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AN EVALUATION OF THE INTERPLAY BETWEEN CAPITAL ADEQUACY AND CAPITAL STRUCTURE OF NIGERIAN LISTED BANKS

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Abstract

The study investigates the interplay between capital adequacy and capital structure of Nigerian licensed and listed commercial banks, with special attention on the impact of financial performance and the dividend policy of these Banks. A panel data of listed banks on the Nigerian Stock Exchange was selected. Period of investigation was 2008 to 2013. A diagnostic test on the data was conducted for data distribution normality using the data skewness and kurtosis tests while the regression diagnostic test was conducted for heteroscedasticity and autocorrelation. The transformed panel data was used to reduce the impact of heteroscedasticity and autocorrelation on the study. The Ordinary Least Square (OLS) technique was adopted for the evaluation of the relationship between the observed variables and the fixed effect model. The research outcome indicates that banks' capital structure was positively related to board composition while negatively related to capital adequacy, profitability, liquidity, dividend payment and board size. It was further observed that capital adequacy is positively related to financial performance, liquidity, size of the board and board composition while capital adequacy has a negative relationship with leverage and dividend payment. The study confirms the relevance of pecking order theory and agency theory to the Nigerian listed banks.

Keywords: Capital adequacy, Capital structure, Corporate Governance and Performance



INTRODUCTION

This study is aimed at a critical evaluation of the role of capital structure on the value of the form and the role it plays on the determination of the dividend policy of selected Nigerian Banks. The panel data of the listed Banks on the Nigerian Stock Exchange for the period between 2008 and 2013 is used this study.

The review of empirical literature show that the previous researcher on this subject have treated these concept separately. This study therefore will bring a synergy between the vital concept of corporate finance to determine the degree of the relationship between these concepts. These relationships will be evaluated with the intention to optimising the value of the firm.

The concept of Capital structure explained how the firm's activities are financed using the combinations of debt and equity to optimise the value of the firm. The controversy relating to the concept of capital structure and the value of the firm was triggered by the paper presented by Modigliani and Miller (1958) that was entitled "the cost of capital, corporate finance and the theory of investment", however they concluded that the value of the firm is irrelevant to the determination of the value of the firm, though this conclusion was based on an unrealistic assumption of perfect financial market conditions.

The concept of capital adequacy have not, until recently attracted particular attention, despite the claim that regulations such as the capital adequacy is aimed at ensuring the solvency of these Banks and it is ultimately for the protection of these Institutions.

The history of capital adequacy is dated back to the European Union's adoption of the capital adequacy directive of 1993 (CADI). This directive established the minimum capital for banks and non-banks financial institutions within Europe.

We adopt the use of total capital ratio as a measure of the capital adequacy of the bank. Capital adequacy is the measure of the ratio of the bank capital to its total assets.

We observed that both the capital structure and the Dividend policy of Banks in Nigeria have not got the particular attention due to the nature of Banks capital structure and the regulatory implications, however this study is a bold attempt to isolate the Banks for the purpose of the evaluation of the Bank's variable. This study is also unique because of the adoption of the concept of Capital Adequacy, while the study period was not covered by any known study in Nigeria on the subject.

Next section state the objective of the study, section three is the review of existing literature to establish the theoretical basis of the study, section four is the review of the research strategy used and model formulation, section five of the study is the analysis based on the formulated model while the last section is the conclusion.

Research Objectives

- To evaluate the relationship between capital structure and the ownership structure of listed Banks in Nigeria.
- To evaluate the relationship between capital structure and capital adequacy of Nigerian
- · To critically evaluate the relationship between leverage and dividend policy of Banks in Nigeria
- To analyse the relationship between capital adequacy and dividend policy of Nigerian Banks
- To formulate recommendations to bring synergy between corporate governance, capital adequacy and capital structure of the Nigerian Banks.

LITERATURE REVIEW

The academic discourse and controversy generated from the work of Modigliani and Miller (1958, 1963) lead to the developments of the main theories of capital structure, prominent among these theories are; Trade- off theory of Kraus and Litzenberger (1973), Pecking order theory of Myers and Majluf (1984), Agency theory of Jenson and Meckling (1976) and the Market timing theory of graham and Harvey (2001).

Kahane (1977) stated that various forms of regulations such as capital adequacy is aimed at protecting these institutions and ensuring their solvency. He examined the effectiveness of theses financial regulations and concluded that it cannot on its own protect the financial institutions from liquidation nor can it lead to improved performance.

Gallati (2003) observed that CADI provide a viable foundation for the Basel proposal of 1993, but it was noted that Basel's guidelines is applicable to banks only, non-bank financial institution were not covered, however Basel guidelines did not become effective until 1998 when capital adequacy became a global requirement for banks.

Blum and Hellwig (1995) observed in a research paper that was presented at the Ninth Annual Congress of European Economic Association, that the requirement of capital adequacy could reduce the banks' ability to service their debt, which could then impact negatively on the sector's lending and overall investment.

Blum (1999) evaluated the capital adequacy role in a dynamic setting. It was observed that capital adequacy rule can lead to increase in banks business. He concluded that based on the statutory capital requirement, it may become imperative for the banks to raise additional equity which will eventually lead to an increase in the bank's risk, this is due to the high cost of equity.



Cecchetti and Li (2008) observed the conflict between the central bankers and the monetary authorities. It was argued that monetary authorities stimulate lending activities to create a stable economic growth, while banker's supervisors will ensure the reduction of capability to avoid taking excessive risk

Shelizad et.al (2010) conducted a study on the impact of ownership concentration on the banker riskiness and capital adequacy. It was observed that ownership concentration do have a positive impact on the capital adequacy of the bank.

Mamum (2013) observed that banks have high leverage level when compared with industrial firms. This is based on the special nature of the bank's leverage and the peculiar riskiness of this institution. He therefore stated that the regulatory framework of capital adequacy is used to reduce the riskiness of banks.

Shleifer and Vishny (1997) described corporate governance as a process whereby the investors in a firm secure their investment and also guarantee a sustained return on their investment. A more systemic approach was adopted by Gillan and Starks (1998) when they described corporate governance as a process whereby rules, regulations and features that regulate procedures are put in place in an organisation to moderate the relation between the firm's stakeholders aimed at the protection of the stakeholders interest.

Rocca(2007) observed that there is an important link between the firm capital structure and the value of the firm, he then stated that corporate governance is a major determinant of capital structure and that corporate governance played a mediating role between the leverage level and the value of the firm, he emphasised that efficient corporate governance could be motivated by the capital structure, that the choice of finance (leverage) is influenced by corporate governance, he concluded that firm make corporate governance decision that is aimed at using financing to reduce the information asymmetry problem. This is consistent with the study of Tong and Ning (2004) when it was observed that there is a direct relationship leverage and managerial ownership.

A major development was when Al-Najjar and Taylor (2008) extended the relationship between the capital structure and corporate governance to the emerging economies of sub Saharan Africa, to test the efficiency of the result of research conducted in western developed economies in an emerging economy of Africa, they however observed that the Jordanian firm demonstrated the same relationships as with what is obtained in the western developed countries, they discovered that capital structure is determined by profitability, growth rate, firm size, tangibility and liquidity.

Driffield et al (2005) observed the existence of a strong relationship between the capital structure and the ownership structure, they argued that irrespective of whether they are family owned or not, an increase in ownership concentration is associated with increase in leverage level of the firm. This research result was supported by the findings of Cespedes et al (2010) when they observed a positive relationship between leverage and ownership concentration.

Akbari and Rahmani (2013) investigated the impact of the ownership structure and the corporate governance on the capital structure in Iran. This study was based on the non-financial firms while the corporate governance vectors such as board size, board composition, CEO / Chair duality, Managerial shareholding and Institution shareholding. They observed that the board size is insignificantly related to capital structure, the non-executive directors has negative correlation with the capital structure, however they concluded that corporate governance and ownership structure play an important role to determine the capital structure of the firm.

Zeitum (2014) in the study of the effect of ownership concentration on performance of the firm in 5 GCC countries (Qatar, Kuwait, Saudi Arabia, Bahran and Oman) observed that ownership structure have some impact on the performance of the firm, that ownership structure affect performance positively and significantly, a firm's capital structure has no effect on performance while the age and size of the firm have significant positive effect on performance.

Masood (2014) emphasised the importance of the capital structure decision when he argued that such decisions has serious repercussions not only on the stakeholders of the firm but also for the survival of the firm in the face of the increasing competitive business environments. He noted however that despite various theories and research studies on capital structure the issue of capital structure remain unresolved.

Rajangan et al (2014) in a recent study of the impacts of corporate governance in Malaysia observed that ownership structure and board size have impacts on the profitability and gearing while they concluded that the executive directors and independent directors have an impact on the gearing of the firm however they discovered that the non-independent and nonexecutive directors seems not related with the performance indicators of the firm.

Neves (2014) argued that the problem of the agency cost can be resolved with efficient corporate governance when he stated that Managers will act in the interest of the shareholders in a firm with efficient corporate governance and this will lead to the optimisation of the value of the firm while the shareholders wealth will be optimised, however in a firm with poor corporate governance it is likely that the dominant shareholders would appropriate available resources to themselves therefore the minority shareholders are left to suffer.

In a recent research study that was conducted in Nigeria Uwuigbe et al (2014) concluded that capital structure is negatively related to the board size and board composition while CEO duality has a positive relationship with the capital structure. While Ganguli (2012) concluded that capital structure of Indian firms were not affected by the ownership structure.

Modigliani and Miller (1963) is a response to the huge reactions to the M&M irrelevance theory and it was suggested that dividend payment send vital signal to the company's stakeholders with the attendance signalling effect. The change in dividend payout give information about the company to the market and most important the investors both the current and potential investors. It was claim that a decrease in dividend payout will convey harmful signal to the public that could affect the value of the firm inversely leading to reduction in the firm's value. This was supported by Berman (1977) and Jacklin and Bhattacharya (1988).

Jensen (1986) in his agency theory suggested that dividend policy is one of the factor that can be used by the firm for the reduction of the agency problem faced by the firm. I was then argued that the amount of cash that is available to the management will be controlled leading to a decrease in the cash flow of the firm . This situation will force the management to approach the capital market that will place some rules and restrictions on the activities of the firm particularly in the corporate governance and to improve the level of transparency in the firm's activities. This was suported by Easterbrook (1984), Dang (2013) and Zameer et al (2013)

Pecking order theory was the product of the studies by Myer (1984) and Myer and Mailuf (1984) when it was observed that a firm prefer internal finance instead of external finance. They stated that the firm will exploit the use of internal financing before the consideration of the external sources. External financing is considered only when the company did not have enough fund from the internal sources. The implication of the pecking order theory is that the firm will finance its project using retained earning rather than payment of dividend to the shareholders since internal financing of project will increase share value and the share holders wealth.

Pruitt and Gitman (1991) claim that there is a strong relationship between profitability and the dividend policy of the firm. This claim is consistent with the studies of Kohli et al (2011) Sheikh and Wang (2011) and Obenbe et al (2014)

Mirza (2014) examined the impact of liquidity on dividend policy of a firm. It was suggested that liquidity play an important role in the dividend policy of the firm but the extent vary from one country to the other . This was consistent with the study of Pappadopoulos and Dimitrios (2007).

Zang and Fu (2014) observed that ownership structure and profitability are the most important determinant of dividend yield and that the size of the firm has negative effect on the dividend policy.

This study is aimed at bridging the observed gap that is aimed at creating a synergy between the capital adequacy and capital structure.

METHODOLOGY

This research is based on the data from all the active Bank that is listed on the Nigerian Stock Exchange. For the reduction of the level of bias in the research process, only companies with continuous data for the period covered in the research was included, firms that do not have annual report and financial statement for the period under investigation is excluded from this study. This study will exclude all firms that are engaged in merger and acquisition during the research period. At the end only fourteen Banks were selected based on the above criteria, this is a fair representation, as the sample size constitute over 66 per cent of the population.

Table 1: Population and sample size

Population size	Sample size	Percentage
21	14	66.67

The firm with missing data for any variable in the model will be included, this is because the analysis tool employed, can process model even with missing variables. The analysis is done using the econometric tool, Eview to determine the relationship between the observed variables. This study adopt the tool of OLS for the calculation of the regression analysis that will explain the formulated stated models.

The research period is between 2008 and 2013, the rationale of choosing this period are,

- ❖ The year 2008 was picked as the base year to avoid the structural break that 2008 financial recession could bring to the research process.
- This period is selected because of the impact of banking reform of 2005 that lead to a restructuring of the banking sector, this resulted into merger and acquisition of most of the banks in Nigeria.
- The period to the Knowledge of the researchers have not been tested by any other study on the subject and in Nigeria, therefore this period is selected to bridge the observed knowledge gap.

The performance of the firm will be measured using the ROA as performance indicators. This is based on the adoption of the models by Jackling and Johl (2009), Bauer et al (2004), Bhagat and Bolton (2008).

The fixed effect model is used to determine the relation between corporate governance and the performance of the firm on one hand and that of capital adequacy and dividend policy on the other hand.

RXit-1 is the vector of the firm's features that affect its dividend policy, these are the independent variables.



Where Xi t-1 is the vector of observed firm's characteristics, that is the independent variables, while LEV is the measure of the firm's capital structure and CA is the measure of the total capital ratio.

The regression model is formulated as follows using the fixed effect model.

Model 1

The capital structure will be regressed against the independent variables, this is illustrated in the equation below;

LEV
$$it = \alpha i + \beta_1 CA_{t-1} + \beta_2 Prof_{t-1} + \beta_3 Div_{t-1} + \beta_4 Liq_{t-1} + \beta_5 Bcomp_{t-1} + \beta_6 Size_{t-1} + Et(3)$$

Model 2

The capital adequacy will be regressed against the independent variables, this is illustrated in the equation below;

$$CAit = \alpha i + \beta_1 Lev_{t-1} + \beta_2 Prof_{t-1} + \beta_3 Div_{t-1} + \beta_4 Liq_{t-1} + \beta_5 Bcomp_{t-1} + \beta_6 Size_{t-1} + Et(4)$$

Where:

ai is the constant coefficient

 β_1 is the regression coefficient of the independent variable that explain the relationship between dependent and the independent variables.

LEV is the total leverage

Div is dividend payout

CA is the capital adequacy, this is the measure of bank's total capita ratio. This is measured as; Tier1 capital plus Tier2 capital divided by risk based asset

Prof is measured with the return on assets (ROA), this is the measure of firm's performance Liq is the measure of the bank liquidity and the level of solvency

Bsize is the Board size, measured by the total number of directors of the firm

Bcomp is board composition, measured by the percentage of independent directors to the total board directors of the firm.

The table below illustrate the variables specification, their proxy and how they are measured in this study.

Table 2: Variable specification and measurements

Variables	Proxy	Measurement
Dividend payout	Div	Dividend pay-out ratio
Profitability	Prof	EBIT / Total Assets (ROA)
Last year Dividend	Div _{t-1}	Last year Dividend pay-out ratio
Liquidity	Liq	Ratio of Current Assets to Current liabilities
Ownership Structure	Bcomp	Ratio of independent directors to total board of directors
Board Size	Bsize	Number of the board of directors
Leverage	Lev	Debt to assets ratio (Total debt/Total Assets)
Capital Adequacy	CA	Total capital ratio (Total capital/Risk based assets)

The robustness of this study is confirm with conduct of regression diagnostic test, these test will ensure that the regression result is a true representative of actual relationship between the variables. The test of normality is done with the data skewness and Kurtosis, while the OLS also subjected to test of Heteroscedasticity and test of Autocorrelation. The result of the test led to the adoption of the use of transformed date to ensure the appropriate use of OLS for the establishment of relationship between the variable that are examined in this study.

The hypothesis was generated based on the review of the empirical studies and the popular findings were adopted for this study based on the models that were formulated.

H1: There is relationship between capital structure and capital adequacy

H3: There is relationship between capital adequacy and performance

H4: There is relationship between dividend payout and capital adequacy

There is relationship between corporate governance and capital adequacy H5:

ANALYSIS

This section of the paper will apply the conceptual framework as was stated in the methodology and as illustrated with the models. This will demonstrate the basic relationships between the observed variable.

These relationships are represented in each of the models as stated in the earlier section. These are grouped into three categories, firstly leverage and the explanatory variables, secondly dividend payout and the explanatory variables and thirdly. capital adequacy and the explanatory variables.

Table 3: Descriptive Statistics

	LEV	CA	ROA	LIQ	DIV	DIV_1	BSIZE	BCOMP
Mean	0.852533	22.85003	0.008523	0.137192	0.441484	0.447047	14.37349	0.255014
Median	0.861766	21.70000	0.009000	0.131050	0.353900	0.369400	15.00000	0.166667
Maximum	1.402119	49.00000	0.133000	0.318700	5.445900	5.445900	17.00000	0.411765
Minimum	0.086695	10.04000	-0.323000	-0.197300	-1.897800	-1.897800	12.00000	0.125000
Std. Dev.	0.150815	7.425821	0.046039	0.076874	0.886161	0.881397	1.687189	0.113830
Skewness	-1.479467	1.220993	-4.216316	-1.029104	3.679428	3.723282	0.135729	0.179571
Kurtosis	15.48979	4.524154	34.63257	7.444969	20.19804	20.54136	1.707108	1.271451
Jarque-Bera	569.7605	28.65694	3706.395	81.97940	1210.158	1255.897	6.035689	10.77916
Probability	0.000000	0.000001	0.000000	0.000000	0.000000	0.000000	0.048907	0.004564
Sum	70.76024	1896.552	0.707400	11.24972	36.64319	37.10490	1193.000	21.16618
Sum Sq. Dev.	1.865094	4521.711	0.173807	0.478677	64.39308	63.70251	233.4217	1.062492
Observations	84	84	84	84	84	84	84	84

Table 3 above illustrates the descriptive statistics, here the mean, median, maximum, minimum and the standard deviation of the variables were illustrated. It is observed that banks in Nigeria have high leverage with mean of 0.852533, this indicates a leverage level of about 85 per cent. The value of Skewness and kurtosis confirm the goodness of fit of the data and the compliant with the principle of normality.

Table 4: Regression of leverage and the independent variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	0.350880	0.163468	0.428642	0.0000
CA	-0.171660	0.002862	0.579984	0.0437
ROA	-0.195725	0.443516	0.441304	0.2603
LIQ	-0.407895	0.277951	1.467506	0.0465
DIV	-0.343324	0.022466	0.147950	0.0028
BSIZE	-0.108893	0.011090	0.801871	0.4252
ВСОМР	0.295762	0.175303	0.546263	0.0065
R-squared	0.576980	Mean dependent var		0.250834
Adjusted R-squared	0.510332	S.D. dependent var		0.150942
S.E. of regression	0.151720	Akaike info criterion		-0.841098
Sum squared resid	1.703393	Schwarz criterion		-0.606296
Log likelihood	42.48502	Hannan-Quinn criter.		-0.746829
F-statistic	0.081661	Durbin-Watson stat		1.990704
Prob(F-statistic)	0.005267			

Table 4 shows the relationship between leverage and the observed independent variables. The R² of 0.576980 indicate that 58 per cent of the dependent variable can be explained with the independent variables. In addition to the value of the probabilities and Durbin-Watson statistics, the regression value can be described as appropriate reflection of the established relationships with the OLS.

It is observed that leverage is positively related to board composition while it is negatively related to capital adequacy, profitability, liquidity, dividend payment and board size. This result is consistent with the work of Rocca (2007), Rajangan et al (2014) and Dada et al (2014). While it is contrary to the findings of Akbari and Rahmani (2013) and Zeitum (2014). The negative relationship with board size is consistent with the finding of Uwuigbe et al (2014) while the positive relationship with board composition indicate a contrary result.

The negative relationship between dividend payment and leverage, also with profitability is contrary to the postulation of Modigliani and Miller (1961) that leverage stimulate the firm's profitability due to the tax effect. This result however support the postulation of the pecking order theory of Myer and Majluf (1984).

Table 5: Regression of capital adequacy and the independent variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
С	0.426334	8.147854	1.406916	0.1636
LEV	0.491687	4.690992	0.595117	0.0536
ROA	0.210944	17.70955	1.079047	0.2840
LIQ	0.548941	9.505602	5.717566	0.0000
DIV	-0.270063	0.896351	0.301291	0.7640
BSIZE	0.083366	0.449767	0.185353	0.8535
BCOMP	0.268545	6.681572	3.033500	0.0033
R-squared	0.366915	Mean dependent var		0.394369
Adjusted R-squared	0.316268	S.D. dependent var		7.422030
S.E. of regression	6.137135	Akaike info criterion		6.548094
Sum squared resid	28.83212	Schwarz criterion		6.753545
Log likelihood	26.47183	Hannan-Quinn criter.		6.630579
F-statistic	0.244574	Durbin-Watson stat		1.679014
Prob(F-statistic)	0.000004			

Table 5 shows a positive relationship between capital adequacy and leverage, profitability, liquidity, board size and board composition while it is negatively related to dividend payment, however the result is not statistically significant for dividend payment and board size. This result is consistence with the theory of agency theory and at the same time it also supported the finding of Blum (1999), Shelizad et al (2010) and Mamum (2013), this result is contrary to the claim of Blum and Hellwig (1995).

CONCLUSION

Capital structure of financial institutions have not received particular attention from corporate finance scholars. Banks are mostly affected because of the claim of special capital structure and high level of statutory regulations and intervention. This claim became obvious when we discovered that Nigerian Banks are saddled with 85 per cent leverage, this seems too dangerous for any industrial firm. The Bank's leverage position motivate the use of the capital adequacy rule based on the Basel guidelines on capital adequacy, that eventually become the global requirement for Banks.

This study is a bold attempt to create a synergy between related corporate finance concept, that have hitherto being treated as independent concept, without much effort to link them. We observed that capital structure is negatively related to capital adequacy, board size and dividend payment, while it is positively related to board composition. Dividend payment is also negatively related to capital structure and capital adequacy, while it is positively related to board size and board composition. It is also discovered that capital adequacy is positively related to capital structure, board size and board composition, while it is negatively related to the dividend payments.

RESEARCH LIMITATIONS

This study was confronted with the problem of the impact of statutory intervention of the Central Bank and the effect of various statutory interventions that lead to the restructure and reform of the sector. These intervention lead to high level of merger and acquisition of banks, that make the availability of continuous financial information difficult if not impossible in Nigeria. This contributed to the exclusion of some banks and the small sample size. Furthermore the business risk is not covered therefore, there is need for further study on the effect of capital adequacy and business risk of Nigerian banks.

RECOMMENDATIONS

1. The capital structure of Banks should be strengthened in line with the pecking order theory. The leverage level can be effectively reduced with application of retain earnings.

- 2. The capital adequacy should be seen as a strong tool of survival by the banks and not just another statutory requirement.
- The Banks can reduce the agency cost with corporate governance, the use of strong and diverse board composition with increase in independent directors while the size of the board need to be reviewed.

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