

Effect of Board Structure on Risk Taking: The Moderating Role of Firm Performance

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ABSTRACT

It is argued that the main cause of the recent corporate failure was that corporations engaged in excessive risk taking. The board of directors is responsible for the companies' risk management policies. This research examined how board characteristics predict risk taking propensity when firm size and industry were controlled. The study also examined the moderating effect of firm performance on board structure -risk taking relationship. Moreover, the study was guided by agency theory which postulates principal-agent conflict in decision making. The study employed explanatory research design. The research utilized secondary data derived from document analysis mainly from companies' financial reports. The study included 38 companies listed throughout 2005-2010. Both descriptive and inferential statistics were used. The data collected was presented in tables and graphs. Inferential statistics included correlation and moderated regression analysis. The findings revealed that board size had negative significant effect on risk taking ($\beta=-.061, p<0.01$), director independence had positive effect on risk taking ($\beta=1.249, p<0.01$) and CEO duality had no effect on risk taking ($\beta=0.311, p>0.01$). After moderation of the above variables using firm performance, board size and director independence had significant effect on risk taking; ($\beta=0.025, p < 0.05$), ($\beta=0.309, p < 0.05$) respectively whereas CEO duality has no effect on risk taking ($\beta=0.092, p > 0.05$). In conclusion, the study showed that board structure affects risk taking and that firm performance has a moderating effect. Thus the study recommends that managers should emphasize on reducing board size and increasing director independence which can have strong impact on firm decisions and outcomes. Specifically, it can lead to undue risk taking, and such risk taking may significantly influence the firm's performance. In addition level of performance when making such decision is a crucial factor that should be taken into account.

Key Words: Risk Taking, Board Structure, CEO Duality, Director Independence, Board Size, Firm Performance

1.0 Introduction

Much of the empirical findings on corporate governance, firm performance and risk taking in companies have confirmed that board engage in making decisions which either improve the value of a firm or become detrimental. Formation of boards are mechanisms to oversee the conduct of the owner-manager and prevent them from endangering vested parties interest (Hermalin and Weisbach, 2003). Decisions relating to company's policies and strategic planning, their implementation and the appointment, dismissal and compensation of executives are ratified and determined by the board (Fama and Jensen, 1983).

Consistent with agency theory, the role of the board is significant in designing efficient corporate monitoring and ratification mechanisms which regulates activities done by management. With respect to reducing agency costs at the board level, boards of directors have three key decision rights which are monitoring, ratification, reward and punishment rights. They may even remove top managers from their positions and sanction them for their decisions. Such decisions according to the theory involve high risks taking or conservative implementation of strategies thus low risk taking.

The monitoring role of the boards has been examined in several academic studies. For example, the relationship between corporate performance and outside directorships was examined by Kaplan and Reishus (1990). Cotter et al., (1997) studied the role of directors in takeover control of firms. According to Stulz (1988), if a board relaxes the monitoring role, managerial discretion increases leading to implementation of conservative investment policies giving rise to low risk-taking hence sub optimal decisions thus poor performance. Poor

corporate decisions such as poor resource allocation according to Durnev et al., (2004) could lead to low level of informed risk arbitrage which ultimately leads to low productivity growth.

However, research indicates that risk taking propensity of decision makers depend on firm performance. This argument is supported by previous researches for example, Whetten (1987) and Cameron et al., (1987) argues that that poor performance and organizational decline can lead to increased secrecy and conservatism which reduces risk taking. On the contrary, March and Simon (1958) noted that poor performance drives organizations into problem-motivated search leading to pressure for change hence more risks are taken. Moreover, past organizational success can also create illusions of invulnerability that make decision makers impervious to external change (Dutton & Duncan, 1987; Starbuck & Hedberg, 1977). Organizations with a history of success will resist fundamental change and the longer a period of success has lasted, the more time inertial forces will have had to develop and the more difficult it will be to initiate change in response to changes in environmental conditions (Tushman & Romanelli, 1985).

Bourgeois also wrote that the excess resources successful performance generates allow an organization to compete in its environment more boldly (1981; 35). Hambrick and Snow (1977) argued that successful organizations can better afford to attempt new strategies and new organizational arrangements, such as introducing new products and new markets or experimenting with new organizational structures. Although firm performance has been proven to affect decisions made, there are little empirical studies on the relationship between board structure and risk taking. In addition, the moderating role of firm performance on board structure-risk taking link remains largely unexplored. This study attempted to determine the moderating role of firm performance on the relationship between board structure and risk taking.

2.0 Literature Review

2.1 CEO Duality and Corporate Risk Taking

Agency theory argues that separation of CEO and chairman positions would provide greater transparency and accountability on firm decisions and information, which aims to improve shareholder trust and ultimately generate better corporate risk taking (Adams *et al.*, 2005; Finkelstein & D'Aveni, 1994; Gillan, 2006; Kroll *et al.*, 2008). Furthermore, Cadbury committee also (1992) proposes that the roles of chairman and CEO should be separated.

H₀₁: CEO duality has no effect on risk-taking in listed companies

2.2 Board Size and Corporate Risk Taking

This is considered to be a crucial characteristic of the board structure. Large boards could provide the diversity that would help companies to secure critical resources and reduce environmental uncertainties (Pfeffer, 1987; Pearce and Zahra, 1992; Goodstein *et al.*, 1994) but Yermack (1996) said that coordination, communication and decision-making problems increasingly impede company risk taking when the number of directors increases. Thus, as an extra member is included in the board, a potential trade-off exists between diversity and coordination. Jensen (1993) appears to support Lipton and Lorsch (1992) who recommend a number of board members between seven and eight. However, board size recommendations tend to be industry-specific, since Adams and Mehran (2003) indicate that bank holding companies have board size significantly larger than those of manufacturing firms.

H₀₂: Board size has no effect on firm's risk-taking in listed companies

2.3 Director Independence and Corporate Risk Taking

Drawing from resource dependence theory, independent directors serve to coordinate organizational action, and provide external links (Pfeffer and Salancik, 1978). Independent directors serve to reduce the incentives for opportunism by increasing the bilateral flow of information between exchange partners (Phan *et al.*, 2003). Thus, resource dependence theory predicts that independent directors would lead to improved firm risk taking because they allow the firm access to productive resources, legitimacy and information (Mizruchi, 1996, Schoorman *et al.*, 1981). In addition, the negative relation is also consistent with Cheng (2008) who argues that holding board size constant, independent directors might have more heterogeneous views than insider directors. These heterogeneous opinions are moderate board decisions and be associated with lower levels of risk. When we measure independence using the fraction of truly independent directors, we find that this proxy for independence is unrelated to total risk. This shows that the new measure of independence captures other aspects of the board relationship than the reported independence measure.

H₀₃: Director Independence has no effect on risk taking in listed Companies

2.4 The Moderating Effect of Firm Performance on Board Structure and Risk Taking

Scholars have produced equivocal results on the effects of performance on organizational action. Four arguments have emerged, two concerning the effect of poor performance and two effects of successful performance. The first general argument by Whetten (1987) argued that poor performance and organizational decline leads to increased secrecy and conservatism. This hypothesis is supported by Cameron (1987) who said that poor performance may restrict the number of sources of information consulted and alternatives considered in developing potential solutions, which in turn reduces change. Staw *et al.*, (1981) explained that poor performance increase rigidity, centralization and formalization which hinder change and adaption. According to Singh (1986; 564), performance decline leads decision makers undertaking conservative rather than high risk decisions. Hed-berg (1981) and Dutton & Duncan (1987) added that poor performers lack the resources to even attempt change.

On the contrary second argument explains that low performance acts as a catalyst to organizational adaption. Cyert and March (1963) and Kiesler and Sproull (1982) proved that decline in performance leads to corrective management action. The hypothesis was also supported by March and Simon (1958) who noted that poor performance drives organizations into problem -motivated search leading to pressure for change. The third argument was explained by Dutton & Duncan (1987) and Starbuck & Hedberg (1987) that past organizational success can create illusions of invulnerability that make decision makers impervious to external change.

H_{04a}: Firm performance does not moderate the relationship between board size and firm risk

H_{04b}: Firm performance does not moderate the relationship between director independence and firm risk taking

H_{04c}: Firm performance does not moderate the relationship between CEO duality and firm risk taking

3.0 Methodology and data

We examined these issues by use of explanatory research design. We used 38 Listed Companies that have been consistent in the NSE between 2005 and 2010. We analyzed each company for 6 years i.e. (38*6=228 firm year observations).

We conducted the study using secondary sources which we achieved by analyzing the content of financial reports of 38 companies quoted in Kenya. We prepared document analysis guide to enable and guide collection of data on board composition of the selected listed companies and the extent of their risk taking.

3.1 Measures of variables

We assigned CEO duality the value 1; a situation where the CEO is not serving as the chairman of the board and assigned the value 0, (Shivdasani, 1999). The measure of board size which was also used in previous studies (Yermack,1996; Mayers *et al.*, 1997; Denis and Sarin,1999 , He and Sommer, 2006; Boon *et al.*, 2007),was be the number of members on a board.

We measured the director independence by the percentage of non- executive directors (outsiders) in a board. We also considered the ratio of outside to be the measure of board independence.

We measured risk taking using standard deviation of earnings before interest and tax (EBIT) where we employed it for the measure of firm risk as recommended by Baird and Thomas (1990).

Zahra and Pearce (1989) suggest that greater scale of the firm may increase the amount of uncertainty and complexity in the firm's operation. Thus, previous empirical studies have suggested a positive relationship between firm size and firm risk (Graves, 1988; Hansen & Hill, 1991). We, therefore, controlled firm size which was measured as the log of total assets. In addition, given that past research has associated industry conditions with firm risk (e.g., Reed & Luffman, 1986; Fiegenbaum & Thomas, 1986), we controlled for industry types. We categorized the Industry by grouping similar firms into one industry and assigned a dummy variable. We categorized the firms into five industries namely Agricultural, Commercial and Services, Finance and Investment, Industrial and Allied and Alternative investment and we assigned dummy variables 1, 2, 3, 4 and 5 respectively.

We used return on assets (ROA) which is an accounting-based measure for performance as it is a well-understood operational measure (Grossman and Hoskisson, 1998;Hambrick and Finkelstein, 1995) primarily reflecting those areas under management's control and which also provides a convenient target for boards of directors to reach (Joskow et al.,1993). Return on assets (ROA) is measured as earnings before interest and tax divided by end of year total assets (Bhagat and Bolton, 2004)

3.2 Preliminary Analysis

We employed Pearson Correlation and moderated regression analyses in the study. Pearson correlation assumes the data is linear, and shows the relationship/association between the dependent variable and independent variable whereas moderated regression reported the extent of the effect of the independent variables on dependent variable. We first analyzed for correlation using coefficient of correlation r for association and coefficient of determination R^2 to establish the extent to which board structure accounted for changes in risk taking. Lastly, we employed a moderated regression model to establish the moderated regression coefficient of correlation and difference between extents of risk taking created by board structure. The general panel regression model we used in the study is as follows:

$$y_{it} = \beta_{0it} + \beta_1 x_{1it} + \rho_{it} \dots \dots \dots (i)$$

Where;

y is risk taking

β_0 is the constant of equation (represents the changes in risk taking that cannot be explained by independent variables in the model)

β_1 is the coefficient of regression for board structure variables

x_1 is the vector of board structure variables

ρ is error term
 i is i th order of the regression models
 t is the measure of time

The model testing direct effects of board structure on risk taking is as follows:

$$y_{it} = \beta_{0it} + \beta_1 x_{1it} + \beta_2 x_{2it} + \beta_3 x_{3it} + \rho_{it} \dots \dots \dots (ii)$$

Where;

- y is risk taking
- β_0 is the constant of equation (represents the changes in risk taking that cannot be explained by independent variables in the model)
- x_1 is the measure of board size
- x_2 is the measure of director independence
- x_3 is the measure of CEO duality
- β_1 is the coefficient regression for X_1
- β_2 is the coefficient regression for X_2
- β_3 is the coefficient regression for X_3
- ρ is error term
- i is i^{th} order of the regression models

The model testing moderated regression analysis is as follows:

$$y_{it} = \beta_{0it} + \beta_1 x_{1it} + \beta_2 x_{2it} + \beta_3 x_{3it} + \beta_4 x_1 * z_{1it} + \beta_5 x_2 * z_{2it} + \beta_6 x_3 * z_{3it} + \rho_{it} \dots \dots \dots (iii)$$

- y is risk taking
- β_0 is the constant of equation (represents the changes in risk taking that cannot be explained by independent variables in the model)
- x_1 is the measure of board size
- x_2 is the measure of director independence
- x_3 is the measure of CEO duality
- β_1 is the coefficient regression for X_1
- β_2 is the coefficient regression for X_2
- β_3 is the coefficient regression for X_3
- $x_1 * z_1$ is the measure of Board size*Firm Performance
- $x_2 * z_2$ is the measure of Director Independence*Firm Performance
- $x_3 * z_3$ is the measure of CEO duality*Firm Performance
- i is i th order of the regression models
- t is the measure of time
- ρ is error term

The data collected was classified in a table and presented in graphs to show the relationship of each independent variable and the dependent variable (risk taking)

4.0 Empirical Results

Descriptive statistics and correlations are reported in Table 1. The Pearson correlation test on the variables (independent, dependent and controlling variables) to investigate the relationship between the variables as well as multi- co linearity was conducted. The level of correlations among the variables is relatively moderate with most of the variables showing significant correlations. The relationship between variables in Table 1 shows that board size is significantly negatively correlated to risk taking, director independence is significantly positively correlated to risk taking and CEO duality and risk taking had no correlation.

Table 1: Means, Standard Deviations and Correlations

Variable	Mean	Std.dev	Risk taking	Board Size	CEO Duality	Director independence	Firm size	Industry	Firm Performance
Risk taking	24765.04	18918.76	1						
Board Size	8.7	2.98	-.862*	1					
CEO Duality	.004	.27	-.11	-.09	1				
Director independence	.7695	.15	-.547*	.318*	-.071	1			
Firm size	5.002	1.8798	.599*	.126	-.015	.219**	1		
Industry	3.101	1.098	.334*	-.129	-.188**	.081	.112	1	
Firm Performance	0.9962	9.207	-.04	-.107	.026	.081	.091	.09	1

N=288; **p<.01

Hypothesis was tested using moderated regression analysis. Before multiple regressions was performed, the variables were standardized to reduce the effect of multicollinearity especially when using interaction variables (Bauer and Curran, 2005; Aiken and West, 1991). In testing the hypothesis control variables (Industry and Firm size) and main effects were entered and later each interaction variable was entered separately.

Hypothesis 1 tested whether board size has no effect on firm's risk-taking in listed companies. However, results on Table 2, shows that this hypothesis does not hold ($\beta = -0.179, p < 0.05$)

Hypothesis 2 proposed that director independence has no effect on risk taking in listed companies. Results from Table 2 shows that the hypothesis does not hold ($\beta = 0.140, p < 0.05$).

Hypothesis 3 postulated that CEO duality has no negative effect on risk-taking in listed companies. The results reported does not have to it ($\beta = 0.215, p > 0.05$).

Hypotheses 4a, 4b and 4c focus on moderating role of firm performance in the relationship between board structure and firm risk-taking behavior. Hypothesis 4a suggested that firm performance does not moderate the relationship between board size and firm risk taking. Table 2 indicated that the interaction between board size and firm performance was significant as evident of coefficient of $\beta = 0.025, p < 0.05$. This may be due to the fact that when the firm performance is high, board tends to leave or the decision making process under CEO discretion, thus CEO might engage into decision which are more risky.

Hypothesis 4b predicted that firm performance does not moderate the relationship between board independence and firm risk taking. The results showed a coefficient of $\beta = 0.131$ with p value of 0.019 therefore the hypothesis did not get any support. Hence, the study concluded that at higher levels of firm performance, directors' independence increase risk taking in the firm. This may be related to the fact that when performance is high,

board assumes continues performance, hence they tend to be less engaged in decision making leading to high risks.

Finally, Hypothesis 4c states that firm performance moderates the relationship between CEO duality and firm risk. Analysis in Table 2 reveals that after using firm's performance to moderate the relationship between CEO duality and the firm risk taking its effect on predicting risk taking was not significant as recorded by coefficient ($\beta = 0.092$, $p > 0.05$) therefore the results reject hypothesis 4c.

Table 2 Regression Analysis Results

Variable	Model 1 (Direct Effects)	Model 2 (Firm performance*Board size)	Model 3 (Firm performance*Director Independence)	Model 4 (Firm performance*CEO Duality)
Constant	.431(.000)	.430(.000)	.429(.000)	.433(.000)
Control variables				
Firm size	.570(.000)	.581(.000)	.583(.000)	.570(.000)
Industry	.278(.000)	.287(.000)	.289(.000)	.278(.000)
Predictor variables				
Board size	-.179(.000)	-.178(.000)	-.158(.02)	-.179(.000)
CEO Duality	.072(.000)	.068(.173)	.066(.183)	.64(.312)
Director independence	.140(.007)	.135(.009)	.124(.017)	.139(.008)
Interaction	-	.101(.40)	.119(.019)	.014(.827)
n				
R²	.475	.485	.488	.475
(F ratio)	39.928**	34.472**	34.903**	33.138**

5.0 Discussions and Conclusion

Based on the research findings, we concluded that Board size highly influences risk taking, the more the firm increases the number of board members the lower the level of risk taking. We also identified that board independence had positive effect on risk taking, in the study number of non-executives board members were found to be almost equal with number of board members. We concluded that some reasons for this may be that independent directors have relevant experience, and, apart from complying with their legal obligations of due care and skill, lack a direct interest in the company's performance (and the incentive that interest brings), consistent with the expectation, the results support that strong firm boards (at least small board size) positively relate to firm risk-taking. Consistent with the expectation, we realized that CEO duality had no impact on risk taking. Contrary to the prediction increase in performance we also discovered that when boards are large there is increased risk taking in the firms this because of the availability of resources and perhaps excitement in the firm triggered by previous success. Finally we discovered that firm performance had a role in the relationship between director independence and risk taking. However, we reported from the results that firm performance had no effect on the relationship between CEO duality and firm risk taking

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