

Do Board Independence and CEO Duality Matter in Firm Valuation? – An Empirical Study of Indian Companies

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Post regulatory enactments, Sarbanes-Oxley (SOX) Act, 2002 and the Narayana Murthy Committee's report, responsibilities of the board have undergone a major change. Consequently, different aspects of board structure, comprising board size, board independence and CEO duality, have become influential factors in the implementation of effective corporate governance of firms. These factors are drawing the attention of investors both in India and abroad due to the involvement of Indian firms in cross-border acquisitions and cross-listing in foreign bourses. This paper examines the impact of board independence and CEO duality on the valuation of companies listed in BSE 100 index. Panel data regression results show that aspects like board independence and CEO duality do not have a significant impact on firm valuations measured by Tobin's Q. The study also indicates that in the Indian context, the firms with large board sizes have better valuation

Introduction

Agency relationship manifests in different forms among different stakeholders of a firm. Agency relationships exist within the firm between senior executive management and employees depending on its organizational complexity. The firm, through its board, has an agency relationship with the community—a social agency relationship—that encompasses other responsibilities. Thus, boards form an important link in the corporate governance mechanism. This study is focused on the different aspects of board structure comprising board size, board independence, and CEO duality, influencing the firm performance measured by Tobin's Q.

The paper is organized as follows: it presents a review of literature, followed by a discussion of the methodology used in the study. Subsequently, it presents the data analysis, and finally, offers conclusion.

Literature Review

Research on the relationship between corporate governance mechanisms and higher firm value shows mixed results. Literature on board structure can be divided into studies on board independence, CEO duality and board size.

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Board Independence

One of the most widely accepted features of good governance in recent years has been 'boardroom independence'. Intuitively, it is opined that greater board independence is beneficial for firms. It is often cited that independent directors are the cornerstones of good corporate governance. Over the last decade, particularly post-Asian Financial Crisis (AFC), the global movement towards outside director representation has accelerated. Primarily, it started with the Cadbury Report (1992)¹ recommending that publicly traded companies in the UK should have at least three outside directors. CalPERS and NACD insist on adopting similar guidelines. Dahya *et al.* (2008) observe that this trend of global movement towards greater board independence is made on the assumption that outside directors may be able to make better decisions and improve monitoring.

Related research literature suggests two theories—agency theory and stewardship theory. Proponents of the agency theory, Fama and Jensen (1983) and Brickley *et al.* (1994), support the view that board independence reduces agency cost and expropriation and improves the effectiveness of monitoring, leading to improvement in firm performance.

Studies by You *et al.* (1986) and Agrawal and Knoeber (1996) support greater board independence. Further, Denis and Sarin (1997) find that firms which substantially increase the proportion of independent directors experienced above-average stock price returns. Greater board independence also leads to increased firm performance due to effective monitoring (Adams and Mehran, 2003). While Farinha and Viana (2006) find that board diligence and independence matter in modification of opinion in financial statements, Morck (2010) finds that independent directors are more ethical and rational in their approach.

In their study on emerging markets, Yuetang *et al.* (2007) observe that, in Chinese companies, greater proportion of independent directors is positively related to companies' financial performance. Put differently, their study supports agency theory in the context of China's capital market. In their study on firms in Chile, Lefort and Urzua (2007) find that independent directors improve corporate governance and ameliorate the agency problem.

The OECD Principles of Corporate Governance and the Higgs Report on Corporate Governance also support greater independence of the board. In the Indian context, Jackling and Johl (2009) observe that improved firm performance is associated with greater board independence.

On the contrary, proponents of stewardship theory opine that independent directors will reduce board's efficiency and alleviate companies' financial achievements (Yermack, 1996; Klein, 1998; Hermalin and Weisbach, 2000; and Caselli and Gatti, 2007).

In the Indian context, Sarkar *et al.* (2006) stress on board quality rather than board independence. Also, Lange and Sahu (2008) and Balasubramanian *et al.* (2010) contend that the proportion of independent directors may not matter much in firm valuation.

¹ The Cadbury Report, titled, *Financial Aspects of Corporate Governance*, is a report of a committee chaired by Adrian Cadbury that sets out recommendations on the arrangement of company boards and accounting systems to mitigate corporate governance risks and failures. The report was published in 1992. The report's recommendations have been adopted in varying degree by the European Union, the US, and the World Bank.

Role of CEO Duality

CEO duality is an important corporate governance mechanism affecting the value of a firm. CEO duality means an executive director performing the dual roles of Chairman and CEO. There are two contrasting theories (stewardship theory and agency theory) about CEO duality. While stewardship theory is in favor of CEO duality, agency theory is against it.

Research evidence supporting stewardship theory shows that when one person is performing both the roles, the director is able to act more efficiently and effectively, thereby improving the value of the firm. This is because the agency cost between the two is eliminated (Alexander *et al.*, 1993). Brickley *et al.* (1997) state that costs of separation are larger than the benefits for most large firms. The additional costs are due to additional compensation and costs associated with informational asymmetries.

In his study on 304 firms of Arab countries, Elsayed (2007) finds that CEO duality attracts positive and significant firm valuation when the corporate performance is low, and further contends that it creates unity across the company's managers and board of directors facilitating the CEO to serve the shareholders even better.

In their study on Chinese companies, Peng *et al.* (2007) find evidence supporting CEO duality. This is in consonance with the studies of Stoeberl and Sherony (1985), Alexander *et al.* (1993) and Brickley *et al.* (1997). These researchers contend that higher performance is attributable to CEO duality. The CEO cannot plan and make the decisions beneficial for the shareholders in the case of differences between the CEO and chairman. Further, Bhagat and Jefferis (2002) justify CEO duality by stating that in this case the interests of shareholders and the CEO can be aligned without much difficulty. This type of benefit to shareholders is wasted in the case of the firms having a non-dual structure of leadership. Jackling and Johl's (2009) study on Indian firms does not support the notion of separating leadership roles of CEO in line with agency theory.

Proponents of agency theory suggest that the roles of the CEO and chairman should be delegated to different people in order to deal effectively with the agency problem of increasing costs and erosion of shareholder's wealth. This method of splitting avoids domination by the CEO and lessens his potential opportunistic behavior (Jensen and Meckling, 1976). In this context, the chairman, along with his board of directors, is more likely to be responsible for certain activities, such as strategic advices, mobilizing external resources, HRM, remuneration and monitoring the CEO (Johnson *et al.*, 1996). Research evidence of Fama and Jensen (1983) also supports the view that CEO and board chair positions need to be separate. White and Ingrassia (1992) confirm the same and further contend that CEO duality leads to entrenchment, thereby eroding the wealth of the shareholders. CEO duality may also lead to suboptimal managerial performance (Brickley *et al.*, 1997). According to Braun and Sharma (2007), when family ownership is low the separation of chair benefits shareholders of such firms. Supporting this conjecture, Mallette and Fowler (1992) also find the negative impact of CEO duality on the performance of firms. Pathan and Skully (2010) in their study on 212 US bank holding companies, covering the period from 1997 to 2004, find that CEO non-duality benefits the firms.

It is generally opined by the researchers that since the board of directors are responsible for the monitoring of management, CEO duality may impair monitoring effectiveness. Vance *et al.* (1983), Lorsch and Maciver (1989), Lipton and Lorsch (1992) and Goyal and Park (2002) provide evidence consistent with this notion. In his research study, Bliss (2011) finds that CEO duality constrains board independence.

The Cadbury Report of 1992, the Sarbanes-Oxley (SOX) Act of 2002 and regulations of various bourses, shareholder groups and the SEC recommend separation of chair. Institutional Shareholders Services (2006) of governance reforms and California Public Employees' Retirement System (CalPERS) argue for separating the positions of CEO and board chair, as they believe that combining these two positions gives too much power to the CEO and increases agency problem. In their study of 500 large Indian firms, Sarkar *et al.* (2006) find that CEO duality increases earnings management.

Research evidences of Brian (1995), Moyer *et al.* (1996), Chen *et al.* (2008) and Ponnu (2008) reveal that CEO duality does not have an impact on the financial performance of firms. In the case of firms listed in Hong Kong Stock Exchange, Lam and Lee (2008) find that single chair benefits non-family firms and dual chair benefits family-controlled firms. Dey *et al.*'s (2009) research evidence shows that firms which have capable CEOs are more likely to combine CEO and board chair roles.

Board Size

Corporate boards have a strategic role to play in the operations of a firm, implying corporate governance needs to be accorded its due (Bhagat and Bolton, 2008). Hart (1995) and Lodi (2000) consider boards as one of the most important internal mechanisms of the corporate governance system for their role in monitoring, investment approvals, developing strategic guidelines, and managing conflict of interests, thereby benefitting shareholders and stakeholders. As a team they form the core aspect of value creation in a firm. The contextual aspects of competition in the economy and managerial team influence board size and its compositions (Boone *et al.*, 2007). However there are diverging views about the board size which are as follows:

Research Studies Favoring Smaller Board Size

Research evidence in support of smaller board sizes is put forward by Lipton and Lorsch (1992), Jensen (1993), Yermack (1996), Eisenberg *et al.* (1998), and Hermalin and Weisbach (2003). Among the studies on emerging markets, Mak and Yuanto (2003) and Haniffa and Hudaib (2006) favor smaller board sizes, while in the Indian context, Garg (2007) and Kaur and Gill (2008) favor smaller boards.

Research Studies Favoring Larger Board Size

Singh and Harianto (1989), Zahra and Pearce (1989), and Dalton and Dalton (2005) show that larger boards have increased board diversity in terms of experience and skills and monitoring will be effective in such companies. In the studies on emerging markets, Abidin *et al.* (2009) and Sulong and Nor (2010) favor large board sizes, while in the Indian context research studies by Dwivedi and Jain (2005), Lange and Sahu (2008), and Jackling and Johl (2009) support large board size.

Findings of Beiner *et al.* (2006), suggest that the size of the board of directors is an independent control mechanism. Further, Mayur and Saravanan (2008) find that board size does not really matter in the financial performance of Indian banks.

From the literature review on board size it is evident that there are variations in the research outcomes till date. However there is a general agreement regarding the key roles of the board—monitoring and advising—across all research studies (Lange and Sahu, 2008).

Methodology

Hypotheses Development

To assess the impact of board structure comprising board independence, CEO duality and board size, on firm values measured by Tobin's Q, the following hypotheses have been set:

H₁: The number of independent directors in the board does not impact firm performance measured by Tobin's Q.

H₂: CEO duality has no impact on firm value.

Data Description and Sample

The study comprises companies listed in BSE 100 index. The sample is representative of the market as it accounts for 70% of market capitalization.

The data for index have been obtained from the information provided in the annual reports. Research literature provides evidence supporting the reliability of information provided in the annual reports (Lang and Lundholm, 1996; Botosan and Plumlee, 2002; and Lundholm and Myers, 2002).

Computation of Financial Data

Financial data have been collected from the CMIE Prowess database and websites for the companies belonging to the BSE 100 index.

Table 1 describes the principal variables used in this study. For robustness check the other variables considered in this study are: log of sales and promoters' holding. Natural log of the board size and board independence were incorporated as control variables (Sulong and Nor, 2010).

Table 1: Variables Description		
Dependent Variables	Proxy for	Description
Tobin's Q	Financial Performance/Firm Value	(Mkt. Cap. + Total Debt)/TA
Independent Variables	Description	
Board Size	Number of directors on the board	
Board Independence	Number of independent directors on the board	
CEO Duality	It takes the value 1 in case the post of CEO and Chairman is held by two persons, 0 otherwise	

Estimation Methods

Multiple regressions using Tobin's *Q* as the dependent variable have been conducted. The first set of regressions relate to CEO duality and board independence. This comprises cross-sectional regressions for the years 2007-08 and 2008-09. To get a better inference, panel data have been used to perform pooled, fixed and random effect regressions supplemented by Hausman test and Breusch-Pagan test. The second set comprises spline regressions applied for ascertaining the range of board size rather than generalizing the preference for larger or smaller board size.

Results and Discussion

Tables 2 and 3 present the descriptive statistics of the variables used in the multiple regressions for the years 2007-08 and 2008-09 respectively. Tables 4 and 5 report the correlation matrix of Tobin's *Q* and other independent variables used in the multiple regression for the years 2007-08 and 2008-09 respectively.

	Mean	SD	N
Tobin's <i>Q</i>	2.95	2.032	95
<i>CEO Duality</i>	0.42	0.496	95
<i>ADR Marks</i>	0.61	0.490	95
<i>Promoters Holding (%)</i>	50.34	22.035	95
<i>Margin</i>	0.74	1.643	95
<i>ln assets</i>	9.55	1.337	95
<i>ln sales</i>	8.77	1.414	95
<i>ln brd size</i>	2.34	0.322	95
<i>ln brd ind</i>	1.60	0.386	95

Note: ADR Marks is a dummy variable that takes value '1' for companies which have issued American Depository Receipts/Global Depository Receipts, '0' otherwise.

	Mean	SD	N
Tobin's <i>Q</i>	1.809	1.352	100
<i>CEO Duality</i>	0.430	0.498	100
<i>ADR Marks</i>	0.610	0.490	100
<i>Promoters Holding (%)</i>	51.046	22.051	100
<i>Margin</i>	0.355	0.278	100
<i>ln assets</i>	9.737	1.365	100
<i>ln sales</i>	8.900	1.490	100
<i>ln brd siz</i>	2.357	0.326	100
<i>ln brd ind</i>	1.687	0.362	100

Variables	Tobin's Q	CEO Duality	ADR Marks	Promoters Holding (%)	Margin	In assets	In sales	In brd siz	In brd ind	
Tobin's Q	1.000									
CEO Duality	0.087	1.000								
ADR Marks	-0.142	-0.150	1.000							
Promoters Holding (%)	0.256	0.242	-0.444	1.000						
Margin	-0.061	-0.014	-0.012	0.159	1.000					
In assets	-0.506	0.150	-0.072	0.060	0.075	1.000				
In sales	-0.286	0.156	-0.132	0.060	0.232	0.652	1.000			
In brd siz	-0.313	-0.204	-0.126	-0.171	-0.031	0.359	0.388	1.000		
In brd ind	-0.217	-0.145	0.157	-0.289	-0.137	0.234	0.206	0.618	1.000	
Model Summary										
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R ² Change	F Change	df1	df2	Sig. F Change	
1	0.608	0.369	0.310	1.688	0.369	6.289	8	86	0.000	1.948

Variables	Tobin's Q	CEO Duality	ADR Marks	Promoters Holding (%)	Margin	In assets	In sales	In brd size	In brd ind
Tobin's Q	1.000								
CEO Duality	0.115	1.000							
ADR Marks	-0.270	-0.217	1.000						
Promoters Holding (%)	0.225	0.251	-0.470	1.000					
Margin	-0.146	0.000	-0.212	0.097	1.000				
In assets	-0.361	0.187	-0.125	0.055	0.301	1.000			
In sales	-0.032	0.218	-0.111	0.011	-0.328	0.670	1.000		
In brd siz	-0.104	0.045	-0.214	-0.134	-0.051	0.276	0.296	1.000	
In brd ind	-0.118	0.039	0.017	-0.153	-0.028	0.194	0.179	0.770	1.000

Table 5 (Cont.)

Model Summary										
Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	Change Statistics					Durbin-Watson
					R ² Change	F Change	df1	df2	Sig. F Change	
1	0.600	0.360	0.304	1.1283	0.360	6.393	8	91	0.000	2.384

Table 6 reports the regression results of Tobin's Q on log of board size, board independence and CEO duality variables. The regression also includes variables like log of sales, log of assets, margin and promoter's holding.

The coefficients on CEO duality and board independence are positive, but not significant. Further, the coefficient of board size is negative, but not significant.

Table 7 also reports the regression results of Tobin's Q on log of board size, board independence and CEO duality variables. The regression also includes variables like log of sales, log of assets, margin and promoter's holding.

The coefficients on CEO duality and board independence are positive, but not significant. Further, the coefficient of board size is negative, but not significant.

Table 6: Regression Results, 2007-08										
Variable	Unstandardized Coefficients		Standardized Coefficients	t-Value	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-Order	Partial	Part	Tolerance	VIF
Constant	5.327	1.315		4.052	0.000					
CEO Duality	0.197	0.243	0.073	0.810	0.420	0.115	0.085	0.068	0.877	1.141
ADR Marks	-0.543	0.310	-0.197	-1.754	0.083	-0.270	-0.181	-0.147	0.558	1.791
Promoters Holding (%)	0.008	0.006	0.123	1.213	0.228	0.225	0.126	0.102	0.684	1.462
Margin	1.378	0.689	0.284	1.999	0.049	-0.146	0.205	0.168	0.350	2.860
ln assets	-0.901	0.174	-0.909	-5.186	0.000	-0.361	-0.478	-0.435	0.229	4.369
ln sales	0.590	0.161	0.651	3.655	0.000	-0.032	0.358	0.307	0.222	4.504
ln brd siz	-0.361	0.623	-0.087	-0.579	0.564	-0.104	-0.061	-0.049	0.310	3.226
ln brd ind	0.132	0.519	0.035	0.253	0.801	-0.118	0.027	0.021	0.363	2.752

Model	Unstandardized Coefficients		Standardized Coefficients	t-Value	Sig.	Correlations			Collinearity Statistics	
	B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
Constant	10.529	1.802		5.845	0.000					
<i>CEO Duality</i>	0.248	0.384	0.060	0.645	0.521	0.087	0.069	0.055	0.834	1.199
<i>ADR Marks</i>	-0.352	0.422	-0.085	-0.834	0.407	-0.142	-0.090	-0.071	0.707	1.415
<i>Promoters Holding (%)</i>	0.022	0.009	0.236	2.302	0.024	0.256	0.241	0.197	0.700	1.430
<i>Margin</i>	-0.097	0.113	-0.078	-0.854	0.396	-0.061	-0.092	-0.073	0.875	1.143
<i>ln assets</i>	-0.852	0.177	-0.561	-4.829	0.000	-0.506	-0.462	-0.414	0.544	1.838
<i>ln sales</i>	0.159	0.175	0.111	0.907	0.367	-0.286	0.097	0.078	0.493	2.028
<i>ln brd siz</i>	-0.994	0.793	-0.158	-1.252	0.214	-0.313	-0.134	-0.107	0.463	2.159
<i>ln brd ind</i>	0.358	0.612	0.068	0.585	0.560	-0.217	0.063	0.050	0.542	1.844

Panel Data

Next, the results of panel data regressions are presented covering the period of five years, 2004-2008. Table 8 reports the pooled regression results of Tobin's Q on log of board size, board independence and CEO duality variables. The regressions also include variables like log of sales, log of assets, margin and promoter's holding.

From Table 8, it can be seen that the coefficient of CEO duality is positive and significant at 10% level, while that of board independence is also positive and significant at 5% level. The other coefficients such as those of *margin* and *ln sales* are positive and significant at 10% level. The coefficients of *ln assets* and *log brd size* are negative and significant at 1% and 5% levels respectively. To have a better inference about these parameters, other regressions such as fixed effect and random effect have been run.

Fixed-Effects Regression

Table 9 reports the fixed-effects (within) regression results of Tobin's Q on log of board size, board independence and CEO duality variables. The regression also includes variables like log of sales, log of assets, margin and promoter's holding. The coefficients of CEO duality, board size and board independence are all negative, but not significant.

Random-Effects GLS Regression

Table 10 reports the random-effects GLS regression results of Tobin's Q on log of board size, board independence and CEO duality variables. The regression also includes variables like log of sales, log of assets, margin and promoter's holding.

The coefficients of CEO duality and board independence are positive but insignificant, while that of board size is negative and insignificant.

From the cross-sectional and panel data regressions, it can be inferred that the aspects of CEO duality and board independence do not influence firm valuations. Hence, both hypotheses are accepted.

Ind. Variable	Coefficient	Std. Err.	$P > t$	95% Conf. Interval	
<i>prho</i>	0.008305	0.00622	0.183	-0.00392	0.020531
<i>Margin</i>	3.15612	0.732839	0	1.715708	4.596531
<i>ln assets</i>	-1.52302	0.172393	0	-1.86186	-1.18418
<i>ln sales</i>	0.769047	0.163804	0	0.447086	1.091008
<i>CEO Duality</i>	0.420306	0.242595	0.084	-0.05652	0.897132
<i>ADR Marks</i>	-0.47509	0.275621	0.085	-1.01683	0.066648
<i>ln brd size</i>	-2.51597	1.106906	0.024	-4.69161	-0.34032
<i>ln brd ind</i>	1.541642	0.782176	0.049	0.004258	3.079026
<i>_cons</i>	10.40682	1.125738	0	8.194157	12.61948
Number of Obs.	437				
<i>F(8, 428)</i>	20.26				
Prob. > <i>F</i>	0				
<i>R</i> ²	0.2747				

Ind. Variable	Coefficient	Std. Err.	<i>t</i> -Value	$P > t$	95% Conf. Level
<i>prho</i>	0.020739	0.030200	0.69	0.493	-0.03867
<i>Margin</i>	1.615180	1.749003	0.92	0.356	-1.82531
<i>ln assets</i>	-1.604340	0.416945	-3.85	0	-2.42451
<i>ln sales</i>	0.528949	0.376207	1.41	0.161	-0.21109
<i>CEO Duality</i>	-0.158470	0.557052	-0.28	0.776	-1.25425
<i>ADR Marks</i>	-1.084800	0.576239	-1.88	0.061	-2.21833

Table 9 (Cont.)

Ind. Variable	Coefficient.	Std. Err.	t-Value	P > t	95% Conf. Level
ln <i>brd size</i>	-0.49958	1.860175	-0.27	0.788	-4.158760
ln <i>brd ind</i>	-0.61895	1.055536	-0.59	0.558	-2.695310
_cons	13.23167	2.899830	4.56	0	7.527377
R ² (Within)	0.1075				
R ² (Between)	0.3407				
R ² (Overall)	0.2345				
Obs. per Group (Min.)	2				
Obs. per Group (Avg.)	4.6				
Obs. per Group (Max.)	5				
F-test that all $u_i = 0$: F(95, 333) = 3.15	Prob. > F = 0	Prob. > F = 0.0000			

Table 10: Random-Effects GLS Regression of the Panel Data for the Period 2004-2008 with Tobin's Q as the Dependent Variable

Ind. Variable	Coefficient	Std. Err.	z	P > z	95% Conf. Interval	
<i>prho</i>	0.014105	0.007691	1.83	0.067	-0.000970	0.029180
<i>Margin</i>	2.930459	0.838723	3.49	0	1.286591	4.574326
ln <i>assets</i>	-1.493670	0.204665	-7.30	0	-1.894810	-1.092540
ln <i>sales</i>	0.655842	0.188640	3.48	0.001	0.286115	1.025569
<i>CEO Duality</i>	0.396663	0.309230	1.28	0.2	-0.209420	1.002741
ln <i>brd ind</i>	0.434180	0.839551	0.52	0.605	-1.211310	2.079670
ln <i>brd size</i>	-1.314450	1.265483	-1.04	0.299	-3.794750	1.165855
_cons	10.171860	1.324668	7.68	0	7.575561	12.768160
R ² (Within)	0.0863	Obs. per Group (Min.)	2			
R ² (Between)	0.3952	Obs. per Group (Avg.)	4.6			
R ² (Overall)	0.2642	Obs. per Group (Max.)	5			
Wald $\chi^2(7)$	92.12	Prob. > χ^2	0			
Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity						
$\chi^2(1) = 576.80$	Prob. > $\chi^2 = 0.0000$					

Regressions Analysis Related to Board Size

Besides independence and CEO duality, board size also has an important role to play in the corporate governance of firms. In line with this concept, the following additional regressions have been conducted.

Table 11 reports the results of spline regression (for brevity in only one table, i.e., Table 11, results are given in detail, while summary of the other spline regressions is presented in Table 12). This process facilitates optimizing the board size.

It is clear from Table 11 that the coefficient of *brd1* is negative, while that for *brd2* is positive and significant. In spline regression, optimum board size range is considered up to a point where *brd2* turns negative.

The first column of Table 12 indicates the nodal point of the board sizes. It is observed from Table 12 that the values of *brd2* are turning positive in the case of board sizes 9, 10, 11 and 12. In the cases of board sizes 13, 14, 15, 16 and 17, although the *brd2* values are positive, they are not significant. This leads to an inference of positive relationship between larger board sizes and firm values measured by Tobin's *Q*. This concept of drawing inference based on the range is derived from the studies by Jensen (2001) and Brown and Caylor (2006), which makes an additional contribution to our study.

For effective control by CEO, Jensen (2001) optimizes around seven or eight members. Brown and Caylor (2006) show that board sizes ranging between 6 to 15 enjoy higher returns on equity and higher net profit margins than do firms with other board sizes.

Table 11: Spline Regression				
Variables	Coef.	Std. Err.	t-Value	$P > t $
<i>brd1</i>	-0.3219116	0.1839336	-1.75	0.081
<i>brd2</i>	0.1157623	0.0502490	2.30	0.022
<i>Spline1</i>	8.1688330	0.8894316	9.18	0.000
<i>Spline2</i>	7.6599670	0.7897024	9.70	0.000
<i>ln sales</i>	0.7787534	0.1571878	4.95	0.000
<i>ln assets</i>	-1.4877210	0.1636140	-9.09	0.000
<i>Margin</i>	3.3187050	0.6887050	4.82	0.000
<i>prho</i>	0.0112109	0.0053525	2.09	0.037
Source	SS	df	MS	Number of Obs. = 442 $F(7, 434) = 24.62$ Prob. > $F = 0.0000$ $R^2 = 0.2842$ Adj. $R^2 = 0.2727$ Root MSE = 2.3033
Model	914.232555	7	130.604651	
Residual	2302.49346	434	5.3052844	
Total	3216.72602	441	7.2941633	
Note: Dependent Variable: Tobin's <i>Q</i> , Independent Variables: <i>brd1</i> , <i>brd2</i> , <i>spline1</i> , <i>spline2</i> <i>ln sales</i> , <i>ln assets</i> , <i>margin</i> , and <i>prho</i> .				

Table 12: Summary of Spline Regressions					
	Variable	Coefficient	Std. Error	t-Value	p-Value
4	<i>brd1</i>	-4.2561000	2.489433	-1.71	0.088
4	<i>brd2</i>	4.2378860	2.492197	1.70*	0.090
5	<i>brd1</i>	5.5428150	2.652392	2.09	0.037
5	<i>brd2</i>	-5.5477040	2.651008	-2.09	0.037
6	<i>brd1</i>	-0.1019607	1.403268	-0.07	0.942
6	<i>brd2</i>	0.0865607	1.403173	0.06	0.951
7	<i>brd1</i>	1.2872800	0.5202689	2.47	0.014
7	<i>brd2</i>	-1.2321360	0.5220753	-2.36	0.019
8	<i>brd1</i>	-0.1318137	0.3360107	-0.39	0.695
8	<i>brd2</i>	0.2192995	0.3389902	0.65	0.518
9	<i>brd1</i>	-0.4962841	0.2317652	-2.14	0.033
9	<i>brd2</i>	0.5993705	0.2367721	2.53**	0.012
10	<i>brd1</i>	-0.5184929	0.1623232	-3.19	0.002
10	<i>brd2</i>	0.1084907	0.0592973	1.83**	0.068
11	<i>brd1</i>	-0.3546372	0.1182404	-3.00	0.003
11	<i>brd2</i>	0.1511744	0.0689543	2.19**	0.029
12	<i>brd1</i>	-0.3202002	0.0958608	-3.34	0.001
12	<i>brd2</i>	0.1396251	0.0822769	1.70*	0.091
13	<i>brd1</i>	-0.2488642	0.0755210	-3.30	0.001
13	<i>brd2</i>	0.0768971	0.1068567	0.72	0.472
14	<i>brd1</i>	-0.1876835	0.0694936	-2.70	0.007
14	<i>brd2</i>	0.0809501	0.1286478	0.63	0.530
15	<i>brd1</i>	-0.1473636	0.0602892	-2.44	0.015
15	<i>brd2</i>	0.0394202	0.1796787	0.22	0.826
16	<i>brd1</i>	-0.0767691	0.0562385	-1.37	0.173
16	<i>brd2</i>	0.0863632	0.2148469	0.40	0.688
17	<i>brd1</i>	-0.0427442	0.0509775	-0.84	0.402
17	<i>brd2</i>	0.0863698	0.3151505	0.27	0.784
18	<i>brd1</i>	-0.0416011	0.0498181	-0.84	0.404
18	<i>brd2</i>	-0.0543392	0.3967292	-0.14	0.891
19	<i>brd1</i>	-0.0343848	0.0482059	-0.71	0.476
19	<i>brd2</i>	-0.2670923	0.5618088	-0.48	0.635

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

Recent regulations across the world have laid emphasis on the formation of separate committees such as audit committee, and remuneration committee, comprising board members. If due diligence is to be effectively exercised, then overlapping of roles is to be minimized which necessitates larger board size.

Conclusion

The study indicates that in the Indian context, the firms with large board size have better valuation. Perhaps the justification needing a larger board size in the Indian context is that SEBI's Clause 49 of the listing agreement has both mandatory and voluntary requirements for the formation of different committees (audit committee, nomination committee, etc.) and larger board size may minimize the overlapping of functions. This is in consonance with the findings of the study by Brown and Caylor (2006) which recommends board sizes ranging from 6 to 15, Sulong and Nor (2010) for Malaysia, and Jackling and Johl (2009) for India. Mayur and Saravanan (2008) did not find any evidence supporting the relationship between board size and firm performance.

In the Indian context, CEO duality does not matter much. Overall, the results are not conclusive, implying that boards whose chairman is not a CEO may not perform better than those boards whose chairman is a CEO. This result is consistent with the findings of Jackling and Johl (2009) and Elsayed (2007).

Regarding board independence, the findings of this study are not in line with the findings of Jackling and Johl (2009) who find that independent directors and firm valuations are positively and significantly related. The present study indicates that relationship between board independence and firm performance is inconclusive. This finding is in line with the findings of Kaur and Gill (2008) and Lange and Sahu (2008). Similar views are echoed by Balasubramanian *et al.* (2010), who state that the overall compliance regarding board independence may not produce valuation gains. □

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