% of ownership concentration and again above 50% both under OLS and 2SLS. Board independence does not impact

Table 5 Piecewise OLS regression

Explanatory variables	0–24.9% ($N=52$)	25–49.9% ($N=495$)	50–74.9% ($N=657$)	75% and above ($N=121$)
Intercept	− 2.45 (0.08)***	1.35 (0.05)**	− 3.55 (0.00)*	− 4.84 (0.23)
P_HOLD	− 7.17 (0.00)*	2.15 (0.00)*	3.56 (0.00)*	2.74 (0.42)
BD_SIZE	1.16 (.03)**	0.15 (0.48)	0.82 (0.04)*	1.10 (0.06)***
B_IND	0.89 (0.45)	− 0.05 (0.92)	0.96 (0.22)	− 1.20 (0.50)
ROA	10.99 (0.00)*	3.75 (0.00)*	9.51 (0.00)*	5.56 (0.00)*
RISK	− 5.54 (0.54)	− 4.36 (0.03)**	− 2.16 (0.27)	17.10 (0.03)**
FM_SIZE	0.05 (0.59)	− 0.11 (0.02)**	0.02 (0.74)	0.27 (0.09)***
LEV	0.72 (0.39)	− 2.92 (0.00)*	− 2.66 (0.00)*	− 2.90 (0.02)**
DD	0.76 (0.41)	0.39 (0.19)	− 0.79 (0.04)**	1.03 (0.15)
DCS	0.25 (0.59)	0.26 (0.26)	− 031 (0.50)	− 0.99 (0.28)
DPHARM	0.20 (0.81)	1.44 (0.00)*	− 0.05 (0.81)	2.95 (0.00)*
R^2	0.85	0.33	0.27	0.45

This table reports the piecewise OLS regression results of model (2) as discussed in text for the sub-samples. Column headings indicate the promoter's shareholdings based on which sub-samples are created. The numbers in the cells indicate the regression coefficients, while the numbers within parenthesis indicate their p-values. *, ** and *** represent significance at 1%, 5% and 10%, respectively

Table 6 Piecewise 2SLS regression

Explanatory variables	Promoters shareholding			
	0–24.9% ($N=52$)	25–49.9% ($N=495$)	50–74.9% ($N=657$)	75% and above ($N=121$)
Intercept	− 2.64 (0.06) ***	0.87 (0.22)	− 4.57 (0.00)*	− 17.79 (0.12)
P_HOLD	− 5.69 (0.02)**	3.12 (0.00)*	4.91 (0.00)*	15.33 (0.16)
BD_SIZE	1.09 (0.05)**	0.17 (0.43)	0.86 (0.00)*	1.55 (0.03)**
B_IND	0.89 (0.46)	0.001 (0.99)	1.03 (0.18)	− 0.10 (0.96)
ROA	11.64 (0.00)*	3.70 (0.00)*	9.57 (0.00)*	6.01 (0.00)*
RISK	− 5.63 (0.53)	− 4.36 (0.03)**	− 2.01 (0.31)	17.69 (0.04)**
FM_SIZE	0.06 (0.52)	− 0.10 (.022)**	0.03 (0.64)	0.47 (.049)
LEV	0.73 (0.38)	− 2.94 (0.00)*	− 2.68 (0.00)*	− 4.59 (0.02)**
DD	0.53 (0.578)	0.38 (0.21)	0.85 (0.03)**	1.52 (0.08)***
DCS	0.073 (0.88)	0.32 (0.17)	− 0.43 (0.36)	− 1.85 (0.12)
DPHARM	0.13 (0.88)	1.45 (0.00)*	− 0.08 (0.72)	2.73 (0.00)
R^2	0.85	0.33	0.27	0.38

This table reports the piecewise 2SLS regression results of model (2) as discussed in text for the sub-samples. Column headings indicate the promoter's shareholdings based on which sub-samples are created. The numbers in the cells indicate the regression coefficients, while the numbers within parenthesis indicate their p-values. *, ** and *** represent significance at 1%, 5% and 10%, respectively

q at any level. ROA impacts TQ at all levels signifying value relevance of accounting earning and the result is consistent with seminal finding of Ball and Brown (1968) and their follow-up study in 2014 (Ball and Brown 2014).

Robustness tests

We carry out a couple of robustness tests to validate the results that we obtain in the main analysis.

Robustness test 1: using alternate measures of performance

To check robustness of the results from the above approaches, we use two alternative measures of performance of sample firms, namely: Cash ratio (CR), return on asset (ROA) and return on equity (ROE). We define the ratios as shown below:

(i) Return on Equity, ROE $= \frac{\text{Net Income}}{\text{Book Value of Equity}}$

Table 7 Robustness test results: panel regression using alternate performance measures and a winsorized sample

Explanatory variables	OLS with winsorized sample		OLS with alternate performance measures	
	ROA	Tobin's-Q	ROE	CR
Intercept	0.04 (0.18)	0.03 (0.36)	0.001 (0.45)	0.03 (0.48)
P_HOLD	0.74** (0.02)	0.69** (0.03)	0.07** (0.03)	0.44** (0.02)
BD_SIZE	0.07** (0.03)	0.09** (0.04)	0.04*** (0.06)	0.06** (0.03)
B_IND	0.02 (0.26)	0.01 (0.48)	0.03 (0.29)	0.002 (0.36)
ROA	–	4.56** (0.04)	–	–
RISK	0.04 (0.27)	− 0.05 (0.37)	0.003 (0.18)	− 0.001 (0.23)
FM_SIZE	0.002** (0.04)	0.02** (0.03)	0.01** (0.02)	0.01** (0.04)
LEV	− 0.13** (0.03)	− 1.77** (0.04)	− 0.04* (0.00)	− 1.41* (0.00)
DD	0.17 (0.55)	0.003 (0.46)	0.08 (0.33)	0.002 (0.31)
DCS	0.05 (0.45)	0.03 (0.27)	0.06 (0.36)	0.02 (0.62)
DPHARM	0.12** (0.03)	0.01 (0.34)	0.13* (0.00)	0.03*** (0.07)
R^2	0.29%	0.32%	0.33%	0.25%

This table reports the results of OLS regression models of performance on ownership concentration, board size and independence using alternate performance measures and also on a winsorized sample as discussed in text. The numbers in the cells indicate the regression coefficients, while *, ** and *** represent significance at 1%, 5% and 10%, respectively

(ii) Cash Flow Ratio, $CR = \frac{\text{Net Operating Cash Flow}}{\text{Book Value of Asset}}$

Robustness test 2: re-estimating the models on a Winsorized sample

It is possible that our results are driven by a small number of very high or very low performances and the overall patterns visible may not reflect the generic trend. To control for that, we sort our sample firms every year based on their performance measures (ROA as well as TQ). We then drop all sample firms within the top 10% or bottom 10% of the entire range based on these performance measures and then repeat the OLS regression on the winsorized sample.

Findings from Robustness test

Table 7 shows the panel regression results using (i) alternate performance measures (ROE and CR) and (ii) using a winsorized sample. The principal findings are pretty much similar to our findings from the main analysis like: (i) firm performance is positively impacted by ownership concentration but the relation is 'nonlinear' in nature (ii) board size positively impacts both accounting and market performance. However, there seems to be no systematic relationship between firm performance and board independence.

Discussion of results

The current study explores the impact of ownership concentration, board size and board independence on firm performance. Our results show that firm performance (measured in terms of market performance as well as accounting performance) is positively impacted by ownership concentration. However, the relationship between ownership concentration and firm performance is not monotonously increasing but 'nonlinear' in nature. We find that, different levels of ownership concentrations have different impacts on firm performance. Very low levels of ownership concentration negatively impact firm performance. In such cases, the promoters control the resources of the firm with lesser alignment of interest giving rise to agency problems because of higher probability of 'self-dealing'. This gets reflected through weaker firm performance, as the market heavily discounts the negative impact of lack of alignment of interest of the promoters arising from their lower stake. As the promoter's holding increases and rises above 25%, there is more convergence of interest and firm performance improves. However, at a very high level of concentration (above 75%), the firm value increases but the increase is not significant. This observation may be attributed to illiquidity. As per current SEBI guidelines, any listed Indian company with promoters' shareholding exceeding 75% must bring down the shareholding to 75%. The suggested mechanisms are: (i) issuing additional shares to the public, or (ii) sale by the promoter(s) through a prospectus or on the floor of the stock exchange or (iis by issue of rights or bonus shares to

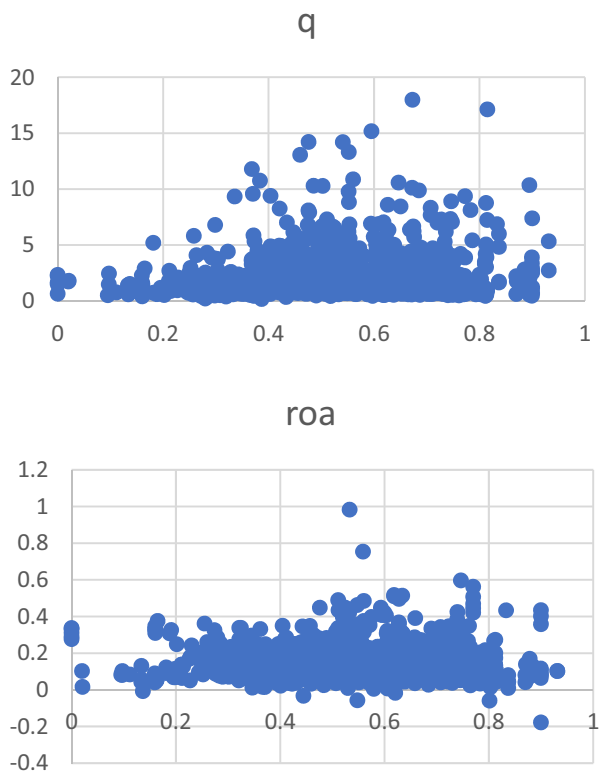

Fig. 1 The plots show the scatter of Tobin's Q and ROA vis-à-vis the Promoter's shareholding percentages. A roughly normal distribution ratifies our findings from regression models that between 25 and 75% of promoters' shareholding trigger best performance of the firms (both market and accounting). Drift on either side of this range is seen to be adversely affecting the performance

the existing shareholders excluding the promoter(s). Information asymmetry associated with such prospective share sale can also adversely affect the valuation of firms with a very high concentration of ownership.

With respect to the second issue, i.e., board size, our findings reveal that board size positively impacts firm performance. Large board size denotes a greater number of directors both internal and external, because of regulatory requirement of proportional representation of the latter. We posit that a large board size ensures plurality of opinions, suggestions and advices which seems to play a positive role in valuation and market perception. Further, a higher number of internal directors can represent different interest groups among the promoters themselves (family representatives). This, in turn, can ensure stability and rationality in the decision making process of the firm which gets built in the pricing process. Our observation is consistent with some recent studies that show a close association between large board size and firm performance (Kalsie and Mittal Shrivatav 2016).

SEBI's regulation regarding presence of a minimum percentage of independent directors arises out of a couple of assumptions already mentioned before. Primarily, the understanding is that a high percentage of independent directors has a role in mitigating agency cost and better monitoring and should act better in the interest of the dispersed minority shareholders. However, we do not find empirical support for this hypothesis in our study. We posit that this may be due to the fact that in India independent directors are mostly chosen by the promoters only. Hence, it is very likely that independent directors ultimately act in the interest of the block shareholders and are not truly 'independent' (Fig. 1).

Conclusion

This paper primarily investigates the effect of ownership structure and board composition on financial performance of Indian firms in the presence of some unique regulatory provisions by the Indian capital market regulator SEBI. These regulations pertain to the maximum permissible ownership by promoter shareholders and proportion of outside directors in the board. Such regulations are somewhat unique within the common law countries initiated with certain objectives in mind to ensure protection of minority shareholders.

Using a sample of 265 firms, with continuous data between the periods 2009 to 2013, we highlight a number of interesting empirical findings in the presence of unique regulatory environment in India. The findings reveal that moderate-to-high (but not too high) concentrated ownership patterns, large board size with inherited traditional wisdom, high operating profit, low debt and domain expertise rather than diversification representing a traditional conservative strategy, leads to value creation in the Indian context. Importantly, 1) empirical evidence supports that the recent move by the SEBI to ensure minimum public shareholding for higher liquidity and mitigate agency conflict between large block holders and minority shareholders to an extent is a welcome move for better price discovery and value creation, and 2) though the SEBI regulation is based on the presumption that the independent directors create incremental value for shareholders by addressing agency problem between corporate insiders and outside minority shareholders, we do not get empirical support for such presumption.

By extension, the findings can have a varying degree of applications in other common law origin countries as well with regulatory framework for protecting minority shareholders' interest.

Notwithstanding the above-mentioned contributions, our study is subject to a few limitations. We have mainly focussed on recent changes in the statutory requirement of minimum public holding, board size and independent

directors on firm performance of Indian companies. Extant studies show that there are other corporate governance variables like intense monitoring of directors measured by number of other committees each director participates in, number of directorship held in other companies, number of board meetings attended by directors, audit committee, percentage of women directors in the board, average compensation of the board members, which can potentially impact the firm performance. Future research can factor in any of these features separately or in conjunction to explore their impact on firm performance along with the variables we have used in our present study.

Compliance with ethical standards

Conflict of interest On behalf of all authors, the corresponding author states that there is no conflict of interest.

References

Agarwal, A., and C.R. Knoebar. 1996. Firm performance and mechanisms to control agency problems between managers and shareholders. *Journal of Financial and Quantitative Analysis* 31 (2): 377–397.

Ang, J.S., R. Cole, and J. Wuh Lin. 2000. Agency cost and ownership structure. *The Journal of Finance* 55 (3): 81–106.

Arthur, N., Chen, H., and Tang, Q. 2019. Corporate ownership concentration and financial reporting quality. *Journal of Financial Reporting and Accounting* 17 (1): 104–132.

Ball, B., and P. Brown. 1968. An empirical evaluation of accounting numbers. *Journal of Accounting Research* 6 (2): 159–178.

Ball, B., and P. Brown. 2014. 'Ball and Brown': A Retrospective. *The Accounting Review* 89 (1): 1–26.

Banerji, K., and R.B. Sambharya. 1996. Vertical Keiretsu and international market entry: The case of the Japanese automobile ancillary industry. *Journal of International Business Studies* 27 (3): 89–114.

Baysinger, B.D., and H. Butler. 1985. Corporate governance and the board of directors: Performance effects of change in board composition. *Journal of Law, Economics and Organization* 1 (2): 101–134.

Brick, I.E., O. Palmon, and J.K. Wald. 2006. CEO compensation, director compensation and firm performance: Evidence of cronyism. *Journal of Corporate Finance* 12 (1): 402–423.

Claessens, S., Simons, D.J., Fang, J., and Lang, L. 2004. Expropriation of minority shareholders in East Asia. Working paper, Centre for Economic Institutions, Institute of Economic Research, Hitotsubashi University, Japan, pp. 1–25.

Coles, J.W., V.B. McWilliams, and N. Sen. 2001. An examination of the relationship of governance mechanisms to performance. *Journal of Management* 27 (2): 23–50.

Dalton, D.R., C.M. Daily, A.E. Ellstrand, and J.L. Johnson. 1998. Meta-analytic reviews of board composition, leadership structure and financial performance. *Strategic Management Journal* 19 (2): 269–290.

Demsetz, D.R., and K. Lehn. 1985. The structure of corporate ownership: Causes and consequences. *Journal of Political Economy* 93 (6): 1155–1177.

Demsetz, H., and B. Villalonga. 2001. Ownership structure and corporate performance. *Journal of Corporate Finance* 7 (2): 209–233.

Didwani, P. 2017. India: public shareholding in listed companies, available at http://www.mondaq.com. Accessed 17 January, 2017.

Dwivedi, N., and A.K. Jain. 2005. Corporate governance and performance of Indian firms: The effect of Board Size and Ownership. *Employee Responsibilities and Rights Journal* 17 (4): 161–172.

Erkens, D.H., Hung, M., and Matos, P. 2012. Corporate Governance in the 2007–08 Financial Crisis: Evidence from Financial Institution Worldwide.

Fama, E.F., and Jensen, M.C. 1983. Separation of ownership and control. *Journal of Law and Economics* 26 (2): 104–113.

Francis, B.B., Hasan, I., and Wu, Q. 2012. Do corporate boards affect firm performance? New evidence from the Financial Crisis, 2012. Bank of Finland Research Discussion Paper No. 11/2012, Available at SSRN: https://ssrn.com/abstract=2041194 or http://dx.doi.org/https://doi.org/10.2139/ssrn.2041194

Freeman, R.E., and W.M. Evan. 1990. Corporate governance: A stakeholder interpretation. *Journal of Behavioral Finance* 19 (2): 337–359.

Frooman, J. 1999. Stakeholder influence strategies. *Academy of Management Review* 24 (4): 191–205.

Ganguli, S.K., and S. Agarwal. 2009. Ownership structure and firm performance: An empirical study on listed mid-cap Indian companies. *IUP Journal of Applied Finance* 15 (2): 37–51.

Garg and Singh. 2017. Corporate governance and firm performance in Indian companies. *International Journal of Indian Culture and Business Management* 15 (4): 420–444.

Ghosh, S. 2007. Bank monitoring, managerial ownership and Tobin's Q: An empirical analysis for India. *Managerial and Decision Economics* 28: 129–143.

Gkioulekas, I., and L.G. Papageorgiou. 2019. Piecewise regression analysis through information criteria using mathematical programming. *Expert Systems with Applications* 121: 362–372.

Guest, P.M. 2009. The impact of board size on firm performance: Evidence from UK. *The European Journal of Finance* 15 (3): 44–385.

Haldar, A., R. Shah, S.V.D. Nageswara Rao, P. Stokes, D. Demirbas, and A. Dardour. 2018. Corporate performance: Does board independence matter? –Indian evidence. *International Journal of Organizational Analysis* 26 (1): 185–200.

Hansuman, J.A. 1978. Specification tests in econometrics. *Econometrica* 46 (2): 271–1251.

Hermalin, B.E., and Weisbach, M.S. 1987. The effect of board composition on corporate performance. Working Paper, Massachusetts Institute of Technology.

Hillman, A.J., and T. Dalziel. 2003. Board of Directors and firm performance: integrating agency and resource dependence perspective. *Academy of Management review* 28 (3): 383–396.

Hillman, A., A.J. Canella, and R. Paetzold. 2000. The resource dependence role of corporate directors: Strategic adaptation of board composition in response to environmental change. *Journal of Management Studies* 37 (2): 235–255.

Holderness, C.C. 2009. The myth of the new ownership in the United States. *Review of Financial Studies* 22 (4): 1377–1408.

Jackling, B., and S. Johl. 2009. Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review* 17 (4): 492–509.

Jensen, M. C. 1983. Organisation Theory and Methodology., 1983. *The accounting Review* 58 (2): 319–339.

Jensen, M.C., and W.H. Meckling. 1976. Theory of the firm: Managerial Behaviour, agency costs and ownership structure. *Journal of Financial Economics* 3 (4): 305–360.

Jiang, G., C.M. Lee, and H. Yue. 2010. Tunnelling through incorporate loans: The China experience. *Journal of Financial Economics* 98 (1): 1–20.

Jiang, G., P. Rao, and H. Yue. 2015. Tunnelling through non-operational fund occupancy: an investigation based on officially identified activities. *Journal of Corporate Finance* 32: 295–311.

Kalsie, A., and S. Mittal Shrivastav. 2016. Analysis of board size and firm performance: Evidence from NSE companies using panel data approach. *Indian Journal of Corporate Governance* 9 (2): 148–172.

Kumar, N., and J.P. Singh. 2013. Effect of board Size and promoter ownership on firm value: some empirical findings from India. *Corporate Governance* 13 (1): 88–98.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer, and R. Vishny. 1998. Law and finance. *Journal of Political Economy* 106 (2): 1113–1155.

La Porta, R., F. Lopez-De-Silanes, A. Shleifer. 1999. Corporate ownership around the world. *The Journal of Finance* 54 (2): 471–517.

La-Porta, R., D.-S.F. Lopez, A. Shleifer, and R. Vishny. 2000. Investor protection and corporate governance. *Journal of Financial Economics* 58 (1): 3–27.

Leech, D., and J. Leahy. 1991. Ownership Structure, control type classifications and the performance of large British companies. *The Economic Journal* 101 (409): 1418–1437.

Loderer, C., and K. Martin. 1997. Executive stock ownership and performance, tracking faint traces. *Journal of Financial Economics* 45 : 223–255.

Mak, Y., and Y. Kusnadi. 2005. Size really matters: Further Evidence on negative the relationship between board size and firm value. *Pacific-Basin Finance Journal* 13 (2): 301–318.

McConnell, J.J., and H. Servaes. 1990. Additional evidence on equity ownership and corporate value. *Journal of Financial Economics* 27 (4): 595–612.

Mizruchi, M.S., and L.B. Stearns. 1994. A longitudinal study of borrowing by large American corporations. *Administrative Science Quarterly* 39 (2): 118–140.

Morck, R., A. Shleifer, and R.W. Vishny. 1988. Management, ownership and market valuation: An empirical analysis. *Journal of Financial Economics* 20 (3): 293–315.

Nicholson, G.J., and G.C. Kiel. 2007. Can directors impact performance? A case- based test of three theories of corporate governance. *Corporate Governance: An International Review* 15 (2): 585–608.

Opler, T.P., L. Pinkowitza, R. Stulza, and R. Williamson. 1999. The determinants and implications of corporate cash holdings. *Journal of Financial Economics* 52 (3): 3–46.

Palmer, D., and B.M. Barber. 2001. Challengers, elites and owning families: A social class theory of corporate acquisitions in the 1960s. *Administrative Science Quarterly* 46 (1): 87–120.

Pfeffer, J. 1972. Size and composition of corporate boards of directors: the organization and its environment. *Administrative Science Quarterly* 17: 218–228.

Pfeffer, J., and G.R. Salancik. 2003. *The external control of organizations: A resource dependence perspective*. Redwood City: Stanford University Press.

Rosenstein, S., and J.G. Wyatt. 1990. Outside directors, board independence and shareholder wealth. *Journal of Financial Economics* 26 (4): 175–191.

Shleifer, A., and R.W. Vishny. 1997. A survey of corporate governance. *Journal of Finance* 52 (5): 759–783.

Stulz, R. 1988. Managerial control of voting rights: Financial policies and the market for corporate control. *Journal of Financial Economics* 20 (1): 25–54.

Tobin, J. 1969. A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking* 1 (2): 15–29.

Van den Berghe, L.A.A., and A. Levrau. 2004. Evaluating boards of directors: What constitutes a good corporate board? *Corporate Governance: An International Review* 12 (3): 461–478.

Woolridge, J.M. 2013. *Introductory econometrics: A modern approach*, 5th ed. New Delhi: Cengage Learning.

Wooldridge, J.M. 2009. On estimating firm-level production functions using proxy variables to control for unobservables. *Economics Letters, E* 104 (3): 112–114.