

## IMPACT OF BOARD SIZE ON FIRM PERFORMANCE : A STUDY OF SELECTED BSE 500 COMPANIES

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Among the various factors that account for firm's performance, board related issues are one of the most important ones. The present paper attempts to examine whether board size has any effect on firm performance. The study uses Return on Assets (ROA), Return on Equity (ROE) and Tobin's Q as measures of financial performance, whereas board size has been taken as an independent variable. Age of the company, size of the company and risk measured by beta has been taken as the control variables. The study has been conducted for the year 2012, using a sample of 319 companies from BSE 500 Index. The results show that ROE and Tobin's Q is large for companies with small board size. Also, medium size boards are found to perform better than either very small or very big boards. However, the results are not statistically significant. As regard the impact of board size on firm performance, results suggests that for ROE (statistically significant) and ROA (statistically not significant) the impact is positive whereas for Tobin's Q the impact is negative (statistically not significant).

**Key words:** Corporate Governance, Board Size, Firm Performance, ROA, ROE, Tobin's Q

### INTRODUCTION

Corporate governance has become an issue of great importance all around the world due to several miserable corporate failures and unethical practices. It became important in Indian context as well because of the scams that occurred since liberalization, e.g., UTI Scam, Ketan Parekh Scam, Harshad Mehta Scam and the biggest of them all the Satyam Scam. Much of the recent discussion that has taken place concerns on an effective corporate governance mechanism to protect shareholder rights and their wealth. Also, Good corporate governance will help the economy to grow in sustained manner. Corporate governance refers to the processes and structure by which the business and affairs of institutions are directed and managed, in order to improve long term shareholders' value by enhancing corporate performance and accountability, while taking into account the interest of other stakeholders (Jenkinson and Mayer, 1992).

Corporate governance is therefore, about building credibility, ensuring transparency and accountability as well as maintaining an effective channel of information disclosure that will foster good corporate performance. It is an important issue of public policy debate in India because of ongoing discussions within government and various regulatory bodies. Board of directors on behalf of shareholders is envisaged with the role of monitoring the management and protecting their rights (Jensen and Meckling, 1979). A major part of debate on corporate governance centers around board related issues especially the board size. The issue that has attracted the researchers is whether the companies with larger board size perform better than the companies with small board size. Several studies have documented the effects of board size as a governance mechanism on the performance of firms. Some studies have suggested that larger boards are less effective than smaller boards due to the co-ordination, slower decision-making, less candid discussions of managerial performance, and bias against risk-taking problems in larger boards. However, larger boards may improve the performance of firms requiring more advice, more knowledge and more skills at their disposal as compared to smaller boards. Larger boards bring in greater depth of intellectual knowledge than smaller boards and hence improve decision making and firm's performance. Larger boards may also provide a larger pool of expertise to smaller boards. As larger boards, they claim, impede communication and decision making there by reducing the effectiveness of monitoring by the board.

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## REVIEW OF LITERATURE

Several studies have been conducted on the subject in recent past. Weimer (1979) attempted to find out what matters most in the performance of the board. The paper concluded that the optimum board size was 15 members and the members of board should retire at the age of 70.

Later, Yermack (1996) ascertained that whether companies with a small board of directors enjoy higher market valuation or not. The research was based on a sample of 452 large US industrial corporations for the period between 1984 and 1991. The study used Tobin's *q* and return on assets as an approximation of firm value. Using regression analysis, an inverse association was found between board size and firm value. The companies with small boards were found to exhibit more favorable values for financial ratios. Kathuria and Dash (1999) examined the association between board size and corporate financial performance using data of 504 corporations belonging to 18 industries. The study related to the year 1994-95 and used return on assets as proxy for profitability. It was observed that size of the board played an important role in enhancing the performance (profitability) of the company. A corporation's performance improved by increasing the board size and contribution of an additional board member decreased as the size of the corporation increased. However, Bhagat and Black (2002), found no evidence on the relationship between board size and performance, although there are hints of an inverse correlation between the two. Adam and Mehran (2005) found a positive relationship between board size and performance (measured by Tobin's *Q*) in the US banking industry.

Kula and Tatoglu (2006) investigated the relationship between performance and board process attributes. The research focussed on family-owned companies in an emerging country. A survey questionnaire was used to collect primary data and a sub sample of 266 firms with majority family ownership. It was argued that directors' collective attributes and individual attributes were potentially relevant for performance. Eight measures of company performance were adopted based on respondents' perceptions. It was concluded that performance of company was positively associated with collective and individual attributes of director. A similar study by Ghosh (2006) to examine the association between financial performance and boards of non-financial firms considered 127 listed manufacturing firms in India for 2003 was considered for the study. Tobin's *Q*, return on assets, return on equity and return on sales were used as the dependent variable and board size was taken as independent variable. After controlling for various firm-specific factors, the study found that larger boards tend to have a dampening influence on firm performance, judged in terms of either accounting or market-based measures of performance. Later, Garg (2007) stated that corporate governance issues attracted a good deal of public interest because of their apparent importance for the economic health of corporations and society in general, especially after the plethora of corporate scams and debacles in recent times. The research addressed the question whether the board size really matters in terms of influencing firm's performance. The study was based on 146 companies selected from BSE 200 and was carried out for six financial years from 1997-98 to 2002-03. The findings suggested that there was an inverse association between board size and firm performance. Smaller boards were more efficient than the larger ones; the board size limit of six was suggested as the ideal. Wolf (2013) in his research on corporate governance primarily focussed on board processes, board structure and board independence in relation with corporate performance. An attempt was made to explore the relationship between effective board performance and changes made to U.S. Corporate Board processes (after reform based on Sarbanes-Oxley Act of 2002), correlation of board performance and board processes, relationship between effective board performance and board's intellectual capital or human capital. The period of study was divided into pre and post Sarbanes-Oxley Act. It was found that a significant relationship exists between changes made to board processes and effective board performance. It was found that a correlation exists between CEO succession planning and effective board performance for years 2000 and 2006. However, board processes showed positive correlation with effective board performance for all the years of the study period. Positive relationship was found between certain elements of a board's intellectual (human) capital and effective board performance. It was recommended that the focus should shift from agency theory to relationship between board's intellectual capital and performance.

Guest (2009) investigated the impact of board size on the firm performance for a large sample of 2746 UK listed firms over 1981-2002. Tobin's *Q*, return on assets and return to shareholders have been considered as dependent variable whereas board size as independent variable. Size, age, debt, research and development and risk measured by standard deviation have been considered as control variables. The regression result showed that board size had a strong negative impact on profitability, Tobin's *q* and return to shareholders. The large firms were found to have a negative relationship between large board size and firm performance. Sur (2009) investigated

association of composition of board and firm performance for all US public firms (for which the data about ownership and board was available). It was assumed that performance objectives, composition of board, firm's ownership are not homogenous. The study used multi-theoretic framework to empirically test the relationship between board composition and ownership and the relationship between performance and ownership. During the same time period, Jackling and Johl (2009) examined the relationship between board size and financial performance of Indian companies. The study used a sample of 180 top Indian companies. The study considered return of assets, log return of assets, tobin's q, log tobin's q as dependent variables as such proxies for financial performance. Board size was taken as independent variable. Finally, the control variables considered in the study were total assets, log of total assets, leverage, capital expenditure to sales, research and development to sales and age of the firm. The findings suggest that larger board size had a positive impact on performance.

Topak (2011) examined the relationship between the board size and the financial performance of the Turkish firms. The study was conducted for the period of 2004-2009 with a sample of 122 Turkish firms. Tobin's Q, return on assets and return on equity were considered as dependent variables individually. Board size was taken as independent variable. The study employed panel data techniques to measure the relation between board size and firm performance. It concluded that there exists no relation between the board size and the firm performance. Kumar and Singh (2013) examined the effect of corporate board size on firm value for selected Indian companies. The findings suggested that there is a negative relationship of board size with firm value. Recently, Saibaba (2013) investigated the relationship between board size and financial performance of Indian companies listed in BSE 100 index where, Tobin's Q was taken as proxy for financial performance or the firm value and was considered as a dependent variable and board size was considered as independent variables. Panel data regression results showed that firms with large board sizes have better valuation.

### OBJECTIVE AND HYPOTHESIS OF THE STUDY

In light of the above stated discussion it is evident that the issue of whether the size of the board has an impact on the performance of the firm still remains unsolved. With this as the background the present study has been carried out. Its prime objective is to examine whether the size of the board size has an impact on the performance of the firm. Based on the objective stated above the following null and alternative hypothesis have been framed:

H<sub>0</sub>: The board size has no impact on the performance of the firm.

H<sub>1</sub>: The board size has an impact on the performance of the firm.

### RESEARCH METHODOLOGY

The study is conducted for the financial year 2012-13 and is based on BSE 500 companies. Although an attempt was made to include all the companies but as banking companies are governed by different financial reporting regulations they were excluded. In addition due to the non-availability of data for some companies, the study was limited to 319 companies only.

#### Variables of the Study

This study aims to examine the impact of board size on firm performance. Firm performance has been measured by using three performance measures, i.e., return on asset (ROA), return on equity (ROE) and tobin's q have been taken as dependent variable. The three performance parameters are on annual (financial year) basis. The variables have been selected after ascertaining which financial performance parameters have been considered by the earlier studies on the subject. On scanning the studies conducted so far it has been found that Sunday (2008) and Aljifri and Moustafa (2007) had selected the three performance parameters. In addition to it the three performance indicators serve different purposes, ROA measures the overall performance, ROE measures return to equity shareholders and Tobin's Q measures the market return. The independent variable in the present study is board size. In addition to the dependent and independent variables stated above, selected control variables such as age of the company, beta of the company, and size of the company (measured by the total of assets) have also been considered in the present study. The earlier studies Cremers and Nair (2005), Nandi and Ghosh (2013) and Saravanan (2012) have been referred in the selection of control variables. The purpose of selecting control variable is to study the effect of board size on firm performance by isolating the effect of control variables

### Statistical Tools Used

In order to ascertain the extent to which the board size affects firm performance, selected statistical tools have been applied. To be specific the study has made use of ANOVA and Regression Analysis. ANOVA has been used to find out if any statistically significant difference, exists between the companies with different board sizes. Regression analysis is also used to examine the impact of the board size on firm performance. The following regression equations have been tested

$$ROA = a + b \text{ board size} + b \text{ beta} + b \text{ log of sales} + b \text{ age} + u_t$$

$$ROE = a + b \text{ board size} + b \text{ beta} + b \text{ log of sales} + b \text{ age} + u_t$$

$$\text{Tobin's Q} = a + b \text{ board size} + b \text{ beta} + b \text{ log of sales} + b \text{ age} + u_t$$

### RESULTS AND DISCUSSIONS

The research study uses various statistical tools and techniques for analyzing the data. Descriptive statistics and techniques of analysis of variance (ANOVA) and regression analysis have been applied to arrive at the results. The results have been later interpreted to derive meaningful conclusions.

#### Descriptive Statistics

Initially the descriptive statistics has been calculated for each variable used in the study. Table 1 depicts the results for all the 319 companies considered in the study. The return on assets (ROA) is 11.2 per cent with a standard deviation of .093 whereas the average return on equity (ROE) is 16.5 per cent with a standard deviation of .334. Return on equity being higher than the return on assets indicate that the equity shareholders are rewarded more. Higher standard deviation of return on assets indicates more variability. Tobin's Q is 1.405 with standard deviation of 1.558 and the average board size is 10.87 with standard deviation of 3.576. This indicates that the average board size is much above the minimum required by the law. Standard deviation indicates a high degree of variability in board size.

**Table 1.** Descriptive Statistics Relating of the Dependent and Independent Variables

Statistics	ROA	ROE	Tobin's Q	Board Size
Mean	0.112	0.165	1.405	10.87
Standard Error	0.005	0.018	0.087	0.200
Standard Deviation	0.093	0.334	1.558	3.576
Sample Variance	0.009	0.112	2.428	12.789
Skewness	1.177	6.182	2.867	.902
Std. error of Skewness	.137	.131	.137	.137
Count	319	319	319	319

**Source:** Author's own calculations based on secondary data

#### Board Size and Average Firm Performance

Table 2 shows the frequency of each of the board size along with the average and standard deviations for each of the three performance indicators. However, no specific trend could be concluded. ROA is high for companies (19 in total) having a board size of 14. ROE is high for a board size of 9 with 44 companies (one company with board size of 22 however had the highest ROE). As tobin's q indicates, it has been highest for board size of 12 with 26 companies, again ignoring one company with a board size of 22. Hence, it can be stated that no specific board size indicates all the three performance measures to be high. The results however indicate that a small board size of four members on an average resulted in high performance as indicated by ROA and tobin's q whereas board size of eight or nine have more than average ROA and ROE. This is followed by the board size of fourteen with more than average ROA and ROE. This may be a perception that a very small board size will be focused and very quick in decision making. Large board size gets the benefit of having more inputs for decision making. A medium board balances both. A very large board did not result in high performance which may be due to delay in decision making.

**Table 2.** Board Size and Average Firm Performance including Results from ANOVA Analysis

Board Size	Frequency	ROA		ROE		Tobin's Q	
		Average	Standard Deviation	Average	Standard Deviation	Average	Standard Deviation
3	2	0.045	0.058	-0.392	0.698	1.744	1.018
4	2	0.229	0.149	0.257	0.100	1.917	2.708
5	5	0.082	0.022	0.126	0.078	0.847	0.771
6	15	0.089	0.050	0.104	0.074	1.160	0.827
7	24	0.102	0.058	0.137	0.081	1.222	1.451
8	29	0.108	0.143	0.262	0.830	1.426	1.189
9	44	0.114	0.102	0.240	0.466	1.452	1.979
10	49	0.118	0.090	0.136	0.175	1.230	1.050
11	38	0.115	0.078	0.189	0.190	1.624	1.984
12	26	0.104	0.054	0.120	0.101	1.770	2.109
13	21	0.118	0.065	0.133	0.189	1.764	1.601
14	19	0.148	0.155	0.217	0.183	1.122	1.272
15	11	0.076	0.057	0.078	0.058	1.221	0.922
16	10	0.132	0.103	0.154	0.127	1.577	2.047
17	4	0.091	0.030	0.139	0.051	1.171	0.189
18	8	0.115	0.130	0.132	0.133	1.195	1.449
19	6	0.110	0.036	0.142	0.058	1.025	0.227
20	1	0.062		0.147		0.702	
21	2	0.063	0.009	0.073	0.016	0.588	0.103
22	1	0.305		0.329		6.033	
25	2	0.064	0.035	0.097	0.041	0.481	0.224

Source: Author's calculations based on data from www.cmie.com

### Analysis of Variance

Analysis of variance has been used to examine whether the various sizes of board perform equally well. In order to examine this issue we have classified the boards into four categories namely board size upto 8, board size of 9 to 10, board size of 11 to 13 and lastly, the board size above 14. The results are listed in Table 3. It is evident that ROA has been highest for companies with a board size of above 14 and minimum for companies having upto 8 as its board size. The results are however insignificant as indicated by F-value and its associated p-value. The F-value is very small in case of ROE indicating a very low explanatory power. For ROA and tobin's q, f-value is however more than ROE resulting in lower p-value but statistically insignificant. Return on equity is found to be highest for companies with board size of 9 to 10 and minimum for companies with the board size of

**Table 3.** Board Sizes and Firm Performance

Indicator	Board size	N	Mean	Std. Deviation	F-value	p-value
ROA	Upto 8	77	.102	.0997	.412	.745
	9-10	93	.115	.0954		
	11-13	85	.112	.0673		
	Above 14	64	.117	.1115		
	Total	319	.111	.0933		
ROE	Upto 8	77	.166	.5259	.168	.918
	9-10	93	.185	.3468		
	11-13	85	.154	.1686		
	Above 14	64	.153	.1336		
	Total	319	.165	.3348		
Tobin's Q	Upto 8	77	1.293	1.210	1.459	.226
	9-10	93	1.334	1.554		
	11-13	85	1.703	1.916		
	Above 14	64	1.246	1.376		
	Total	319	1.405	1.558		

Source: Author's calculations based on data from www.cmie.com

above 14. The results are again statistically insignificant. Finally in case of tobin's q, it has been highest for companies with board size of 11 to 13 and lowest for companies with board size of above 14. Again the results are insignificant. Hence, it is evident that none of the performance measures significantly differs across various board sizes.

### Regression Analysis

An attempt has also been made to examine the impact of board size on firm performance using regression analysis. The results are depicted in Table 4. Firm performance has been taken as dependent variable and the size of board as independent variable. Firm performance has been measured by return on equity, return on assets and tobin's q. For each of the three performance measures three regression equations have been estimated separately. In addition to the independent variables, three control variables namely beta for risk, log of assets for size and age has also been considered.

**Table 4.** Regression Results of Relationship Between Board Size and Firm Performance

	ROE	ROA	Tobin's Q
A	0.495	-0.303	3.686
(p-value)	(.001)	(.000)	(.000)
B	.081	0.001	-0.219
Board Size	(.028)	(.933)	(.190)
B	.185	-0.070	-0.853
Beta	(.000)	(.000)	(.000)
B	-.007	-0.035	-.424
Log Assets	(.834)	(.000)	(.009)
B	-.001	.000	.006
Age	(.063)	(.526)	(.059)
Ad R Sq	.066	.167	.102
F-value	5.496	13.729	8.205
P-value	(0.000)	(0.000)	(0.000)

**Source:** Author's own calculations based on data from www.cmie.com.

The effect of board size is reported to be insignificant on ROA (p-value = 0.933) and tobin's q (p-value=0.190). However, for ROE the results are significant at five per cent with the value of regression coefficient of 0.081. Among the control variables, risk as measured by beta is reported to be significant for all the three regression equations. Log of assets is significant for ROA and tobin's q. However, age is found to be insignificant for ROA and ROE. All the three models as reported by F-value are significant at one per cent. On comparative basis the F-value is maximum for ROA board indicating high explanatory power of independent variable i.e, board size. This also is an indication of robustness of the model. The lowest F value is for ROE, where the explanatory power is minimum. All the three models are found to be significant as per F value. But the value of adjusted R square does not indicate a high explanatory power as it ranged from 0.066 to 0.102. Thus board size fails to show a significant effect on firm performance except for ROE which is significant but with a very low effect.

### CONCLUSION OF THE STUDY

The increase in the corporate disasters and collapses has made everyone concerned about the governance issue. Among the various aspects that reflect on the type or level of corporate governance, the most crucial is the board related issues. Considering the importance of the issue, the present study has examined the impact of Board size on firm performance. The study has been conducted for the year 2012 using a sample of 319 companies selected from BSE 500 Index. It considered three performance variables namely return on assets (ROA), return on equity (ROE) and tobin'q. Results suggest that ROA is relatively more for companies with large board size (statistically not significant). While ROE and Tobin's Q is large for companies with small board size (again

statistically not significant). Medium size boards however performed better than either very small or very big boards. The results are however not statistically significant. As regard the impact of board size on firm performance the results suggest that for ROE (statistically significant) and ROA (statistically not significant) the impact is positive whereas for Tobin'Q the impact is negative (statistically not significant)

## REFERENCES

- Adams, R. B., & Mehran, H. (2005). Corporate Performance, Board Structure and its Determinants in the Banking Industry. EFA 2005 Moscow Meetings.
- Aljifri, K., & Moustafa, M. (2007). The impact of corporate governance mechanisms on the performance of UAE firms: an empirical analysis. *Journal of Economic and Administrative Sciences*, 23(2), 71-93.
- Bhagat, S. & Black, B. (2002). The Non-correlation between Board Independence and Long-term Firm Performance. *Journal of Corporation Law*, 27(2), 231-274.
- Cremers, K. J., & Nair, V. B. (2005). Governance mechanisms and equity prices. *The Journal of Finance*, 60(6), 2859-2894.
- Ghosh, S. (2006), Do board characteristics affect corporate performance? Firm-level evidence for India. *Applied Economics Letters*, 13(7), 435-443.
- Garg, A. K. (2007). Influence of Board Size and Independence On firm performance: A study of Indian Companies. *Vikalpa*, 32(3), 39-60.
- Guest. (2009). The Impact of Board Size on Firm Performance: Evidence from the UK. *The European Journal of Finance*, 15(4), 385-404.
- Jensen, M. C., & Meckling, W. H. (1979). Theory of the firm: Managerial behavior, agency, costs and ownership structure. *Rochester Studies in Economics and Policy Issues*, 1, 163-231.
- Jenkinson, T., & Mayer, C. (1992). The assessment: corporate governance and corporate control. *Oxford Review of Economic Policy*, 8(3) 1-10.
- Jackling, B., & Johl, S. (2009). Board structure and firm performance: Evidence from India's top companies. *Corporate Governance: An International Review*, 17(4), 492-509.
- Kathuria, V., & Dash, S. (1999) Board size and corporate financial performance: An investigation. *Vikalpa*, 24(3), 11-17.
- Kula, V., & Tatoglu, E. (2006). Board process attributes and company performance of family-owned businesses in Turkey. *Corporate Governance: The International Journal of Business in Society*, 6(5), 624-634.
- Nandi, S., & Ghosh, S. (2013). Corporate governance attributes, firm characteristics and the level of corporate disclosure: Evidence from the Indian listed firms. *Decision Science Letters*, 2(1), 45-58.
- Kumar, N., & Singh, J. P. (2013). Effect of board size and promoter ownership on firm value: some empirical findings from India. *Corporate Governance: The International Journal of Business in Society*, 13(1), 88-98.
- Sur, S. (2009). For whom the firm toils: A thesis investigating the ownership, board and performance linkages (Doctoral dissertation, Concordia University).
- Saravanan, P. (2012). Corporate governance and company performance: A study with reference to manufacturing firms in India, [http://www.nfcgindia.org/pdf/cor\\_gover\\_manu\\_firms.pdf](http://www.nfcgindia.org/pdf/cor_gover_manu_firms.pdf), 10.12.2013
- Saibaba, M. D. (2013). Do Board Independence and CEO duality Matter in Firm Valuation? – An Empirical Study of Indian Companies. *The IUP Journal of Corporate Governance*, 12(1), 50-67.
- Topak, I. T. (2011). The Effect of Board Size on Firm Performance: Evidence from Turkey. *Middle Eastern Finance and Economics*, 14, 119-127.
- Wolf, Patricia M. (2013). Board Performance in a Post Sarbanes-Oxley Environment: An Examination of the Relationships among Board Processes, Board Intellectual Capital and Board Changes. Capella University, 2007. United States -- Minnesota: ABI/INFORM Global. Web. 2 Mar. 2013
- Weimer, A. M. (1979). Corporate boards: Improving their job performance. *Business Horizons*, 22(3), 28-31.
- Yermack, David. (1996). Higher market valuation of companies with a small board of directors. *Journal of Financial Economics*, 40, 185-211.