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Board Size Determinants: Evidence from Nigeria

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ABSTRACT

This paper seeks to investigate the determinants of board size for Nigerian companies. To accomplish the aim of the study, a panel data set of public listed companies in Nigeria from 2005 to 2015 was employed. The results showed that the most common board size of Nigerian companies ranged from four to 18 members. Specifically, the findings indicated that board size was a function of company and industry characteristics. A significant and positive association was found between company size and board size, while CEO ownership and ownership concentration were negative. The results lend support to theoretical arguments that a company's board structure is determined by the scope of company operations and monitoring costs associated with the company. Since company-specific characteristics

determine board size, the impact of board size on corporate outcomes may differ based on these characteristics. Therefore, it would be helpful if future studies could consider the interactive effect of company characteristics when investigating the impact of board size on corporate outcomes.

1. Introduction

In today's corporate environment, emphasis on improving corporate governance is mainly centred on the board of directors (BODs). The BODs is the most important corporate governance mechanism in companies and has a wide range of responsibilities, which include monitoring company operations, advising top management and making strategic decisions that may affect company financial performance and value as well as sustainability. However, for the BODs to carry out its responsibilities effectively, understanding the environment in which the company operates is vital. One key factor that affects board effectiveness and which reflects the ability of a company to link the company with the environment and to secure critical resources is the size of the board (Nguyen, Rahman, Tong, & Zhao, 2015; Pfeffer, 1972).

Board size, which is considered as the number of directors in the corporate boardroom and this number (small or large), is crucial in enabling the BODs to discharge its responsibilities. For instance, scholars arguing from the agency theory perspective have suggested that a small board can monitor more effectively, while a large board can be ineffective and slow in decision-making because of coordination and communication problems leading to the deterioration of company value (Jensen, 1993; Lipton & Lorsch, 1992). However, resource dependence theory scholars have opined that large boards provide directors with the chance to specialise, which in turn, can result in better advice on the company's management (Pfeffer, 1972; Zahra & Pearce, 1989). In fact, companies which are highly in need of advice benefit from having a large board (Coles, Daniel, & Naveen, 2008).

These two opposing arguments suggest that board size depends on the costs and benefits of board functions in terms of monitoring and advising. Thus, the question is what are the drivers of a company's board size? Some scholars mentioned that the scope and complexities of a company's operations as well as specific business and information environment, are the drivers of a

company's board structure, including its size (Coles et al., 2008; Lehn, Patro, & Zhao, 2009; Raheja, 2005). However, empirical evidence in this respect is scarce with most being investigated in advanced countries (the United States and the United Kingdom), with little attention given to emerging and frontier markets, like Nigeria. Therefore, this study examines the determinants of board size of companies in the Nigerian capital market.

Investigating this issue is particularly important, considering the contextual differences in business practices and environments of frontier markets. Similarly, there are divergent views and mixed findings on the impact of board size on its effectiveness, which in turn, influences corporate outcomes, such as performance and company value. There is also a concern with regards to the channel that board size influence on corporate outcomes passes through. In addition, capital market regulators in most countries require companies to have a reasonable number of board directors. Specifically, in Nigeria, section 4.2 of the Code of Corporate Governance for public companies states that membership of the board should not be less than five. This means that companies have the discretion to decide on the number of directors that can sit on the board. Similarly, in Nigeria, which is one of the most important financial markets, corporate boards have been considered inefficient (Adegbite, Amaeshi, & Nakajima, 2013). Hence, it is important to examine what factors affect board size, as this would enable future researchers to identify how board size can influence company effectiveness and corporate outcomes. The remainder of the paper is structured as follows. Section 2 discusses the literature review, while section 3 describes the research method used. Section 4 reports the results and finally, section 5 presents a discussion followed by the conclusion.

2. Literature Review and Hypotheses Development

The BODs is defined as a group of individuals who represent the shareholders and other stakeholders of the company to carry out certain functions[1], whereby the size of the board plays a vital role (Golden & Zajac, 2001). Therefore, understanding the role that the size of the board plays in a company is important. There are different and opposing theoretical views on the exact role of board size. Scholarly literature from the agency theory point of view has indicated that small boards are more effective in monitoring than large size boards. Some of the reasons to this effect are that small boards have fewer opportunities for free-riding, are more cohesive and more productive, and these assist the directors in their monitoring function of the company as well as their ability to be involved in strategic decision-making.

However, increase in board size makes coordination and communication difficult among directors, leading to internal conflicts (Coles et al., 2008;

Firstenberg & Malkiel, 1994; Jensen, 1993; Lipton & Lorsch, 1992). This also creates difficulties for directors to organize board meetings and reach agreement due to their numbers and operational complexities (Guest, 2009; Jensen 1993). It also increases agency problems in the boardroom and inhibits the board's ability to initiate strategic changes in the company. A typical example is Goodstein, Gautam, and Boeker's (1994) study which showed that boards with a large number of directors made slower and less-efficient decisions. Such boards held back corporate restructuring decisions and were slow to react in difficult situations. Large boards were also more likely to be controlled by the Chief Executive Officer (CEO) instead of the other way around. It is based on this line of argument that shareholders generally consider small boards and pressure companies to reduce board size due to problems inherent in large boards. For example, Jensen (1993) argued that increase in board size beyond seven or eight led to a negative relationship between board size and company value. Likewise, in the case of the Nigerian banking sector, Uwuigbe and Fakile (2012) showed that banks with boards less than 13 directors were more viable than banks with more than 13 directors. In addition, companies with large boards have been found to record lower profits than those with small boards. Similarly, certain empirical literature has shown that a large board is detrimental to the company (Cheng, 2008; Guest, 2009; Kumar & Singh, 2013; O'Connell & Cramer, 2010; Nguyen et al., 2015; Yermack, 1996).

In contrast to the agency theory perspective, the resource dependence theory is of the view that companies are better off with large boards. The theory posits that there is a tendency that a board with a large board size would have directors with diverse educational qualifications and industry experience, which would result in greater monitoring. It would also enhance the company's access to more resources and expertise (Goodstein et al., 1994). These resources include access to markets, new and better technologies and raw materials. For instance, Booth and Deli (1996) stated that large boards enabled companies to access a wide range of expertise needed to overcome environmental uncertainties. Musteen, Datta and Kemmerer (2010) reported that companies with large boards had a better reputation compared to small boards. Coles et al. (2008) mentioned that companies requiring more advice derived greater value by having a large board. Cheng (2008) suggested that large boards were necessary for some types of companies and under certain situations. Therefore, it can be concluded that large boards would provide management with high quality advice and strategic decisions that can create value for the company (Dalton, Daily, Johnson, & Ellstrand, 1999; Pfeffer, 1972; Zahra & Pearce, 1989).

These conflicting arguments therefore, indicate that each company has an optimal board size that can be explained with the company's characteristics, in particular the scope and complexity of its operations, specific business

and information environment and negotiation between the company's CEO and outside board members (Boone, Field, Karpoff, & Raheja, 2007). These characteristics are what theoretical papers refer to as scope of operations and monitoring cost hypotheses (Adams & Ferreira, 2007; Coles et al., 2008; Fama & Jensen, 1983; Harris & Raviv, 2007; Lehn et al., 2009).

Under the scope of operations hypothesis, several studies are of the view that monitoring and providing strategic directions may be a challenging task for complex companies. This is because such companies exist in a complex business environment that would need external human capital for effective decision-making (Booth & Deli, 1996; Boone et al., 2007; Cicero et al., 2013; Pfeffer, 1972). According to Fama and Jensen (1983), the organization of a company was a reflection of the scope and complexity of its production processes. Therefore, large or more complex processes would lead to large and more hierarchical companies, thereby making the job of ratifying and monitoring senior managers' decisions more complex. Hence, the need for a large board becomes important. In addition, the ability of the board to carry out its resource dependence functions, such as provision of information and expertise and creation of channels of communication with constituents of importance for the company are dependent on the number of directors on the board (Carter, D'Souza, Simkins, & Simpson, 2010). Indeed, Boone et al. (2007) reported that companies with operations that were more complex may likely require large boards with a greater proportion of independent directors. Accordingly, the requirement of the board to increase the number of independent directors would in turn, increase board size (Coles et al., 2008; Linck, Netter, & Yang, 2008).

Several studies have suggested that large companies tend to be more involved in diverse activities (e.g., merger and acquisition activities and using more sophisticated and financial marketing techniques). Such companies therefore need more directors for the new tasks, including succession planning, compensation and auditing, as well as more information compared to small companies (Bhagat & Black, 1999; Agrawal & Knoeber, 1996; Lehn et al., 2009; Pearce & Zahra, 1992). In another related study, Nguyen et al. (2015) found that the sensitivity of CEO compensation to company size was more prevalent in Australian companies with a large board. This indicated that a large board would exhibit lower operating performance and higher operating costs. In a similar vein, Guest (2009) reported that the negative effect of board size on company performance was more pronounced in large companies that tended to have large boards. Consistent with this notion, a number of studies have shown that board size is positively associated with company size. For example, Germain, Galy, and Lee (2014) found that companies' operational level was a significant determinant of the board size in the Malaysian stock market. Other studies have also shown that company size is positively associated with board size, which

means larger and more complicated companies would need more directors' expertise and external resources (Boone et al., 2007; Lehn et al., 2009; Linck et al., 2008; Min, 2018; Yermack, 1996). Therefore, in line with the scope of operations hypothesis, this study hypothesizes that:

H1 : Company size is positively associated with board size.

In contrast to the positive effect of a company's scope of operations, a considerable number of studies pointed out that free-riding problems caused by having larger boards may result in less monitoring services offered by board members, which makes the board less effective (Adams & Ferreira, 2007; Harris & Raviv, 2007; Raheja, 2005). The net benefits of additional monitoring increase with managers' opportunities to consume private benefits, but decrease with the costs of monitoring. Therefore, it can be suggested that board size emerges from the trade-off between firm-specific benefits and costs of increased monitoring, which is determined by the environment that a company operates in. For example, Linck et al. (2007) demonstrated that companies facing greater information asymmetry tended to have small and less independent boards because of the high costs of monitoring. An important example is a high growth company, which is often characterized as high in information asymmetry, may have a small board because of the high costs of monitoring (Smith & Watts, 1992; Gaver & Gaver, 1993). Consistent with the monitoring cost hypothesis, Germain et al. (2014) documented that board size was correlated with the monitoring cost hypothesis, such as market-to-book ratio, free cash flow and market concentration. Lehn et al. (2009) found that board size was negatively associated with growth opportunities. Min (2018), Linck et al. (2008) and Boone et al. (2007) demonstrated that board size was negatively related to the company's costs of monitoring, such as CEO ownership and research and development (R&D) expenditure. This means that companies with high managerial ownership, high growth opportunities and high R&D expenditures are associated with small boards. Kyereboah-Coleman and Biekpe (2007) also reported that CEO tenure, as a measure of monitoring costs, is negatively associated with board size. This implies that when the costs of monitoring are high, the board should be small. Therefore, the next hypothesis is that:

H2 : *CEO ownership and ownership concentration are negatively associated with board size.*

3. Research Design and Data

The unit of analysis in this study was the company. This study considered 80 listed companies on the Nigerian stock exchange. Based on data availability, the

sample data was collected from the period, 2005 to 2015. The board structure and each company's financial data were extracted manually from annual reports of the sampled companies and the FACTBOOK released by the Nigerian stock exchange. In line with prior studies, financial companies were excluded due to their financial ratios characteristics (Guest, 2008; Germain et al., 2014).

The dependent variable in this study was board size, while the independent variables were company size, age and CEO ownership. Board size was measured as the natural logarithm of the total number of directors on the board as indicated in the annual reports of the companies (Coles et al., 2008; Germain et al., 2014). Company size was measured as the natural logarithm of the total assets of the company in each year of analysis, while company age was computed as the natural logarithm of the company age from the time the company was established. These two variables were proxies for the scope of operations hypothesis. To capture the monitoring cost hypothesis, this study used CEO ownership, which was identified as the percentage of company shareholdings owned by the company's CEO. Other control variables considered in this study were ownership concentration, industry classification of the company and time dummies. Another important variable that could determine board size was the company's ownership structure (Ning, Davidson, & Zhong, 2007), because a company with a concentrated ownership in the hands of a few directors tended to have a small board (Denis & Sarin, 1999). In addition, the industry in which a company operates may significantly affect its board size because of the variability associated with the costs and benefits of large boards across different industries (Ning et al., 2007).

Since the sample contained data across companies and over time, this study employed the multivariate panel regression technique. This allowed the study to estimate the effects that were simply not detectable in pure cross-sectional or time-series data (Germain et al., 2014; Ahmed Sheikh et al., 2013).

$$LNBSIZE_{it} = \beta_0 + \beta_1 LNTA_{it} + \beta_2 \mathrm{LNCAGE}_{it} + \beta_3 CEOWN_{it} + \beta_4 OWCON_{it} + \beta_5 INDUSTRY\ DUMMIES_{it} + \beta_6 YEAR\ DUMMIES_{it} + \varepsilon_{it}$$

Where $LNBSIZE$ represents board size for the ith company at time t, measured as the natural logarithm of number of directors on the board; $LNTA_{it}$ captures company size for the ith company at time t and it is measured as the natural logarithm of total assets of the company; LNCAGE_{it} represents the company age for the ith company at time t, which is measured as the natural logarithm of the company's age from year of establishment; $CEOWN_{it}$ is the company CEO's ownership for ith company at time t, which is the proportion of shares owned by the CEO; $OWCON_{it}$ represents ownership concentration for the ith company at time t, which is the percentage of shares controlled by block holders which is at least 10% of the total share of the company;

$INDUSTRY$ represents industry dummies; YEAR represents year dummies; and ε_{it} is the random error for the ith company at time t.

3.1 Empirical Results

3.1.1 Descriptive Statistics and Correlation Analysis

The descriptive statistics of the variables considered in the study are displayed in Table 1. Based on the figures shown, the average board size was nine, the minimum was four and the maximum was 18. In addition, the average age of companies was 38 years and the maximum was 92 years, which meant that a company could be as old as 92 years. The average percentage of CEO ownership was 4% and a CEO owned as much as 63.65% of the company shares. There was also a high degree of ownership concentration among Nigerian companies.

Table 1. Descriptive Statistics

Variable	Mean	Min	Max	Skewness	Kurtosis
Board size (BSIZE)	9.08	4.00	18.00	0.37	2.50
LNBSIZE	2.16	1.39	2.89	-0.17	2.27
Company age (CAGE)	39.54	1.00	92	0.05	2.72
LNCAGE	3.50	0.00	4.52	-1.67	6.54
Total assets in millions Naira (TA)	29360.44	65.31	950000	6.09	59.84
LNTA	15.76	11.12	20.67	-0.08	2.60
CEO ownership (CEOWN)	4.50	0.00	63.65	2.67	9.95
Ownership concentration (OWCON)	53.83	0.00	95.00	-0.54	2.44

On average, ownership concentration was 53.83% and was as much as 95%. The average total asset of Nigerian companies was 29.360 million Naira and the maximum value was 950 million Naira. In addition, the correlation results shown in Table 2 revealed that company age (LNCAGE) and company size (LNTA) were statistically significant and positively correlated to board size (LNBSIZE).

$LNBSIZE$ is the natural logarithm of the number of directors on a company's board. LNCAGE is measured as the natural logarithm of the company's age from year of establishment. $LNTA_{it}$ captures the company size

and is measured as the natural logarithm of total assets of the company. CEOWN is the company CEO's ownership, which is the proportion of shares owned by the CEO. *OWCON* represents ownership concentration and it is the percentage of shares controlled by block holders which is at least 10% of the total shares of the company.

However, CEO ownership (CEOWN) was statistically significant and negatively correlated to LNBSIZE. The results in Table 3 also showed that the correlation terms among the variables were small, hence indicating no concerns with multicollinearity among variables, further evidenced in the variance inflation factors (VIFs) results presented in column 6 of Table 3, where all the VIF values reported were below the critical level of 10.

Table 2. Correlation Results

Variable	LNBSIZE	LNCAGE	LNTA	CEOWN	OWNCON
LNBSIZE	1.000				
LNCAGE	0.081***	1.000			
LNTA	0.531***	0.157***	1.000		
CEOWN	-0.322***	-0.195***	-0.303***	1.000	
OWCON	0.019	-0.020**	0.113***	-0.046	1.000

LNBSIZE is the natural logarithm of the number of directors on a company's board. LNCAGE is measured as the natural logarithm of the company's age from year of establishment. LNTA captures the company size and is measured as the natural logarithm of the total assets of the company. CEOWN is the company CEO's ownership, which is the proportion of shares owned by the CEO. *OWCON* represents ownership concentration and it is the percentage of shares controlled by block holders which is at least 10% of the total shares of the company.

3.1.2 Regression Results

Although panel data regression assisted in controlling for heterogeneity of cross-sectional units (Hsiao, 2007), the independence of the year-to-year company-level observations was a concern because board structure was relatively persistent (Boone et al., 2007; Guest, 2008; Hermalin & Weisbach, 1988). Therefore, the empirical results reported in Table 2 were based on the robust White Huber standard errors regression technique, which allowed observations to be clustered at company level and controlled for serial correlation and heteroskedasticity

problems that occurred mostly when using panel regression (Cameron & Miller, 2015). This was especially in situations where the panel regression results chose the fixed-effects model. On this note, the main result discussed in this study is the robust regression results displayed in column 5 of Table 3.

Table 3. Regression Results

Variable	Pooled OLS	Random-effects model	Fixed-effects model	Huber White standard error	VIF
LNCAGE	-0.019	-0.012	-0.000	-0.023*	1.06
LNTA	0.081***	0.061***	0.044***	0.097***	1.13
CEOWN	-0.004***	-0.001	-0.000	-0.003***	1.13
OWCON	-0.061*	0.111**	-0.158**	-0.094**	1.02
Industry dummies				Yes	
Agriculture				0.194***	
Consumer				0.165***	
Health				0.198***	
Industrial products				0.138***	
Natural resources				0.161***	
Oil and gas				0.199**	
Year dummies				Yes (2005 & 2006)	
R-squared	33%			41%	
Breusch and Pagan Lagrangian multiplier test		0.000			
Hausman test			0.002		
Wald test				0.000	

Based on the results, a positive association was found between company characteristics and board size. Specifically, company size was significantly and positively associated with board size at the 1% significance level. However, CEO ownership and ownership concentration had a significant and negative impact on board size; while CEO ownership had a 1% level of significance and ownership concentration which was significant at the 5% level. These results highlighted that a company's board size was determined by the company's characteristics. In addition, board size was found to be dependent on the type of industry that the company belonged to. For instance, a significantly positive influence was found in agriculture, consumer, health, industrial products, natural resources and oil and gas industries. Similarly, there was also evidence of year effects in 2005 and 2006, which indicated that possible amendments to corporate governance regulations had impacted the number of directors in the company.

LNBSIZE is the natural logarithm of the number of directorson a company's board. LNCAGE is measured as the natural logarithm of the company's age from year of establishment. LNTA captures the company size and is measured as the natural logarithm of total assets of the company. CEOWN is the company CEO's ownership, which is the proportion of shares owned by the CEO. *OWCON* represents ownership concentration and it is the percentage of shares controlled by block holders.

4. Discussion and Conclusion

Several scholars in the area of corporate governance have claimed that board size is one of the important internal governance mechanisms that have direct influence on board effectiveness. This mechanism reduces conflict of interest between managers saddled with the responsibility of controlling company resources and owners with equity holdings that do not amount to monitoring costs (Lipton & Lorsch, 1992; Pfeffer, 1972). It therefore suggests that the number of directors on a company's board should be appropriate. Corporate governance studies have suggested that company-specific features may be important determinants of board size. Thus, this study employed proxies related to scope of operations hypothesis and monitoring cost hypothesis to investigate the determinants of company board size in Nigeria. Consistent with prior empirical literature (e.g., Boone et al., 2007; Germain et al., 2014; Lehn et al., 2009; Linck et al., 2008), the regression results of this study has revealed that company size is positively associated with board size, which simply implies that the complexity of a company's operations is a significant determinant of a company's board size. Thus, board size grows in response to a company's complexity. Similarly, in line with the prediction of the monitoring cost hypothesis that monitoring costs would have a negative impact on board size, this study has found that proxies

for monitoring costs, such as CEO ownership and ownership concentration, are negatively associated with board size. This implies that board structure is based on the monitoring requirements of the company's business activities and increases in private benefits. All these findings are consistent with assertions from prior studies (Boone et al., 2007; Coles et al., 2008; Cicero et al., 2013; Linck et al., 2008) that board size is a function of monitoring costs combined with increase in benefits.

In short, the findings provide at least some support for the theoretical prediction of the scope of operations hypothesis and the monitoring cost hypothesis in explaining board size. Hence, it is recommended that studies examining the influence of board size on corporate outcomes could consider the interacting effects of company characteristics before regressing it against corporate outcomes, like performance, value and financial reporting quality. In addition, a number of proxies have been proposed by previous scholars for scope of operations and monitoring costs hypotheses. Therefore, future studies can apply leverage and diversity in the context of scope of operations hypothesis and growth opportunities, such as market-to-book ratio and R&D expenditure in the context of the monitoring cost hypothesis. This would allow for a comprehensive conclusion on board size determinants in Nigeria. The overall implication of these results is that regulators and managers should ensure that corporate boards commensurate with the size of the company, as this would enable the boards to act efficiently and to avoid boards which are persistently too large.

End Note

[1] Some of these functions include giving expert advice and guidance to the CEO and managers in strategy formulation and implementation. Other functions include monitoring and disciplining of ineffective management teams, and providing access to critical information and resources that are needed for company survival (Adams & Ferreira, 2007; Fama & Jensen, 1983; Hillman & Dalziel, 2003). It is also considered as an instrument for dealing with external interdependence and uncertainty caused by its exchange of resources with the external environment (Lynall, Golden, & Hillman, 2003; Pfeffer, 1972).

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