

Corporate Governance Internal Board Mechanisms and Firm Performance: A Panel Level Analysis in Emerging Market

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Abstract

This paper seeks to examine the relationship between internal corporate governance mechanisms and firm performance of NSE listed Companies. Firm performance has been measured using Tobin's Q and MBVR as market-based measures and ROA and ROE as accounting-based measures. Econometric Analysis is performed using Fixed Effect with-in and Least Square Dummy Variable model, Random effect model and Feasible Generalized Least Square model on a panel of 178 non-financial NSE listed firms for a period of eight years from 2011-2018. The results concluded that Board parameters are the important internal corporate governance mechanisms impacting firm performance in Indian context. Board size, Board Composition, Board independence and CEO Duality have a significant negative impact on firm performance measures; on the other hand, Chairman Identity has a significant positive impact on firm performance. However, Board Activity has no impact on firm performance. The results provided a comprehensive analysis of various board parameters based on the various theories of corporate governance viz. agency, stewardship, stakeholder and resource dependency theory backed by the extensive empirical literature on corporate governance and firm performance studies which would be great help for researchers and academicians.

JEL Classification: G32, G34

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1. INTRODUCTION

Corporate Governance issues gained attention of governing bodies as well as public in large because of the apparent importance of economic and social health of the organization especially after the corporate scandals of the big giants Enron, WorldCom, One.Tel, Tyco, Satyam and others in the recent times. This eventually has led to the need for corporate governance mechanisms in recent years. The fundamental insight for the current corporate governance framework was found in the classical work of Berle and Means (1932) who argued that the separation of ownership and control reduces management's incentives to maximize the corporate efficiency of modern corporations resulting in agency problem. Corporate Governance evolved as a mechanism to deal with the agency problem and has been defined by Shleifer and Vishny (1997) as, "Corporate governance deals with the ways in which the suppliers of finance to corporations assure themselves of getting a return on their investments"

Corporate governance standards and practices evolved over the years in India are in line with the best practice followed in US and UK. Based on the principles of agency theory, these standards and practices primarily focused on enhancing firm performance and thereby shareholder's wealth.

There are large numbers of studies on different aspects of corporate governance in developed markets (Jensen and Meckling, 1976; Perace and Zahra, 1992; Daily and Dalton, 1992; Jensen, 1993, Yermack, 1996; Hermalin and Weisbach 2001). However the studies in emerging markets are sparse. Emerging markets have different characteristics such as different political, social and economic, legal environment which limits the application of empirical findings of studies pertaining to developed markets in developing markets.

In the present study the relationship between the Corporate Governance Board Parameters and Firm Performance of 178 non-financial companies listed in NSE CNX 200 index is analysed using panel data of eight years from 2011-2018. Board parameters are seen as the most important internal corporate governance mechanism as board of directors is responsible for monitoring and advising the top management in performing their responsibility to protect the shareholders' interest. Board of

directors occupies a unique position in the corporate form of business organization. It is mandated by law to have board of directors in order to govern the organisation be it large or small. The Cadbury Committee (1992) also placed board of directors at the centre stage of corporate governance system.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Board Size and Firm performance

Board size refers to the total number of directors in the board of directors of a firm comprising of executive (insiders) and non-executive (outsiders) directors. The relationship between board size and firm performance is supported by different corporate governance theories. Agency Theory and Resource Dependency Theory supports board with large number of directors. On the other hand stewardship theory supports smaller board size for the effective management.

The perusal of the empirical studies showcased that the relationship between board size and firm performance has mixed results. Lipton and Lorsh (1992) argued the preference of smaller board size and recommended limiting the number of directors to seven or eight. Jensen (1993) believed that when board size goes beyond a certain number the directors are less likely to perform their function due to coordination problem and rather become difficult for CEO to control. Yermack (1996) provided empirical evidence for a negative relationship between board size and firm performance for a sample of US firms. Similarly for a sample of 230 Malaysian firms, Mak and Kusnadi (2005) find a negative and significant impact of board size on firm performance measured by Tobin's Q. Guest (2009) found that the negative relationship is not stronger for large firms in UK, which tend to have larger boards. A number of other researchers also documented a negative relationship (Kota and Tomar, 2010; Ghosh, 2006; Garg, 2007; Guo and Kga, 2012). Contrary to this there are strong evidences of positive relationship between board size and firm performance in the literature (Jackling and Johl, 2009; Pearce and Zahra, 1992; Katuria and Dash, 2009; Sahu and Manna, 2013). Pearce & Zahra (1992) believed that larger board size enhances firm's ability to understand and respond to diverse stakeholders and hence increases firm performance. Anderson, Mansi and Reeb (2004) recommended larger board as they argued that institutional investors believe that firms with larger board size have more monitored financial accounting structure which in turn reduces their cost of borrowing. Bennedsen, Kongsted and Nielsen (2008) in Denmark found that there is no effect on firm performance when the board size was varied at levels below six directors.

Based on the extensive literature, the following hypothesis is thus proposed:

H₁: Board Size has no significant impact on the performance of companies listed in India.

2.2 Board Composition and Firm performance

Board composition measures the proportion of non-executive directors to the total number of directors in the firm. Whether board composition has a positive and negative impact on firm performance has been a subject of significant study. Agency theory proposes positive influence as non-executive directors possess specialist skills which help management in strategic planning and they also bring transparency and objectivity in the decision making. Rashid, Zoysa, Lodh and Rudkin (2010) analysed a panel data set of Malaysian companies and found that firms with more number of non-executive directors on their board results in better performance. Peng (2004) also concluded that outside directors are able to make a difference in the performance of companies for a sample of Chinese firms. Some researchers (Kota and Tomar, 2010; Hermalin and Weisbach, 1991; Agarwal and Knoeber, 1996) are of the opinion that there cannot be a positive influence of board composition on firm performance as non-executive directors lacks specialist knowledge about the day-to-day functioning of the business operations. Guest (2009) concluded that board composition has a significant negative influence on ROA, Tobin's Q and share returns analysed using OLS, Fixed Effect and GMM model. McIntyre, Murphy and Mitchell (2007) found that firms with high average proportion of outside directors results in decreased levels of performance. Baysinger & Butler (1985) empirically supported and advocated a mix of insiders and outsiders on the board to enhance firm performance. They concluded that before deciding on the issue of non-executive directors it is sensible to assess the firm's profile and roles of the expected directors.

The following hypothesis is thus framed based on the impact of board composition on firm performance:

H₂: Board Composition has no significant impact on the performance of companies listed in India.

2.3 Board Independence and Firm Performance

Proportion of Independent directors to the total directors is referred as board independence. Provisions of Clause 49, made it mandatory that at least one third of the board should comprise of independent directors if the Chairman of the board is a non-executive director, if he is an executive director then at least half of the board should comprise of independent directors.

Prior literature on board independence and firm performance studies could not find any clear relationship between the two. Kumar and Singh (2012) examined the efficacy of outside directors on the corporate boards of 157 non-financial Indian companies and found that independent directors have a positive but insignificant impact on firm performance. It was concluded that the companies with a greater proportion of independent directors have more market value. Thus independent directors require a greater representation on board in lieu of other non-executive outside directors. Contrary to this, in a similar study of listed firms in India, Dey and Chauhan (2009) found that board independence has an insignificant impact on firm performance across all categories of companies. Besides, Agrawal and Knoeber (1996) and Bhagat and Black (1999) find there is a negative relationship between the proportion of independent directors and a company's performance when measured using Tobin's Q. Hermalin and Weisbach (1991) found that the proportion of independent directors tended to increase when company's performance is poor. Lehn, Patro and Zhao (2009) argued that larger firms require more outside independent directors because the large size of the board gives rise to significant agency problems. In a similar line, Coles, McWilliams and Sen (2001) proposed that more diversified firms with wider operations, require more of independent directors to monitor the operations.

In light of the mixed evidence in support of relationship between Board Independence and firm performance, the hypothesis is thus framed as:

H₃: Board Independence has no significant impact on the performance of companies listed in India.

2.4 Board Activity and Firm Performance

Board activity is measured in terms of frequency of board meetings i.e. the number of board meetings in a financial year. Companies in India are required to hold at least one meeting in a quarter i.e. a minimum of four meetings in a year.

Board meeting frequency is considered as an important determinant of board activity affecting the firm performance (Vafeas, 1999). The nature of relationship between board meeting frequency and firm performance is however ambiguous in literature (Lipton and Lorsh, 1992; Jensen, 1993).

One proposition is that since frequency of board meetings measures the intensity of board activities and the effectiveness of their monitoring, thus higher the number of board meetings, higher will be the performance. A higher frequency of board meetings results in higher quality of managerial monitoring and thereby increases the firm performance (Ntim, 2009). Further, frequent meetings provide informal side-line interactions helping in strengthening the relationship among directors (Lipton and Lorsch 1992). Sahu and Manna (2013) concluded that more number of meetings helping in prompt decision and reducing inconsistencies in opinion of the board members. An opposing view is that board meetings more often serve as fire-fighting device rather than providing directions for future course of action thus are not necessarily beneficial to shareholders. Executive directors who often do not interact with other fail to discuss and exchange their ideas. Vafeas (1999) argues that the time directors spend together in the board meetings is not used for the meaningful exchange of ideas among themselves. Instead most of the meeting time is usually absorbed in routine tasks of the meetings, thereby reducing the time of outside directors which could be otherwise used in effective monitoring of the management (Jackling and Johl, 2009). Vafeas (1999) also highlighted that Board meetings are costly in terms of managerial time, travel expenses, refreshments and directors' meeting fees which can negatively influence corporate performance. Jensen (1993) suggested that the in order

to be more profitable, corporate boards must organize board meetings responsive to the specific challenges rather than organizing frequent board meetings.

The following hypothesis is thus proposed for analyzing the relationship between Board Activity and firm performance:

H₄: Board Activity has no significant impact on the performance of companies listed in India.

2.5 CEO duality and Firm Performance

CEO duality refers to the board leadership structure in terms of whether the CEO and the chairman is the same person or not. The existing literature on CEO Duality and firm performance relationship found that both CEO Duality and non-duality perspectives have related benefits and costs. Jensen (1993) favoured the separation of CEO and chairman role to increase board independence from management resulting in better performance due to better monitoring in line with agency theory. Stewardship theory of corporate governance however favoured CEO Duality in order to unify the roles of Chairman and CEO and to remove ambiguity from firm leadership. Empirical literature also offers differing views in this regard. Some studies (Kiel and Nicholson, 2003; Pi and Timme, 1993; Lipton and Lorsch, 1992; Shleifer and Vishny, 1997) criticize the role dual role of CEO, as centralized leadership authority may lead to management's domination of the board impacting firm performance negatively. On the other hand various researchers (Donaldson and Davis, 1991; Kota and Tomar, 2010; Peng et al., 2010; Lin, 2005) claimed that CEO duality facilitates greater understanding and knowledge. Vafeas and Theodorou (1998) proposed that CEO duality will help in reducing the costs pertaining to extra managerial remuneration. There are several other studies that found the relationship between CEO Duality and firm performance insignificant (Daily and Dalton, 1992; Baliga, et al., 1996).

Given the evidence of the impact of CEO duality on firm performance, the following hypothesis is thus proposed:

H₅: CEO Duality Size has no significant impact on the performance of companies listed in India.

2.6 Chairman Identity and Firm Performance

Chairman Identity refers to whether the chairman is executive or non-executive director. The need to evaluate the Chairman identity is that according to the provisions of Clause 49 of listing agreement, at least one third of the board should comprise of independent directors if the Chairman of the board is a non-executive director, if he is an executive director then at least half of the board should comprise of independent directors.

The relationship between Chairman Identity and firm performance is not evaluated much in the existing literature. In Indian context, Sahu and Manna (2013) reported a significant negative relationship between chairman's identity and firm performance when measured various performance indicators. Saat, Karbhari, Heravi and Nassir (2011) also found the relationship negative and significant. Mura (2007) and Peng (2004) however found the relationship positive and significant. The following hypothesis is framed after reviewing the limited literature:

H₆: Chairman Identity has no significant impact on the performance of companies listed in India.

3. OBJECTIVES AND METHODOLOGY

3.1 Objectives:

The main objectives of the study are:

- To identify the nature of internal corporate governance mechanisms of NSE listed Indian companies.
- To analyze the impact of such corporate governance mechanisms on the performance of NSE listed Indian companies.

3.2 Methodology

3.2.1 Variables

Dependent Variables: The performance of the firm is considered as dependent variable. It is measured using the Market based performance measures-Tobin's Q and Market to book value ratio (MBVR) as well as the Accounting based measures-Return on Assets (ROA) and Return on Equity

(ROE). The formula used for Tobin's Q in the present study is a modified version of Tobin's Q. The modifications are incorporated to make it compatible with the manner of reporting in the Indian context. Accounting based measures are the indicator of the firm's profitability.

Control Variables: In order to analyze the relationship between internal corporate governance and firm performance, the paper employed several other variables that may impact the relationship. The Control Variables include Risk, Firm Size, Firm Age, Firm Growth, Leverage, Advertising Intensity, Research Intensity, Industry Dummies and Year Dummies. Since the sample companies belong to 15 different industries, 14 Industry Dummies were used to avoid multicollinearity trap. Similarly 7 year dummies were used for 8 years.

Table 1 below provides the details of the variables used in the study:

TABLE 1: Description of Variables

Variable	Symbol	Description
Independent Variables		
Board Size	BS	Total number of directors on the Board
Board Composition	BC	Proportion of non-executive directors in the board i.e. Non-executive directors /total directors
Board Independence	BI	Proportion of Independent directors in the board i.e. Independent directors/total directors
Board Activity	BA	Number of Board meetings in a financial year
CEO Duality	Dual	Dummy Variable showing 1 if Chairman is also the CEO, 0 if chairman doesnot hold the position of CEO
Chairman Identity	CI	Dummy Variable showing 1 if Chairman is Non-executive, 0 otherwise
Performance Measures (Dependent Variables)		
<i>Market Based Measures</i>		
Tobin's Q	Tobin's Q	Market value of equity(Market Capitalization) + Book value of preference shares and borrowings divided by total assets
Market-to-Book Value Ratio	MBVR	Ratio of Market value of equity to Book value of equity
<i>Accounting Based Measures</i>		
Return on Assets	ROA	Ratio of profit before depreciation, interest, tax and amortization (PBDITA) to Total Assets
Return on Equity	ROE	Ratio of profit before depreciation, interest, tax and amortization (PBDITA) to Shareholders' Equity
Control Variables		
Firm Size	FS	Natural logarithm of total sales
Firm Age	FA	Natural Logarithm of difference between the financial year and the incorporation year
Leverage	Lev	Ratio of total debt to shareholders funds
Firm Growth	FG	Ratio of difference between current year sales and previous year sales to previous year sales
Research Intensity	RI	Ratio of Research and development expenditure to total sales
Advertising Intensity	AI	Ratio of Advertising expenditure to total sales
Risk	Risk	Value of Beta of the firm
Industry Dummies	Ind_dummies	Dummy variable carrying value 1 for a particular industry and 0 otherwise
Year Dummies	Year_dummies	Dummy variable carrying value 1 for the respective year and 0 otherwise

3.2.2 Sample and Data

The sample of the present study corresponds to NSE CNX 200 Companies. During the period from 2011-2018, the composition of the Index has undergone changes. Thus, we have added 45 companies that were changed in the NSE CNX Index during the period. From the 245 companies, thus selected, all the banking and financial companies were excluded being governed by The Banking Regulations Act, the number of companies thus reduced to 205. Also the companies which were merged during the period from 2011-2018 were excluded. Further 23 companies were excluded due to non-availability of data with respect to corporate governance reports of the companies or the financial data. These screening criteria thus reduced the final sample consisting of 178 companies belonging to different industries. The companies are divided into 15 different industries.

3.2.3 Statistical Articulation

The study employed the panel data of 178 companies for 8 years. The analysis of Data is performed using Panel Data Regression.

A typical panel data regression equation is as follows:

$$y_{it} = \beta_0 + \beta_1 x_{it1} + \beta_2 x_{it2} + \dots + \beta_k x_{itk} + \mu_{it}$$

Where

Y is the dependent variable

i denotes the number of firms and t denotes the time period

x_1, x_2, \dots, x_k are the independent and control variables.

β_0 is the constant term (intercept parameter of the regression)

$\beta_1, \beta_2, \dots, \beta_k$ are the slope parameters that represent the partial effects of x_i on y keeping all other factors constant

μ represents the unobserved factors that change over time and affect y.

Multiple regression analysis is performed using Panel Data Models-Fixed Effect With-in, Least Square Dummy Variable and Random Effect to capture the effects of firm and time specific heterogeneities. Hausman Test is used to find the appropriate model between the Fixed Effect and Random Effect Model. The null hypothesis of Hausman Test is that the individual effects are uncorrelated with the other regressors. If null hypothesis is rejected, a fixed effect model is considered appropriate against Random effect otherwise Random effect model is preferred. The present study also employed FGLS regression to analyze the impact of board corporate governance on firm performance. The study also examined the specification tests (testing for multicollinearity, heteroskedasticity and autocorrelation) that might impact the standard errors and biases the results.

STATA 14 Version has been used for Analysis.

4. ANALYSIS AND RESULTS

4.3 Regression Analysis

4.3.1 Panel Model Tests

In order to analyse the relationship between the Corporate Governance variables and Firm Performance this study used panel data. In panel data analysis certain econometric issues are needed to be addressed. The results of F test for Fixed Effect for goodness of fit between the Fixed Effect Models and Pooled Ordinary Least Square Model (OLS) rejects the null hypothesis for all the dependent variable concluding that there is significant fixed effect and therefore Fixed Effect model is better than Pooled OLS. Also the results of Breush Pagan Lagrange Multiplier Test for Random Effect reject the null hypothesis of poolability for all dependent variable used and conclude that Random Effect Model is preferred over Pooled OLS. However in order to choose between the Fixed Effect and Random Effect Model, the study employed Hausman Test. Hausman Test rejects the null hypothesis for all variables except for Market to Book Value Ratio (MBVR). Table-2 shows the results of F-test, Breush-Pagan Test and Hausman Test.

TABLE 2: Panel Model Tests

Specification Tests	F test For Fixed Effect		Breusch-Pagan Lagrange Multiplier (LM) Test for Random Effects		Hausman Test	
	F Stats	p-value	Chi bar sq	p-value	Chi square	p-value
Tobin's Q	6.94	0.0000***	339.12	0.0000***	220.61	0.0000***
MBVR	5.73	0.0000***	99.04	0.0000***	398.62	0.0000***
ROA	9.66	0.0000***	786.87	0.0000***	112.93	0.0000***
ROE	3.56	0.0000***	159.11	0.0000***	47.85	0.0017***

*** Statistically Significant at 1% Level

4.3.2 Specification Tests

4.3.2.1 Multicollinearity Test

Multicollinearity has been checked using the Variance Inflation factor (VIF). Table 3 shows the VIF statistics. VIF values are found very less with the mean VIF of 1.46 for all independent and control variable. This signifies that there is no multicollinearity among the variables since as a rule of thumb VIF value less than 10 ignore the presence of multicollinearity.

TABLE 3: Collinearity Statistics

Variable	VIF	Tolerance
BS	1.57	0.6379
BC	1.75	0.5701
BI	1.5	0.6668
BA	1.38	0.7264
Dual	1.17	0.8547
CI	1.49	0.6707
FS	2.49	0.4009
FA	1.5	0.6652
Lev	1.04	0.9581
FG	1.82	0.5487
RI	1.17	0.8577
AI	1.21	0.8273
Risk	1.55	0.6436
Mean VIF	1.467647	

4.3.2.2 Heteroskedasticity Tests

Heteroskedasticity tests have also been employed to detect the presence of heteroskedasticity in the panel data as these biases the standard errors and thus lead to misleading results. Likelihood ratio test for testing the panel level heteroskedasticity was employed for all the dependent variables. The results of the test confirm the presence of heteroskedasticity at 1 percent level of significance as shown in Table-4.

TABLE 4: Heteroskedasticity Tests

Specification Tests	Likelihood Ratio (LR) Test for Panel Level Heteroskedasticity		Modified Wald Test for Groupwise Heteroskedasticity in Fixed Effect Model		Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
	Chi square	p-value	Chi square	p-value	Chi square	p-value
Tobin's Q	2829.71	0.0000***	1.50E+05	0.0000***	9864.28	0.0000***
MBVR	4717.1	0.0000***	1.40E+06	0.0000***	15353.25	0.0000***
ROA	1305.93	0.0000***	1.20E+05	0.0000***	115.73	0.0000***
ROE	2643.56	0.0000***	7.10E+05	0.0000***	200.08	0.0000***

*** Statistically Significant at 1% Level

4.3.2.3 Autocorrelation Test

Testing for Autocorrelation has been done using the Wooldridge test for serial correlation as devised by Drukker (2003). The null hypothesis of first order autocorrelation is accepted for Tobin’s Q, MBVR, and ROE having probability value less than 5 percent. However for ROA, the hypothesis of serial autocorrelation is rejected. The results of the Wooldridge test are shown in Table-5 below.

TABLE 5: Autocorrelation Test

Specification Tests	Wooldridge Test for Autocorrelation in Panel Data	
Variables	F Stats	p-value
Tobin’s Q	4.303	0.0395
MBVR	3.945	0.0486
ROA	0.219	0.6406
ROE	2.964	0.0869

*** Statistically Significant at 1% Level

Following the results of the heteroskedasticity and autocorrelation, the panel data regression models use cluster robust standard errors to control for heteroskedasticity and autocorrelation in case of Tobin’s Q and MBVR and robust standard error to control only for heteroskedasticity for ROA and ROE as there is no autocorrelation. Also the FGLS models are devised accordingly. Table 6 shows the summary of the regression used in the study.

TABLE 6: Regression Summary

Tobin's Q and MBVR	Fixed effect Model (With-in) adjusted for “cluster robust” standard error.
	LSDV adjusted for “cluster robust” standard error.
	FGLS model adjusted for heteroskedasticity and first order autocorrelation.
	FGLS model adjusted for heteroskedasticity and first order autocorrelation.
ROA and ROE	Fixed effect Model (With-in) adjusted for “robust” standard error.
	LSDV adjusted for “robust” standard error.
	FGLS model adjusted for heteroskedasticity and no autocorrelation.

REGRESSION EQUATIONS

In Model 1 only independent corporate governance variables are regressed as explanatory variables with firm performance measures as dependent variables. On the other hand in Model 2, Regression is performed along with control variables.

FIXED EFFECT WITH-IN ESTIMATES EQUATION

MODEL 1:

$$\begin{aligned}
 &(Tobin'sQ/MBVR/ROA/ROE)_{it} \\
 &= \beta_0 + \beta_1BS_{it} + \beta_2BC_{it} + \beta_3BI_{it} + \beta_4BA_{it} + \beta_5Dual_{it} + \beta_6CI_{it} + \mu_{it} \\
 &\dots\dots\dots (1)
 \end{aligned}$$

MODEL 2:

$$\begin{aligned}
 &(Tobin'sQ/MBVR/ROA/ROE)_{it} \\
 &= \beta_0 + \beta_1BS_{it} + \beta_2BC_{it} + \beta_3BI_{it} + \beta_4BA_{it} + \beta_5Dual + \beta_6CI_{it} + \beta_7FA_{it} + \beta_8FG_{it} \\
 &+ \beta_9FS_{it} + \beta_{10}Lev_{it} + \beta_{11}Risk_{it} + \beta_{12}AI_{it} + \beta_{13}RI_{it} + \beta_{14}(Ind_dummies)_{it} \\
 &+ \beta_{15}(Year_dummies)_{it} + \mu_{it} \\
 &\dots\dots\dots (2)
 \end{aligned}$$

LEAST SQUARE DUMMY VARIABLE (LSDV) EQUATION

MODEL 1:

$$\begin{aligned}
 &(Tobin'sQ/MBVR/ROA/ROE)_{it} \\
 &= \beta_0 + \beta_1BS_{it} + \beta_2BC_{it} + \beta_3BI_{it} + \beta_4BA_{it} + \beta_5Dual_{it} + \beta_6CI_{it} + \alpha_1 + \alpha_2C_{2i} \\
 &+ \alpha_3C_{3i} + \dots\dots\dots + \alpha_nC_{ni} + \mu_{it}
 \end{aligned}$$

.....(3)

MODEL 2:

$$\begin{aligned}
 & (Tobin'sQ/MBVR/ROA/ROE)_{it} \\
 & = \beta_0 + \beta_1 BS_{it} + \beta_2 BC_{it} + \beta_3 BI_{it} + \beta_4 BA_{it} + \beta_5 Dual + \beta_6 CI_{it} + \beta_7 FA_{it} + \beta_8 FG_{it} \\
 & + \beta_9 FS_{it} + \beta_{10} Lev_{it} + \beta_{11} Risk_{it} + \beta_{12} AI_{it} + \beta_{13} RI_{it} + \beta_{14} (Ind_dummies)_{it} \\
 & + \beta_{15} (Year_dummies)_{it} + \alpha_1 + \alpha_2 C_{2i} + \alpha_3 C_{3i} + \dots + \alpha_n C_{ni} + \mu_{it}
 \end{aligned}$$

.....(4)

Where $C_{2i}=1$ for Company 1 and 0 otherwise. A total of 177 dummies have been employed for 178 companies to avoid dummy variable trap.

4.3.3 Results with Tobin’s Q as a Measure of Firm Performance

Table 7 presents the regression estimates using Tobin’s Q as firm performance measure. The results of the regression analysis showed that Board size has a negative and significant impact on Tobin’s Q irrespective of the regression technique employed. In both the models (without and with control variables) Board size showed a negative relationship with Tobin’s Q. Board composition and Board independence indicate a negative relationship with firm performance measure Tobin’s Q. The relationship between Board Independence and Tobin’s Q is significant in case of FGLS method. Board Composition, however is significantly related in all regression techniques. The impact of Board activity on Tobin’s Q is negative and significant in FGLS but only negative in Fixed Effect and LSDV. CEO duality is negatively associated with Tobin’s Q. Chairman Identity indicates a positive and significant impact with FGLS.

TABLE 7: Regression Results Using Tobin’s Q as Firm Performance Measure

Variables	(1)	(2)	(1)	(2)	(1)	(2)
	Fixed Effect with Cluster Robust Standard errors		LSDV with Cluster Robust Standard Errors		FGLS with Panels Heteroskedastic and First order Auto-Correlation	
BS	-0.0195*	-0.0164*	-0.0195*	-0.0164*	-0.0404***	-0.00239*
	(0.0322)	(0.0308)	(0.0322)	(0.0308)	(0.00797)	(0.00902)
BC	-1.959*	-2.401**	-1.959*	-2.401**	-0.510**	-1.307***
	(1.133)	(1.083)	(1.133)	(1.083)	(0.221)	(0.244)
BI	-0.453	-1.041	-0.453	-1.041	-0.00528	0.382*
	(0.754)	(0.836)	(0.754)	(0.836)	(0.173)	(0.206)
BA	-0.0140	-0.00485	-0.0140	-0.00485	-0.00992	-0.0235**
	(0.0395)	(0.0327)	(0.0395)	(0.0327)	(0.00807)	(0.00932)
Dual	-0.133	-0.0697	-0.133	-0.0697	-0.250***	-0.0383
	(0.230)	(0.253)	(0.230)	(0.253)	(0.0746)	(0.0711)
CI	0.107	0.145	0.107	0.145	0.183***	0.0755*
	(0.230)	(0.193)	(0.230)	(0.193)	(0.0609)	(0.0660)
	(0.0901)	(0.0728)	(0.0901)	(0.0728)	(0.0128)	(0.0130)
FS		1.265*		1.265*		0.150**
		(0.671)		(0.671)		(0.0676)
FA		3.954		3.954		0.0187
		(6.495)		(6.495)		(0.152)
Lev		0.00368		0.00368		0.00354
		(0.00696)		(0.00696)		(0.00444)
FG		-6.95e-07**		-6.95e-07**		-2.40e-07**
		(2.78e-07)		(2.78e-07)		(1.04e-07)
RI		-2.624***		-2.624***		-1.854*
		(0.214)		(0.214)		(1.900)
AI		0.174**		0.174**		0.0227*
		(0.0790)		(0.0790)		(0.0121)
Risk		-1.298***		-1.298***		-1.175***

		(0.283)		(0.283)		(0.0769)
Industry Dummies	NO	NO	NO	YES	NO	YES
Year Dummies	NO	YES	NO	YES	NO	YES
Constant	1.231	-7.614	1.231	-7.614	2.060***	2.962***
	(1.671)	(10.67)	(1.671)	(10.67)	(0.259)	(0.415)
Observations	1424	1424	1424	1424	1424	1424
R-squared	0.025	0.129	0.632	0.657		
Number of Firms	178	178	178	178	178	178

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.3.4 Results with MBVR as a Measure of Firm Performance

As shown in Table 8 Board size shows a negative relationship with MBVR as in case of Tobin’s Q but it is significant only in case of FGLS. Board composition is negatively and significantly associated with MBVR. Board independence and CEO Duality are negatively and significantly related with MBVR using FGLS. But the relationship is not significant in case of Fixed Effect and LSDV Effect Model. Board Activity depicted a negative relationship in models with control variables and positive in models without control variables. The R-squared value is 57.2 %.

TABLE 8: Regression Results MBVR as Firm Performance Measure

Variables	(1)		(2)		(1)		(2)	
	Fixed Effect with Cluster Robust Standard errors		LSDV with Cluster Robust Standard Errors		FGLS with Panels Heteroskedastic and First order Auto-Correlation			
BS	-0.118	-0.0959	-0.118	-0.0959	-0.155***	-0.0422*		
	(0.186)	(0.213)	(0.186)	(0.213)	(0.0191)	(0.0234)		
BC	-4.511	-9.827*	-4.511	-9.827*	-1.489**	-3.779***		
	(7.067)	(5.551)	(7.067)	(5.551)	(0.622)	(0.696)		
BI	-3.715	-0.359	-3.715	-0.359	-0.938	-0.535*		
	(6.245)	(4.325)	(6.245)	(4.325)	(0.604)	(0.578)		
BA	0.168	-0.00495	0.168	-0.00495	-0.00572	-0.0508**		
	(0.212)	(0.187)	(0.212)	(0.187)	(0.0226)	(0.0241)		
Dual	-1.747	-2.014	-1.747	-2.014	-1.128***	-0.413*		
	(1.339)	(1.447)	(1.339)	(1.447)	(0.253)	(0.222)		
CI	4.080	3.961	4.080	3.961	0.816***	1.086***		
	(3.570)	(2.953)	(3.570)	(2.953)	(0.197)	(0.214)		
	(0.228)	(0.203)	(0.228)	(0.203)	(0.0344)	(0.0382)		
FS		3.557		3.557		0.0283		
		(2.232)		(2.232)		(0.204)		
FA		-14.89		-14.89		-0.430		
		(16.38)		(16.38)		(0.442)		
Lev		1.068***		1.068***		0.791***		
		(0.267)		(0.267)		(0.0477)		
FG		8.50e-07		8.50e-07		1.49e-07		
		(2.01e-06)		(2.01e-06)		(2.57e-07)		
RI		-43.34***		-43.34***		9.345**		
		(2.329)		(2.329)		(4.634)		
AI		0.407*		0.407*		0.0430		
		(0.227)		(0.227)		(0.0674)		
Risk		-0.979		-0.979		-2.516***		
		(2.676)		(2.676)		(0.219)		
Industry Dummies	NO	NO	NO	YES	NO	YES		
Year Dummies	NO	YES	NO	YES	NO	YES		
Constant	6.404	17.19	6.404	17.19	4.377***	5.781***		
	(7.145)	(21.78)	(7.145)	(21.78)	(0.746)	(1.275)		

Observations	1,424	1424	1424	1424	1424	1424
R-squared	0.015	0.246	0.436	0.572		
Number of Firms	178	178	178	178	178	178

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.3.6 Results with ROA as a Measure of Firm Performance

6.8.2 Regression Analysis

As discussed earlier since there is no autocorrelation when ROA was used a firm performance measure, so the regression models are adjusted only for heteroskedasticity using robust standard error in FE and LSDV model and only heteroskedasticity adjusted model in FGLS.

The relationship between ROA and Board size is significant and negative in all the cases like Tobin’s Q. Board Composition and Board Independence significantly negatively impact the firm performance measure-ROA. However, in the case of Board Composition, the relationship is significant only with FGLS. Board Activity is positively related with ROA under Fixed effect and LSDV but the relationship is negative and significant with FGLS. The R-squared value is 69.6% in LSDV model with independent and control variables (Table 9).

TABLE 9: Regression Results Using ROA as Firm Performance Measure

Variables	(1)	(2)	(1)	(2)	(1)	(2)
	Fixed Effect with Cluster Robust Standard errors		LSDV with Cluster Robust Standard Errors		FGLS with Panels Heteroskedastic and First order Auto-Correlation	
BS	-0.00207*	-0.000620	-0.00207*	-0.000620	-0.00246***	0.000429
	(0.00117)	(0.00140)	(0.00117)	(0.00140)	(0.000508)	(0.000469)
BC	-0.0322	-0.0176	-0.0322	-0.0176	-0.0528***	-0.0289**
	(0.0331)	(0.0341)	(0.0331)	(0.0341)	(0.0143)	(0.0135)
BI	-0.0460	-0.0559*	-0.0460	-0.0559*	-0.0195	-0.0402***
	(0.0318)	(0.0306)	(0.0318)	(0.0306)	(0.0148)	(0.0143)
BA	0.00314**	0.00243	0.00314**	0.00243	-0.00218***	-0.00227***
	(0.00159)	(0.00194)	(0.00159)	(0.00194)	(0.000616)	(0.000608)
Dual	-0.0103	-0.00846	-0.0103	-0.00846	-0.00193	-0.00654**
	(0.0108)	(0.0114)	(0.0108)	(0.0114)	(0.00401)	(0.00331)
CI	0.00543	0.00504	0.00543	0.00504	0.0271***	0.00169
	(0.00739)	(0.00715)	(0.00739)	(0.00715)	(0.00443)	(0.00384)
	(0.00139)	(0.00136)	(0.00139)	(0.00136)	(0.000878)	(0.000773)
FS		0.0610***		0.0610***		0.00412
		(0.0202)		(0.0202)		(0.00294)
FA		0.0816		0.0816		0.0283***
		(0.0654)		(0.0654)		(0.00542)
Lev		-0.000604		-0.000604		-0.000971*
		(0.000452)		(0.000452)		(0.000504)
FG		-1.06e-08		-1.06e-08		-2.25e-08***
		(6.89e-09)		(6.89e-09)		(3.25e-09)
RI		-0.294***		-0.294***		-0.206***
		(0.0396)		(0.0396)		(0.0236)
AI		0.00535**		0.00535**		0.00286**
		(0.00259)		(0.00259)		(0.00141)
Risk		-0.00948		-0.00948		-0.0834***
		(0.00875)		(0.00875)		(0.00410)
Industry Dummies	NO	NO	NO	YES	NO	YES
Year Dummies	NO	YES	NO	YES	NO	YES
Constant	0.228***	-0.145	0.228***	-0.145	0.207***	0.189***
	(0.0342)	(0.108)	(0.0342)	(0.108)	(0.0176)	(0.0218)

Observations	1424	1424	1424	1424	1424	1424
R-squared	0.015	0.136	0.654	0.696		
Number of Firms	178	178	178	178	178	178

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

4.3.8 Results with ROE as a Measure of Firm Performance

The regression estimates are shown in Table 10. Board size is negatively and significantly associated with the accounting based firm performance measure-ROE under all econometric models. However the level of significance varied. BI and BC have a significant negative impact on ROE under FGLS estimation. Board activity is positively associated under Fixed Effect Model but negatively and significantly associated under FGLS methodology. The R-squared value in case of ROE is 50% with LSDV model.

TABLE 10: Regression Results Using ROE as Firm Performance Measure

Variables	(1)	(2)	(1)	(2)	(1)	(2)
	Fixed Effect with Cluster Robust Standard errors		LSDV with Cluster Robust Standard Errors		FGLS with Panels Heteroskedastic and First order Auto-Correlation	
BS	-0.00786*	-0.00401	-0.00786*	-0.00401	-0.00399***	-0.00236**
	(0.00403)	(0.00541)	(0.00403)	(0.00541)	(0.00100)	(0.00117)
BC	-0.0716	-0.0929	-0.0716	-0.0929	-0.182***	-0.0148
	(0.134)	(0.104)	(0.134)	(0.104)	(0.0316)	(0.0347)
BI	-0.192	-0.0174	-0.192	-0.0174	-0.0616**	-0.160***
	(0.117)	(0.0896)	(0.117)	(0.0896)	(0.0313)	(0.0330)
BA	0.0135***	0.00538	0.0135***	0.00538	-0.000328	-0.00204
	(0.00429)	(0.00423)	(0.00429)	(0.00423)	(0.00143)	(0.00155)
Dual	-0.00468	-0.00742	-0.00468	-0.00742	-0.0290***	-0.0460***
	(0.0258)	(0.0294)	(0.0258)	(0.0294)	(0.00771)	(0.00872)
CI	0.0280	0.00811	0.0280	0.00811	0.0297***	0.0121*
	(0.0215)	(0.0198)	(0.0215)	(0.0198)	(0.00837)	(0.00949)
	(0.00459)	(0.00424)	(0.00459)	(0.00424)	(0.00187)	(0.00204)
FS		0.133***		0.133***		0.0415***
		(0.0453)		(0.0453)		(0.00745)
FA		0.438*		0.438*		0.0605***
		(0.244)		(0.244)		(0.0150)
Lev		0.0439**		0.0439**		0.0307***
		(0.0188)		(0.0188)		(0.00436)
FG		4.17e-08*		4.17e-08*		-3.40e-08***
		(2.47e-08)		(2.47e-08)		(7.72e-09)
RI		0.523**		0.523**		-0.325**
		(0.239)		(0.239)		(0.129)
AI		0.00899*		0.00899*		-0.00115*
		(0.00535)		(0.00535)		(0.00322)
Risk		-0.0893**		-0.0893**		-0.127***
		(0.0434)		(0.0434)		(0.0109)
Industry Dummies	NO	NO	NO	YES	NO	YES
Year Dummies	NO	YES	NO	YES	NO	YES
Constant	0.426***	-0.744**	0.426***	-0.744**	0.467***	0.241***
	(0.107)	(0.352)	(0.107)	(0.352)	(0.0374)	(0.0541)
Observations	1,424	1424	1,424	1424	1424	1424
R-squared	0.015	0.245	0.349	0.5		
Number of Firms	178	178	178	178	178	178

Standard errors in parentheses; *** p<0.01, ** p<0.05, * p<0.1

5. CONCLUSION

In present study we have analyzed the relationship between Corporate Governance Board Parameters and Firm Performance of 178 NSE listed non-financial companies for eight years. Firm Performance was measured using Market Based measures-Tobin's Q & MBVR and Accounting Based measures-ROA and ROE. Using various statistical tools and regression methodologies based on the significance test on panel data, we concluded that:

- a) Board Size is negatively and significantly associated with firm performance measures. With firm performance measures Tobin's Q, ROA and ROE the relationship is significant across all econometric models. However, in case of MBVR, the relationship is significant with FGLS only. The results rejected the Hypothesis 1 of positive and significant relationship in line with the stewardship theory. Thus it can be stated that board size is an important corporate governance mechanisms impacting firm performance negatively. The results supported the recommendations of Lipton and Lorsh (1992) and Jensen (1993) to limit the board size to lesser number of directors. The results are in line with the initial empirical findings of Yermack (1996), which concluded an inverse relationship between Board size and firm performances. Similar results are found in a number of Indian studies (Ghosh, 2006; Kota and Tomar, 2010; Garg, 2007).
- b) The impact of Board composition on firm performance is strongly negative and significant in case of firm performance measures- Tobin's Q and MBVR. With other variables- ROA, and ROE, the impact is though negative but found significant only with FGLS methodology. The hypothesis 2 of positive and significant relationship is again rejected in line with stewardship theory. The negative relationship between board composition and firm performance is owing to the lack of specialist knowledge of the non-executive directors about the day-to-day internal business operations of the firm. The negative impact of Board composition on firm performance is also found in other studies from developed and developing economies (Kota and Tomar, 2010; Kumar and Singh, 2012; Agarwal and Knoeber, 1996; Rashid et al., 2010). The negative relationship between Board composition and Firm performance may be due to the fact that in India most of the business are family managed where the independence of outside directors is suspect.
- c) Board Independence is found negatively and significantly associated with firm performance measures. The regression estimates of accounting based measures-ROA, and ROE found a strong significant negative relationship between Board independence and firm performance. However in case of market based measures-Tobin's Q & MBVR, the relationship is significant only in case of FGLS. The results are consistent with the earlier studies of Agrawal and Knoeber (1996) and Bhagat and Black (1996). Hypothesis 3 is thus rejected. These results suggest that Independent directors in India have so far failed to perform their responsibilities of monitoring the board functions effectively due to the lack of training to function as an independent director. Thus merely adding Independent directors to the board is not sufficient; there is a need for providing training to the independent directors regarding the tasks, procedures and responsibilities expected out of them.
- d) Board Activity has no impact on firm performance as the relationship is found ambiguous with different performance measures used. This ambiguous relationship between board meeting frequency and firm performance is also supported by Lipton and Lorsh (1992) and Jensen (1993). Hypothesis 4 is rejected owing to ambiguous impact of Board Activity on firm performance. The results are indicative of the more complex relationship between Board meetings and firm performance as concluded by Vefas (1999). The quality of the Board meeting in terms of outcome is more important than the quantity of meetings.
- e) Duality is negatively associated with the firm performance measures. Hypothesis 5 is rejected. The results reinforce the theoretical underpinning of the board's monitoring function derived from agency theory, which supports the idea of separation between the CEO and the chairman, to increase board independence from management, resulting in better performance due to better monitoring and overseeing (Jensen, 1993).
- f) Chairman Identity considering the presence of non-executive chairman on the board is found to have a positive and significant impact on firm performance. Mura (2005) and Peng (2004) also found the

relationship positive and significant. Hypothesis 6 is accepted focusing on the growing importance of non-executive chairman on the Board as a new driver of systemic change.

Thus we can conclude that Board parameters are the important corporate governance mechanisms impacting firm performance in Indian context. Board size, Board Composition, Board independence and CEO Duality have a significant negative impact on firm performance measures; on the other hand, Chairman Identity has a significant positive impact on firm performance. However, Board Activity has no impact on firm performance.

6. LIMITATIONS AND DIRECTIONS FOR FUTURE RESEARCH

The study has certain limitations. First and foremost, the study is restricted to a limited number of companies for a period of 8 years. The findings may be different if a larger sample was included for a longer time period. Secondly, the qualitative aspect of corporate governance mechanisms was not used, the study only focused on the quantitative component. Corporate governance variables were recorded based on the information disclosed in the annual reports and it is thus assumed that the information is fair and accurate. Lastly, there are large number of variables that influence corporate governance and firm performance relationship but all of them could not be controlled in the study.

The Study focused on the direct relationship between the corporate governance mechanisms and firm performance relation, thus there is also potential for evaluating the indirect relationship between the corporate governance mechanisms and firm performance relationship via other corporate governance mechanisms. The present study evaluating the corporate governance mechanisms and firm performance relationship is limited to non-financial companies listed in NSE CNX Index. Banking and other financial companies have been excluded due to non-comparability of the applicable regulations as these companies are governed by the Banking and Regulations Act as against Companies Act. Thus an attempt could be made in future studies to cover these companies as the financial sector is of pertinent and vital importance for the economic development of the country.

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