The Effect of Corporate Board Size on Financial Performance of Nigerian Listed Firms

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Abstract

This study examines the relationship between board size and financial performance of 35 non-financial firms listed on Nigerian Stock Exchange. The study covers the period 2003-2014. Using panel data regression analysis and Fixed effects model as estimation technique, result reveals a positive and significant relationship between board size (surrogated by the natural log of number of directors on the board) and the two financial performance proxies (Return on assets and Return on equity). The outcome of the study is consistent with some prior empirical studies and provides evidence in support of the argument that companies with larger board members do harness the divergent views of members, thereby coming up with informed decisions that will improve the financial performance of companies under their watch. It is also difficult for chief executive of companies to influence members of the board. For higher financial performance to be achieved, this study recommended an average board size of not less than 9 members for a listed company.

Key words: agency cost, board of directors, corporate governance, financial performance

1.0   Introduction

Separation of ownership and control is the hall mark of modern joint stock corporations. On one hand, we have the owners (shareholders) of the entity who contribute funds for the running of the business. On the other hand, we have the professional managers (management) that help to run the affairs of the business. For effective monitoring and provision of advisory services to the management of corporations, regulatory agencies provide for companies to have board of directors.

The board is considered to be an important corporate governance mechanism because decisions reached by the board are implemented by the management. These decisions affect not only the performance of the entity, but also have significant effect on the survival of the business.

The crux of the matter is the size of this important corporate governance mechanism (board) and its effect on financial performance of an entity. Much of the public debates and empirical studies in the USA and some other developed countries where boards play important roles in corporate governance favour board with smaller size. It is argued that larger board size initially facilitates key board functions, but there comes a point when larger boards suffer from coordination and communication problems and hence board effectiveness and firm performance declines (Lipton and Lorsch, 1992; Jensen, 1993; and Guest, 2009).

Contrary to the well documented negative relationship between board size and financial performance, a number of recent studies (Dalton and Dalton, 2005; Adam and Mehran, 2005; Guest, 2008, 2009; Coles, Daniel and Naveem, 2008, Topal and Dogan, 2014) provide evidence that board size is determined by firm specific variables, hence the direction of the relationship between it and financial performance may differ between companies. Some of the findings indicate that larger boards work well for certain type of firms depending on their organizational structures and the country's institutional framework on corporate governance regarding functions of the board.

Paucity of research materials in this area of study especially in the developing countries, such as Nigeria, serves as a source of motivation for the current study. The primary objective of this study is to investigate the relationship between board size and financial performance of listed firms in Nigeria.

2.0 Literature Review
Theoretical framework

Agency theory

This theory was initially put forward by Berle and Means (1932) cited in Onaolapo, Kajola and Nwidobie (2015) but reviewed by Jensen and Meckling (1976) show the fundamental agency problem inherent in modern day joint stock (or limited liability) companies. This evolves as a result of separation of ownership and control unlike what we have in a sole proprietorship business. The owners (shareholders) provide the necessary funds for the business to use in the normal day-to-day activity, while professional managers are employed to run the affairs of the business.

It is expected that the managers (who are the agents of the owners) will utilize the funds provided by the owners (principals) by investing in projects that will increase the net worth of the owners. However, some opportunistic managers may decide to use the funds in such a way that will profit them as managers against the interest of the owners. In order to align the interest of the managers with the owners, the latter incur monitoring (agency) cost.

Earlier agency theorists (Demsetz and Lehn, 1985; Jensen and Meckling, 1976 and Fama and Jensen, 1983) suggested having an effective corporate governance system, which involves establishment of board of directors. The primary function of the board is to monitor the professional managers/directors and ensures that these agents discharge their duties in line with their engagements and to the benefit of the owners (shareholders) of the business. Thus, the size of the board is material to the effective discharge of their onerous task, which ultimately affects the financial performance of the entity they preside on.

Related empirical studies

Yermack (1996) pioneered the empirical study on the relationship between board size and financial performance. Analyzing a panel of 452 large USA firms from 1984 to 1991 using a fixed effects model, result shows that there is a negative and significant board size effect on Tobin's q (financial performance proxy).

Kiel and Nichoison (2003) study the impact of board structure on the financial performance of 348 firms quoted on Australian stock exchange for1996-1998. The results of the study suggest a positive and statistically significant relation between board size and financial performance proxy, Tobin's q.

Belkhir (2008) investigates the relationship between board size and performance of a sample of 174 bank and savings-and-loan holding companies, over the period 1995-2002. Using panel data techniques, the

study reveals a positive relationship between board size and performance, as measured by Tobin's q and the return on assets. The paper concludes that the board size-performance relationship goes from board size to performance and that the calls to reduce the number of directors in banks might have adverse effects on performance.

Guest (2009) examine the impact of board size on firm performance for a large sample of 2,746 UK listed firms over 1981-2002. Findings reveal that board size has a strong negative impact on profitability (Tobin's q and share returns). Results further show that the negative relation is strongest for large firms, which tend to have larger boards.

Eyenubo (2013) examines the impact of bigger board size on financial performance of 50 listed firms in Nigeria for the period 2001-2010. With the use of regression analysis technique, the outcome of the study shows that bigger board size affects the financial performance of a firm in a negative manner.

Akpan and Amran (2014) investigate the relationship between board characteristics and company performance of 90 listed companies in Nigeria from 2010 to 2012. The empirical evidence shows that board size and board education are positively and significantly related to company performance.

Topal and Dogan (2014) test the impact of the board size on the financial performance of 136 Turkish manufacturing firms for data from 2002-2012. Robust estimator developed by Beck-Katz (1995) was used for analysis. The results of the conducted analyses suggest a positive relation between the board size and return on asset and Z Altiman score. Another result, on the other hand, suggests that board size doesn't have an impact on Tobin's q and return on equity.

Malik, Wan, Ahmad, Naseem and Rehman (2014) examine the relationship between board size and firm performance using the Pareto Approach for 14 Pakistani banks for the period 2008-2012. The results of the study provide a significant positive relationship between board size and bank performance.

Nath, Islam and Saha (2015) examine the influence of board structure on firm's financial performance in the pharmaceutical industry of Bangladesh. Four major board attributes (board composition, board size, board ownership and CEO duality) were selected to identify their influence on firm's financial performance. The findings from the study show that there is a significant negative relation between board size and firm's financial performance. However, the association between other three variables with financial performance is insignificant.

Pratheepkanth, Hettihewa and Wright (2015) investigate the correlation between board attributes and firm performance in a sample of 100 Australian and 100 Sri Lankan firms. The analysis and a visual inspection of the raw data suggest that Australian boards are much larger than Sri Lankan boards. The most important finding of the study is that the larger boards of Australia appear to have a significantly stronger influence on firm performance than the relatively smaller boards of Sri Lanka.

Bebeji, Mohammed and Tanko (2015) analyze the effect of board size and composition on the performance of 5 Nigerian banks for the period of 9 years. Using multivariate regression analysis, the finding of the study reveals that the board size has significant negative impact on the performance of banks in Nigeria.

Johl, Johl and Cooper (2015) examine the impact of board characteristics and firm performance of 700 public listed firms in Malaysia for the year 2009. The result shows that board independence does not affect firm performance, whilst board size and board accounting/financial expertise are positively associated with firm performance.

Isik and Ince (2016) investigate the impact of board size and board composition on performance of 30 commercial banks from 2008 to 2012 in Turkey. After controlling for bank size, credit risk, liquidity risk, net interest margin and non-interest income, the results of panel fixed effects regression suggest that board size has a significant positive effect on bank's performance (Operating Return on Asset, OROA and Return on Asset, ROA).

On the basis of agency theory and Resource dependency theory, Munyradadzi and Nirupa (2016) explore the effect of board composition and board size on financial performance of companies listed on the Johannesburg stock exchange in South Africa. Result shows that board size is not significantly associated with Tobin's Q and ROE (performance measures). In contrast to this result, board size is found to be positively associated with another performance measure, ROA.

3.0 Methodology
Data source
Data for this study were sourced from the audited reports and accounts of the selected firms and also from the Nigerian Stock Exchange Fact Books for 2003-2014. The choice of the study period is guided by the availability of relevant data.

Population, sample and sampling technique
As at the beginning of 2014, 183 non- financial firms were listed on the floor of the Nigerian Stock Exchange and this constitutes the population of the study. The sample size of 35 companies was chosen from the population through the stratified sampling

technique. In all, the sample companies covered 15 business sectors as shown in Table 1. (see Appendix 1).

Table 1: Sample Companies used in the study

S/N	Sector	No of Firms
1	Agro/Agro-allied	1
2	Automobile and Tyre	1
3	Breweries	2
4	Healthcare	2
5	Industrial and Domestic product	3
6	Building Materials	3
7	Chemical and Paints	3
8	Conglomerates	3
9	Construction	2
10	Printing and Publishing	2
11	Food/ Beverages and Tobacco	3
12	Packaging	3
13	Petroleum (Marketing)	5
14	Textile	1
15	Commercial/Services	1
	Total	**35**

Source: Researchers' selection from Nigerian Stock Exchange Fact Books for relevant years of study.

Research instrument
In line with some prior studies, panel data regression analysis was adopted. This involves simultaneous combination of cross-sectional and time series data. Two estimation techniques- Fixed effects and Random effects were initially considered. Since companies of different sizes and sectors comprised the sample, the use of simple pooled OLS may not give correct inferences on the relationship between the study variables. Hence, in line with Yermack (1996), Marfo-Yiadom and Agyei (2011) and Dawood, Moustafa and El-Hennawi (2011), Fixed effects and Random effects models where lagged values are not included among the regressors are applied. This will help to alleviate the endogeneity problem that may occur due to omitted variables, measurement error of explanatory variables or reverse causality between the dependent variable and the explanatory variables. In order to determine which of the two techniques to be used for valid inferences, Hausman (1978) specification test was conducted.

Description of variables
Dependent Variable
Financial Performance: This is the only dependent variable of the study and it is measured by two proxies- Return on asset (ROA) and Return on equity (ROE).
(i) Return on Asset: It is the measure of how well a firm utilizes its assets to generate profit. It gives a long-term view of performance of the firm (Vijayakumar and Devi, 2011). ROA is measured as the ratio of profit after tax to total assets.
(ii) Return on Equity: This is a measure of how a firm utilized the available resources contributed by owners to earn a profit. Like ROA, It also gives a long-term view of performance of the firm.

Independent variable
Board size is the only independent variable of the study. The current study adopts the natural log of number of directors on the board as a measurement of board size (Anderson & Reeb, 2003; Jackling & Johl, 2009; Arosa, Iturralde & Maseda, 2010, Munyradadzi & Nirupa, 2016 and Isik & Ince, 2016). With some exemptions, the majority of the studies on the relationship between board size and financial performance, especially in the developed countries, is negative (Yermack, 1996; Mak & Kusnadi, 2005; Raheja (2005); Haniffa & Hudaib, 2006; Cheng, 2008; Arosa, Iturralde & Maseda, 2013; Eyenubo, 2013; Bebeji et al, 2015 and Nath et al, 2015).

Control variables
Leverage: Leverage: This variable is considered in the literature to have effect on profitability. The direction of the relationship between leverage and profitability depends on the theory behind it. The Pecking order theory of Myers (1984) and Myers and Majluf (1984) predict a negative relationship while Static-trade off theory predicts positive relationship. Leverage is measured as the ratio between total debts to total assets.

Firm size: This is defined as natural log of total assets. **The size of a firm is considered to be an important determinant of firm's profitability, hence the need to introduce in this study, a control variable, SIZE, which serves as a proxy for firm's size. Penrose (1959) cited in Onaolapo and Kajola (2010) argues that larger firms can enjoy economies of scale and these can favourably impact on profitability. A positive relationship between firm's size and financial performance is expected in line with the prediction of Static trade-off theory.**

Age: Firm age: This is seen as a variable that influences firm performance because of the cumulative experience of the firm and the generation of a purchasing and negotiating power. Older firms are expected to be more profitable than younger firms. Thus, a positive relationship between age and profitability is expected. Log of the age of the firm

(that is from the date the firm has been admitted to stock exchange to the studied date as in Mahdi, relationship) between two variables, it cannot be used to make valid inferences, hence the reason for the conduct of regression analysis.

Regression

Tables 5 (a) and 5 (b) have similar results. In Table 5 (a), the relationship between board size and ROA is positive and significant at 10% level for both Fixed effects and Random effects models. In the same vein, the relationship between board size and ROE is positive and significant at 5% level for both models. For valid inferences to be made there is need for further econometric test to be made.

Results and Discussion

Descriptive statistics

Table 2 presents the descriptive statistics of the variables used in the study.

Table 2: Descriptive statistics

	Mean	Minimum	Maximum	Standard deviation	Skewness	Kurtosis
ROA	0.0434	-3.0259	0.5080	0.1778	-12.601	213.160
ROE	1.2775	-94.6054	12.9393	5.3908	-13.361	239.879
BDZ	0.9463	0.4771	1.2041	0.1177	-0.523	0.707
LEV	0.2232	0.0000	3.0908	0.2676	4.439	38.117
SIZ	9.7169	7.9967	11.4990	0.7763	-0.219	-0.750
AGE	1.5810	1.1460	1.7850	0.1233	-0.881	0.306

Source: Authors' computation with the use of E- Views 7.0

Table 3: Collinearity result

Table 3 shows the result of collinearity test conducted using the VIF and TV methods.

Variable	VIF	Tolerance value
BDZ	1.372	0.729
LEV	1.008	0.992
SIZ	1.567	0.638
AGE	1.174	0.852

Source: Authors' computation with the use of SPSS Version 17

In Table 3, no variable has VIF of above 10 or TV of less than 0.1. These results confirm that there is no high multicollinearity between explanatory variables used in the study. Hence, valid inferences would be made in regression analysis conducted.

Table 4: Correlation matrix

	ROA	ROE	BDZ	LEV	SIZ	AGE
ROA	1					
ROE	0.875***	1				
	(0.000)					
BDZ	0.012	0.054	1			
	(0.714)	(0.269)				
LEV	-0.507***	0.448***	0.005	1		
	(0.000)	(0.000)	(0.721)			
SIZ	0.082*	0.219***	0.518***	0.038	1	
	(0.095)	(0.000)	(0.000)	(0.436)		
AGE	0.095*	0.091*	0.147***	-0.056	0.374***	1
	(0.051)	(0.061)	(0.003)	(0.250)	(0.000)	

*, **, *** indicate significant at 10%, 5% and 1% levels, respectively
Sig-values are shown in parentheses
Source: Authors' computation with the use of SPSS Version 17

Table 5(a): Regression results - (ROA as a dependent variable)

	Fixed	Effects		Random	Effects	
Variable	coefficient	t-stat	prob	coefficient	t-stat	prob
Constant	-2.8726	1.0750***	0.0079	-0.1440	-1.0666	0.2868
BDZ	0.1363	1.8604*	0.0635	0.2061	1.6133*	0.0989
LEV	-0.3409	-12.2363***	0.0000	-0.3416	-11.5088***	0.0000
AGE	0.0012	0.0216	0.9828	0.0377	0.4967	0.6197
SIZ	0.0254	2.2913**	0.0224	0.0313	2.2918**	0.0224
R^2	0.4013				0.2503	
Adj R^2	0.3220				0.2431	
F-stat	5.0612***				34.6358***	
Prob	0.0000				0.0000	
Durbin-Watson	1.9261				1.7696	
Observations	420				420	

*, **, *** indicate significant at 10%, 5% and 1% levels, respectively
Source: Authors' computation with the use of E- Views 7.0

Table 5(b): Regression results - (ROE as a dependent variable)

Variable	Fixed	Effects		Random	Effects	
	coefficient	t-stat	prob	coefficient	t-stat	prob
Constant	-46.0298	-1.4339	0.1524	-11.6712	-2.5105**	0.0124
BDZ	5.2630	2.3335**	0.0201	3.0560	1.7657**	0.0424
LEV	-9.4574	-11.0251***	0.000	-9.6891	-10.1110***	0.0000
AGE	-4.7993	-2.9162***	0.0037	-2.2895	-0.8498	0.3959
SIZ	1.6466	4.8175***	0.0000	2.2253	4.7548***	0.0000
R^2	0.4191			0.2309		
Adj R^2	0.3422			0.2235		
F-stat	5.4476***			31.1468***		
Prob	0.0000			0.0000		
Durbin-Watson	1.9983			1.8421		
Observations	420			420		

*, **, *** indicate significant at 10%, 5% and 1% levels, respectively
Source: Authors' computation with the use of E- Views 7.0

Discussion of findings

In order to determine which of the estimations of the two models (Fixed and Random effects) is to be used for the purpose of making conclusions, Hausman specification test was conducted. The null hypothesis underlying the Hausman specification test is that fixed and random effects models' estimates do not differ substantially. Empirically, if the *prob* value of the Chi-square is greater (lesser) than 0.05, the estimations based on the Random effects (Fixed effects) will be better off.

Results of Hausman specification test are reported in Table 6. It reveals that the *prob* values of the test are 0.0016 and 0.0003 for models 1 and 2, respectively. These values are less than 0.05. Null hypothesis is rejected and this lead to the use of Fixed effects model for making valid inferences.

Table 6: Result of Hausman Test

Model	Dependent variable	Independent variable	Chi-square stat	Chi-square d.f	Prob
1	ROA	BDZ	17.4326	4	0.0016
2	ROE	BDZ	20.9785	4	0.0003

Source: Authors' computation with the use of E- Views 7.0

In Table 5(a), the F-stat value of 5.0612 with prob value of 0.0000 indicates that as a whole, the model is fit. The Durbin-Watson statistic value of 1.9261 indicates no presence of serial autocorrelation in the error component of the model. This shows soundness and reliability of the model. The finding of the regression exercise indicates a positive and significant relationship between board size and financial performance proxy, ROA at 10% level. This result is consistent with prior empirical findings of Van den Berghe and Levrau (2004), Nichoison and Kiel (2007), Hanoku (2008), Belkhir (2008), Kajola (2008), Garcia-Olalla and Garcia-Ramos (2010), Chugh, Meador and Kumar (2010), Dagson (2011), Moscu (2013), Topal and Dogan (2014), Malik et al (2014), Akpan and Amran (2014), Johl, et al (2015), Pratheepkanth et al (2015) and Isik and Ince (2016). The outcome of the study provides evidence in support of the argument that companies with larger boards do harness the divergent views and intellect of

of Margaritis and Psillaki (2006), Zeitun and Tian (2007), Rao, Al-Yahyaee and Syed (2007), Akintoye (2008), Qaiser (2011), Muritala (2012), Rehman and Shah (2013), Leonard and Mwasa (2014), Kajola, Abosede and Akindele (2014), Mwangi, Makau and Kosimbei (2014) and Kajola (2015).

Similarly, the result indicates a positive and significant relationship between size and ROA. This is also in line with the prediction of Static-trade off theory and confirmed by empirical studies of Shubita and Alsawalhar (2012), Maja and Josipa (2012), Babalola (2013), Akinyomi and Olagunju (2013), Dogan (2013), Kipesha (2013), Ehi-Oshio, Adeyemi and Enofe (2013), Mahdi, et al (2014), Kajola (2015), Onaolapo, et al (2015) and Sritharan (2015).

Furthermore, results of the relationship between firm age and financial performance are mixed; insignificant relationship with ROA but negative and significant with ROE.

5.0   Conclusion, Recommendation and Future Study

Conclusion
The objective of the study was to examine the relationship between board size and financial performance of 35 non-financial firms listed on Nigerian Stock Exchange for the period 2003-2014. This represents 420 firm-year observations.

Board size, the only independent variable, was proxied by the natural log of the number of members on board of companies for each of the years of study. Financial performance, on the other hand, was measured by Return on Asset (ROA) and Return on Equity (ROE).

With the use of Fixed effects regression analysis, the results of the study under the two models (ROA and ROE) presented a positive and significant relationship between board size and financial performance. This result suggested that companies with larger board size do harness divergent views of members to come up with decisions that will improve financial performance. It further reinforced the view that chief executives of companies with larger board members will find it difficult to manipulate members to take some actions that will not be in the interest of owners of the business. Furthermore, larger board of directors can effectively monitor managers.

Recommendation
Following the outcome of the study, it is hereby recommended that companies should have larger board as this will enable members to effectively monitor the management, take informed decisions; reduce agency cost of monitoring and invariably leading to better financial performance. The study

recommends average board size of 9 (that is, log inverse 0.9463, as in Table 2) for Nigerian non-financial companies.

Suggestion for future study
This study has its limitations thereby opening avenues for studies to be conducted in the future. Efforts should be directed to the study of the effects of other corporate governance mechanisms such as ownership concentration, board gender diversity and board composition on financial performance. There is also the need to increase the study period to at least twenty years, as well as the number of sample firms. Furthermore, data used in this study were derived only from Nigerian business environment; consequently limiting the possibility of generalizing the outcome of this study to other countries. Researchers from other countries are encouraged to carry out similar studies in their countries, as this would improve our understanding in this important aspect of corporate governance in a broader perspective.

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