



A Nexus between Capital Adequacy and Profitability in the Nigerian Deposit Money Banks

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Author's contribution

The sole author designed, analyzed, interpreted and prepared the manuscript.

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ABSTRACT

This paper examines the impact of capital adequacy on corporate profitability of selected Deposit Money Banks (DMBs) listed on the Nigerian Exchange Limited (NGX Limited) from 2005 – 2014. The paper is carried out based on the historical panel data analysis. To achieve this objective; an ex-post factor research design was employed. Descriptive statistics as well as fixed-effect and random-effect Generalized Least Square (GLS) regression techniques were used as tools of data analysis. The paper made a modest contribution to the existing body of knowledge as most of the studies done in Nigeria and at international arena were not looking at the regulatory standards or benchmark to assess the capital adequacy and its impact on the profitability performance of banks. However, the bases used to evaluate the impact of capital adequacy on the profitability at times vary with the regulatory rating standards. The findings established that capital adequacy has insignificant positive effect on the DMBs' profitability proxies represented by ROA and ROE. It was concluded that capital adequacy does not have significant impact on the profitability of the listed DMBs in Nigeria. The paper recommends that DMBs should ensure strict compliance with the benchmark for capital adequacy set by both the CBN and the Basel since they go a long way in improving their performance.

Keywords: NGX Limited; ROA; ROE; DMBs.

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1. INTRODUCTION

It is generally agreed that a strong and healthy banking system or sound financial system serves as the engine of growth of any economy because of their role in financial intermediation between the surplus and the deficit units. They offer important services of providing deposit and loan facilities for personal and corporate customers, making credit and liquidity available into business organizations and facilitate the nation's payments systems (Ikhida, 2000). Besides, banks are also the vehicles of transmitting effective monetary policy of the Central Bank and in a way they share the responsibility of stabilizing economy [1]. Moreover, the wellbeing of banks to a larger extent depends on their financial performance which invariably indicates the strength and weakness of a bank [2].

Corporate profitability is an important component which serves as an essential indicator of corporate success or failure. This shows how efficiently the management can make profit by using all the available resources in the business and in addition, signify the worth of their investment. Furthermore it is out of the profits that shareholders get their rewards for their investment, which also encourages additional investment. Ongore and Kusa [3] asserted that profit is the primary goal of commercial banks, thus all the strategies designed and activities performed are meant to realize this overall objective. Basically banks remain in operation because they expect to make profits, and they should strive at all times towards the achievement of this objective. This is due to the fact that banks poor performance and profitability can lead to banking failure and crisis which have serious negative repercussions on the economic growth and the wellbeing of the people [3].

Nigeria has gone into financial crises in the banking sector and the major causes of the problems were linked to inadequate capital leading to insolvency. Therefore, this lay a foundation for a minimum capital requirement of N25 billion in the Nigerian DMBs [4]. Thus, capital adequacy is needed in order to avoid insolvency and promote bank safety so as to protect depositors' confidence, this assist immensely in maintaining sound financial system.

Thoughtful association on the impact of capital adequacy on profitability is essential for the

wellbeing of the individual banks and the entire economy. More capital should make banks better able to absorb losses with their own resources, without becoming insolvent or necessitating a bailout with public funds, and at the same time a profitable banking sector is better able to withstand negative shocks, bad & doubtful debt and contribute to the stability of the financial system. For example, in spite of lost suffered by First Bank Nigeria PLC amounting to One hundred and thirty-one million, seven hundred thousand dollars (\$131,700,000) due to unauthorized loan granted by the then MD/CEO Bernard Ojeifo Longe to Investors International London Limited (IILL) in March 20, 2003 being (10%) of acquisition of 51% of NITEL to BPE, the bank was able to absorb the loss and still declared profit [5] This was because of its enough capital and high profitability standing. Hence, safeguards both the survival of the bank and the stability of the financial system.

Regulatory consensus has viewed capital as an essential tool to limit risk in banking industry [6]. As capital increases and future insolvency become less likely thereby ensuring corporate going concern and growth. Capital ratio has for long been a valuable tool for assessing capital adequacy and should capture the general safety and soundness of banks. It's generally believed that well-capitalized banks face lower expected costs of financial distress and such an advantage will then be translated into high profitability. Moreover, most of the papers in Nigeria and at international arena were not looking at the regulatory standards or benchmark to examine the capital adequacy and its impact on the profitability performance of banks, hence necessitating this research to offer a modest contribution to the existing body of knowledge. Therefore, the aim of this paper is to evaluate the capital adequacy of listed firms in the Nigerian Exchange Limited (NGX Limited) for the period 2005-2014 with a view to determine compliance with statutory benchmark and how it influence profitability. The period of ten years from 2005 – 2014 is considered adequate in making a justifiable conclusion. This is consistent with duration used in earlier studies like Ponce (2010) and Soumadi & Aldabat (2010). Moreover, the period 2005 is justified because the banking reforms and consolidation exercise became operational in 2004. This will enable finding the subsequent effect of the reform on financial performance of DMBs. The paper chooses banking sector due to the soundness of the sector to the health of the entire economy.

2. LITERATURE REVIEW

2.1 Concept of Capital Adequacy

The ultimate strength of a bank lies in its capital funds given its significance as a tool for meeting liabilities in financial crises. For a bank to enjoy depositor's confidence it must have a strong capital base as an indication of its strength and a tool for operating profitability so that shareholders' funds can increase through accumulation to statutory and general reserve [7,8] Satchindananda (2006).

In business and finance, capital is seen as "financial capital" which in itself could sometimes mean both tangible and intangible capital; [9]. On the other hand, Arogundade [10] defines capital as the owner's stake in business and therefore a commitment to its success.

Accounting Dictionary defined the financial resources that businesses can use to fund their operations like cash, machinery, equipment and other resources. These are the assets that allow the business to produce a product or service to sell to customers. CBN/NDIC [11] refer capital of a bank to represent shareholders' stake and subsequent funds additions which are used as operating base and remain more or less permanent in the business until it winds off. The CBN & NDIC further stated that the functions of a bank capital include: acquisition of fixed asset; operating base; absorb operating losses which otherwise cannot ordinarily be absorbed by normal earnings; allay fear of depositors, regulators and the public (public confidence); and show owners confidence in the banking business, the strength of the bank and its lending limits. This paper adopts the definition given by CBN/NDIC (1995) due to the fact that it encompasses the true meaning of capital and its adequacy in corporate existence, this is so because capital does not merely mean the resources or funds supplied by owners but also include commitment to its success until its wind off.

Opinion however, differs among experts in banking and finance as to what constitutes capital adequacy; for instance Nwankwo [12] submits that the question of how much capital a bank needs to ensure the stakeholders confidence and sustain healthy operations is determined by the supervisory and regulatory authorities. The paper further stated that insured banks must have enough capital to provide a

cushion for absorbing possible losses or provide funds for its internal needs and for expansion, as well as ensure security for depositors and the depositor insurance system. Regulators and bankers have also not reached agreement as to what level of capitalization is adequate; for instance while regulators concern themselves primarily with the safety of banks, the viability of invested funds, and stability of financial markets, bankers generally prefer to operate with less capital, as the smaller its equity base the greater the financial leverage [6]. Rose [13] argued that, a bank with a low return on assets can achieve a relatively high return on equity through heavy use of debt (leverage) and minimal use of owner's capital.

On the issue of capital adequacy, Kidwell et al [14] observed that the primary goal of banks' management is long term profit maximization achievable through high leverage, likewise bank regulators are more interested in higher capital standards that promote bank safety so as to protect depositors' confidence and gain reputation.

2.1.1 Capital adequacy ratio

Capital adequacy ratios are a measure of the amount of a bank's capital expressed as a percentage of its risk weighted credit exposures. An international standard has been developed which recommends minimum capital adequacy ratios for international banks 8% and Bofia 5% [15]. The purpose of having minimum capital adequacy ratios is to ensure that banks can absorb a reasonable level of losses before becoming insolvent, and before depositors funds are lost. Compliance with minimum capital adequacy ratio will helps to promote the stability and efficiency of the financial system by reducing the likelihood of banks becoming insolvent. When a bank becomes insolvent this may lead to a loss of confidence in the financial system, causing financial problems for other banks and perhaps threatening the smooth functioning of financial markets. Accordingly, applying minimum capital adequacy ratios assists in maintaining a sound and efficient financial system.

In the event of a winding-up, depositors' funds are ranked in priority before capital, so depositors would only lose money if the bank makes a loss which exceeds the amount of its capital. Therefore, capital adequacy ratios give some protection to depositors, likewise the

higher the capital adequacy ratio, the higher the level of protection available to depositors.

2.1.2 Taxonomy of Capital

Capital may be group into tier one capital and tier two capital available for bank safety. **Tier One Capital** is capital which is permanently and freely available to absorb losses without the bank being obliged to cease trading [6]. An example of tier one capital is the ordinary share capital of the bank. Tier one capital is important because it safeguards both the survival of the bank and the stability of the financial system.

Tier Two Capital is capital which generally absorbs losses only in the event of a winding-up of a bank, and so provides a lower level of protection for depositors and other creditors [6]. It comes into play in absorbing losses after tier one capital has been lost by the bank. Tier two capital is sub-divided into upper and lower tier two capital. Upper tier two capital has no fixed maturity, while lower tier two capital has a limited life span, which makes it less effective in providing a buffer against losses by the bank. An example of tier two capital is subordinated debt. This is debt which ranks in priority behind all creditors except shareholders. In the event of a winding-up, subordinated debt holders will only be repaid if all other creditors (including depositors) have already been repaid.

2.2 Concept of Profitability

A number of scholars view the concept of profitability from different perspectives. Keynes [16] remarked that 'profit is the engine that drives the business enterprise'. According to Ayanda et al. [17] the term profitability refers to the ability of the business organization to maintain its profit year after year. Profitability of a bank according to Podder [18] is the efficiency of a bank at generating earnings. Profitability apart from ensuring the sustainability of the companies it has also wider implications of the economy as a whole. According to Ayanda et al. [17] generally profitability of organizations contributes to the economic development of the nation by way of providing additional employment, tax revenue to government and contribute to the income of the investors by having a higher dividend and thus improving the standard of living of the people. Therefore, every business should earn sufficient profits to pay a reasonable salary to its workers, managers and create surplus after settlement of other operational costs in order to survive and grow over a long period of time.

2.3 Review of Empirical Literature

2.3.1 Empirical studies conducted in the Nigerian Exchange Limited (NGX Limited)

Ojong, Ejoh and Ubi [19] evaluates capital adequacy and profitability of Deposit Money Banks in Nigeria, covering a period from 1981 to 2011. Engle and Granger two steps procedure in co-integration was adopted for the study. The findings revealed that capital adequacy plays an important role in explaining banks Returns on Assets (ROA) which is a measure of banks' profitability. The positive and significant relationship between capital adequacy and banks' profitability suggest that banks with more equity capital are perceived to have more safety and such advantage can be translated into higher profitability. It was recommended that there should be a continuous review of minimum capital requirement of deposit money banks in Nigeria to the optimal level. This would go a long way to help in building public confidence in the banks and also accommodate the credit needs of customers.

Mamoud [20] examines the impact of capital adequacy variables (total assets, owners' funds, customers' deposits and loans and advances) on banks' performance in Nigeria. Data was collected using the cross panel methodology from nine deposit money banks with significant foreign operations. The results of the ordinary least square (OLS) regression show that 76 per cent (R²) of the variations in profit after tax (PAT) were caused by independent variables. The study further shows that a unit change in total assets (TA), loans and advances (LA), customer deposits (CD) and owners capital (OC) led to 4.1, 1.6, 3.7 and 1.7 per cent change in PAT respectively. The study therefore recommends that the banks' regulators should not only focus on capital adequacy but also on supervisory review and market discipline (1-R²) to maintain banks' financial strength and stability in Nigeria.

Olalekan and Adeyinka [21] assess the effect of capital adequacy of both foreign and domestic banks in Nigeria and their profitability. The paper used primary data comprising a sample of 518 distributed to staff of banks with a response rate of 76% and in conjunction with published financial statement of banks from 2006 - 2010. The findings for the primary data analysis revealed a non-significant relationship whereas

the secondary data analysis displayed a positive and significant relationship between capital adequacy and profitability of bank. This implies that for deposit-taking banks in Nigeria, capital adequacy plays a key role in the determination of profitability. It was discovered that capitalization and profitability are indicators of bank risk management efficiency and cushion against losses not covered by current earnings.

Ojong, Ekpuk, Ogar, Emori [22] the study adopted ex-post factor research design and data were analyzed using ordinary least square method. The study revealed that, prior to the 2004 banking sector reforms many Nigerian banks were undercapitalization and this contributed for their poor performance in terms of low profitability, low liquidity, low Returns on Investments and lack of sustainability. The study also point out that huge bad debt profile or poor asset quality has a negative contribution to bank performance and statistically significant. Interest rate and quality of asset had a positive and significant effect on bank performance. On the whole, the incorporated variables (BCAP INTR) contributed positively to the growth of Nigerian banks and the economy at large.

Obamuyi [23] analyzed the indicators of Bank's profitability evidence from Nigeria using fixed effects regression model and found that, well capitalized bank and interest income, as well as proficient expenses management and favorable economic condition contribute to higher banks performance and growth in Nigeria.

Okafor, Ikechukwu and Adebimpe (2010) examined the effect of capital adequacy on banks' earnings and profitability in Nigeria by using panel data for a sample of 10 strong banks and 10 weak banks in the period of 2000 – 2003. Least Square Dummy Variables (LSDV) model was employed in the study. Their results indicated that the influence of capital adequacy on bank performance is positively powerful for weak banks than for strong banks through ROE. The study concludes that reinforcement of capital base for banks from a minimum capital base of N2 billion to N25 billion was a step in the right direction to sustain our economy through well-built banking industry.

Uremadu (2012) utilizes the data of banks for 27 years 1980 – 2008 and analysis the relationship between corporate capital structured and the profitability –Cum-liquidity using descriptive statistics and the auto regressive distributed lag (ADL) model. The study applied data on an OLS that incorporated Unit root tests for stationarity

and co-integration. They revealed that a positive influence of Cash reserve ratio; liquidity ratio, and corporate income tax, and a negative influence of bank credits to the domestic economy, savings deposit rate, gross national savings, balances with the central banks, inflation rate and foreign private investment on banking system profits in Nigeria. The study concludes that profitability and liquidity of banks, and by extension, banking and financial system depends on four core precision variables: liquidity ratio, balances with the central banks, savings ratio, and cumulative foreign, in which the first two, are major and the last two are minor.

2.3.2 Empirical studies conducted at international arena

Molyneux and Thornton [24] found out that capital ratio impacts banks' performance positively, although such relationship is confined to just the state-owned banks.

Vong and Hoisichan [25] examined the impact of macroeconomic and financial structure variables on the performance of the Macao baking industry using panel regression model for the period 1993 – 2007. The study showed that well capitalized banks have lower risk and that help into high profitability. Loan-loss provisions measured the assets quality which affects the performance of a bank unfavorably. In addition, banks with a huge retail deposit taking network do not achieve a level of profitability higher than those with a smaller network. Lastly, in relation to macroeconomic variables no more than the rate of inflation demonstrate a significant relationship with banks performance. They conclude that the determinant that usually manipulates the overall performance of banks in Macao is individual characteristics which were able to explain a substantial part of bank profitability.

Naceur [26]. The study found that, high amount of capital tends to be linked with high net interest margin and profitability. Bank loans have a positive and significant impact in determining the banks interest margins, whilst the size often designate adverse and significant coefficients on the net interest margins.

Sufian [27] study was confined to the universe of the domestic and foreign commercial banks operating in the Malaysian financial sector during the period 2000 – 2004. The empirical findings

revealed that higher level of capitalization, a higher proportion of income from non-interest sources and higher operational expenses tends to exhibit higher profitability level. On the other way round, higher credit risk and higher loan concentration lower the profitability level. However, the study disclose that economic growth has negative shock on banks profitability while a higher inflation rate has a positive effect on Malaysian banks profitability.

Hassan and Bashir [28] conducted a study in 21 countries for every year in the 1994 – 2009. The study results signify that high capital and loan to assets ratio lead to high profitability. The regression results indicate that implicit and explicit taxes affect the banks' performance measures negatively and at the same time favorable macroeconomic situations influenced positively.

Flamini, Donald and Schumacher (2009), in their study attempted to explore the relationship between profits and equity using a sample of 389 in 41 Sub Saharan African (SSA) countries over the period 1998 – 2006. The results indicate that, Returns on Assets to Capital occur with a considerable lag, meaning that, high returns is not instantly retained in the form of equity increases. The study also reveals moderate persistence in profitability with the fact that bank returns was affected by macroeconomic variables seeing that it boost credit expansion.

Again, Perera, Skully and Chaudhry [29] utilized unconsolidated bank specific annual data of 119 domestic commercial bank operating in four South Asian Countries. The findings highlight profit persistence despite the negative pressure on bank profitability arising as a result of increase in competition. The study also posited out that well capitalized banks and those with more production processes were level more profitable. In the same vein, high industry concentration allows earning higher profits.

Olweny and Shipho [30] studied the effects of; capital adequacy, Asset quality, Liquidity, operational cost efficiency, income diversification and market structure factors on the profitability of commercial banks in Kenya. Using Multiple Linear Regressions analysis of 38 Kenyan commercial banks from 2002 -2008 obtained from CBK and banking survey 2009. The analysis showed that capital adequacy, Asset quality, Liquidity, operational cost efficiency, income diversification had statistically significant impact on profitability, while none of the market

factors had a significant impact. The study recommended policies that would improve revenue diversification, minimize operational costs, reduce credit risk and encourage banks to minimize their liquidity holdings.

Almazari (2013) conducted a study on the relationship between capital adequacy and profitability of nine Saudi selected banks for the period of 2007 – 2011. The result reveals that, there is a significant correlation between capital adequacy, cost income ratio, banks size with profitability proxies represented by ROA. Whilst negative relationship between ROE and capital adequacy. It was also found that, banks' efficiency proxy by the cost income ratio is negatively related to banks profitability. The study concludes that capital adequacy increase bank profitability and aid in minimizing the expected costs of financial distress including bankruptcy. Furthermore, capital adequacy brings financial strength to banks in sustaining financial suffering as well as boosting the corporate profitability.

Furthermore, Borulelissa [31] made a similar study on the Ethiopian commercial banks performance. The study found that firm attributes by large explained the variation in profitability. In addition, the study discovered that bank's capital and liquidity status are not significant to affect the performance of banks. On the other hand, the study finds that bank size and macroeconomic variables such as real GDP growth rates has no significant impact on banks' profitability. However, inflation rate is determined to be significant driver to the performance of the Ethiopian commercial banks.

Ongore and Kusa [3] conducted a study on the financial performance of commercial banks in Kenya. The major dependent performance indicators used were ROA, ROE and Net Interest Margin (NIM). In the same way Capital Adequacy, Assets Capital, Efficiency and Liquidity status were used as the major independent variables. The findings showed that firm attributes significantly affects the performance of commercial banks in Kenya, except for liquidity variables. But the overall effect of macroeconomic variables was inclusive at 5% significance level. The moderating roles of liquidity on the financial performance of those banks was insignificant.

Almazari (2014) studied Saudi and Jordanian Banks using a sample of 23 banks for the period

of 2005 – 2011. Statistical tools such as Pearson's Correlation, Descriptive Analysis of Variance and Regression Analysis were utilized in testing the hypothesis and to measure the differences and similarities between sampled banks according to their different characteristics. The study found significant positive correlation between ROA of Saudi banks with Total Equity to Asset Ratio (TEA), Total Investment to Total Asset Ratio (TIA) and Liquidity Risk (LQR) variables, as well as negative correlation with Net Credit Facilities to Total Assets Ratio (NCR), Net Credit Facilities to Total Deposit Ratio (CDR) Cost Income Ratio (CIR) and Bank size (SZE) variables. Meanwhile there is significant positive correlation between ROA of Jordanian banks with LQR, NCR, TEA and CDR variables also there is negative correlation of ROA with CIR, TIA & SZE. However, Econometric Approach needs to be employed to capture external factors for measurement of financial performance.

Ponce (2010) analyzed empirically the Spanish banks for the period spans from 1999 – 2009 through bank scope database using system GMM estimator to a sample of 89 banks of which 28 correspond to commercial banks, 45 to savings banks and the rest to credit comparatives. The results indicate that high bank profitability is linked with a large proportion of Loans in Total Assets, a high percentage of Customer Deposits, Good Efficiency, and a little credit risk. Furthermore, sky-scraping of capital ratio adds to bank's return in relation to ROA as the measure of profitability. Therefore, better capitalized banks tend to be more profitable when ROA is taken as the measure of profitability. In addition to that efficiency also constitutes an important attributes of the profitability of Spanish bank.

Elsiefy (2013) utilized the data for conventional and Islamic banks' profitability in Qatar covering the period 2006 – 2011. Least Squares Regression Analysis was employed in testing the objective. Empirical result shows that Capital Strength and Cost Efficiency have negative impact on conventional banks' profit whereas liability management measured and exposure to real estate loans demonstrate positive impact on profitability. On the other hand Islamic banks' result analysis indicate that high liquidity is connected with high profits providing support to the argument that well capitalize banks generally faced lower financing cost, which ultimately reduces costs and enhances profitability.

Similarly, attributes that influence profitability differ widely between conventional and Islamic banks.

Similarly, with adequate capital banks are able to sustain healthy operation because sufficient capital absorb losses without the bank being obliged to cease trading and this provide protections to depositors and other creditors which in turns affects the bank's profitability significantly positive.

2.4 Theoretical Framework

Various theories were advanced trying to explain the structure and frame of corporate profitability (CP). However, CP within the context of information is related to a number of theories such as pecking order theory, free cash flow theory, dynamic theory of Profit, and Innovation theory of profits. For the purpose of this research, dynamic theory was employed as the best explained the variables of the paper. Because the theory shows the way in which capital adequacy can be accomplish, and at the same time generate profit.

2.4.1 Dynamic theory of profit

Clark [32] grasp that profit is a residue, the difference between price and costs, due to the reductions in the cost effected by changes in the economy such as population increase (this reduces wages), increased capital supply (this reduces the interest rate charged and hence the cost of capital comes down), innovations (reduces costs), higher inventory (windfall profits occur when the cost of production remains the same but the price shoots up perhaps due to inflation or higher demand), forms of organization (reduces costs), technological improvements (reduces the costs). This theory is also known as windfall theory of profits. This theory treats profits as a residue in price after deducting costs; hence it is a residual theory of profits.

3. RESEARCH METHODOLOGY

3.1 Research Designed

For the purpose of this paper, *Ex-post facto* research design was employed. This is due to the fact that all the variables required for this study were extracted from the annual reports and accounts of quoted banks in the Nigrian Exchange Limited (NGX Limited). Thus, this is a

correlational study because it attempts to establish the relationship between capital adequacy and profitability. The population of this paper covers all the listed deposit money banks over the period of ten years from 2005 - 2014.

3.2 Model Specification

The study adopts and modifies the models of Lipunga [7]. The multivariate specification of this probabilistic mode will assume the form of

Model I:

$$ROA = \alpha_0 + \alpha_1 CA_{it} + \alpha_2 PBIT_{it} + \alpha_3 AGE_{it} + \alpha_4 TA_{it} + e$$

Model II:

$$ROE = \alpha_0 + \alpha_1 CA_{it} + \alpha_2 PBIT_{it} + \alpha_3 AGE_{it} + \alpha_4 TA_{it} + e$$

Where:

- ROA Return on Asset
- ROE Return on Equity
- CA Capital Adequacy
- PBIT Profit before Interest and Tax
- Age Age of the Company
- TA Total Assets

Chart 1: Multivariate specification of this probabilistic mode

α_0 = parameters to be estimated (is the average amount the dependent variable increases where the independent increases by one unit other independent variables held constant).

e = an error term assumed to satisfy the standard OLS assumption / U_t = Gaussian white Noise (stochastic error term)

$\alpha_1 - \alpha_4$ partial derivatives or the gradient of the independent variable.

4. RESULTS AND DISCUSSION

4.1 Descriptive Statistics

Table 1 presents summary statistics for the variables of the paper which comprise measures of central tendency, such as the mean, and the measures of dispersion (the spread of the distribution), such as the standard deviation. The table displays the summary statistics of the dependent and independent variables so as to understand the nature of the results.

Table 1 shows that the mean of the capital adequacy of the sampled Deposit Money Banks (DMBs) over ten year period from 2005 - 2014 was 5.29 and standard deviation of 16.65 which show high level of dispersion over the period, while the minimum and maximum values are 0.00 and 73.90 respectively. In other words, the minimum value was below the minimum capital adequacy ratio set by Bofia 5% and international standard 8% - Basel [15]. This signifies that the primary goal of banks' management is long term profit maximization which is achievable through allocation of resources in order to select the ones with highest expected value and in addition, both banks' management and especially regulators do consider higher capital standard that promote bank safety so as to build depositors confidence.

Profit Before Interest and Tax as control variable which is an indicator of raw value created by the observed data derived from firms analyzed, indicates that 1.7 billion as an average value created in the industry. The minimum is the negative value of -2.85b and a standard deviation of 4.7b which reflects a huge value gap in value generation between industry averages, maximum and minimum values depicted. The minimum value was negative as a result of losses sustained by Access Bank PLC and GT Bank PLC in 2009; Sterling Bank PLC in 2008, 2009, 2010 and 2011; Union Bank PLC in 2011; and UBA PLC in 2007, 2008 and 2009 (See Appendix C). Whereas huge profits were generated by few players in the industry. The marginal profit created evidenced by maximum values 1.16 which cancelled the negatives currently standing at -2.85.

More so, the Age as the second control variables has a mean value of 22.88 years and a minimum and maximum of 1 and 44 years respectively. This means that all the sampled DMBs were listed before the 2005 financial year and at most not go beyond 44 years as at 31st December, 2014. Furthermore, asset size which is the third controlled variable, a bigger and more appalling gap exist between the industry average of 1.01 and a standard deviation of 9.57. The gap observed is not usual considering similar but lesser magnitude of variance depicted by the profitability tool of profit before tax. The simple fact explaining this similarity is the fact that assets generate profits depicted as PBIT.

Table 1 reveals that the return on assets of the sampled DMBs has an average of 6% ranged

Table 1. Descriptive Statistics of the Variables

Model 1						Model 2					
Variables	Obs.	Mean	Std Dev.	Min	Max	Variables	Obs.	Mean	Std Dev.	Min	Max
CA (%)	80	5.29	16.65	0.00	73.90	CA (%)	80	5.29	16.65	0.00	73.90
PBIT (%)	80	1.73	4.72	-2.80	1.16	PBIT (%)	80	1.73	4.72	-2.80	1.16
AGE (Year)	80	22.88	13.51	1	44	AGE (Year)	80	22.88	13.51	1	44
TA (%)	80	1.01	9.57	5276	4.13	TA (%)	80	1.01	9.57	5276	4.13
ROA (%)	80	0.06	0.33	-1.85	1.26	ROE (%)	80	2.35	8.27	-44.42	40.83

Source: Generated by the author from annual reports and accounts 2005 - 2014 of DMBs Using STATA version 14.0- version

Table 2. Model One Regression Result on Capital Adequacy and Return on Asset (ROA) of DMBs

Explanatory variables	OLS				Random				Fixed			
	Coefficient	Robust Std error	t	p>/t/	Coefficient	Std error	Z	p>/z/	coefficient	Std error	t	P>/t/
Constant	0.001	0.0915	0.00	0.999	0.0001	0.0915	0.00	0.999	-0.0536	0.3892	-0.14	0.891
CA	0.0057	0.0059	0.97	0.33	0.0057	0.0059	0.97	0.330	0.0065	0.0075	0.88	0.385
PBIT	1.22e-1	7.82e-1	0.157	0.122	1.22e-1	7.82e-1	1.57	0.117	1.45e-1	9.22e-1	1.57	0.121
AGE	0.0000	0.0032	0.01	0.991	0.0000	0.0032	0.01	0.991	0.0009	0.1948	0.05	0.963
TA	-2.70e1	5.34e-1	0.51	0.614	-2.70e-1	5.34e-1	-0.51	0.613	-3.60e-1	8.74e-1	-0.41	0.682
R- Squared	0.3240											
F Value	4.93											
Prob F	0.0001											
R Squared:												
Within					0.1816				0.1849			
Between					0.9743				0.9109			
Overall					0.3240				0.3144			
rho					0.000				2.11			
F – Value U_1 = 0												
P Value	0.0552											

Source: generated by the author from annual reports and Accounts 2005-2014 Data of Deposit Money Banks

from a negative return of 1.85% to a maximum of 1.26%. This means that for every one Naira invested, the industry made a loss of ₦1.85 and had at best earned a maximum of ₦1.26 kobo. Every firm in the industry could earned an average of 6% on its net investment, with a high degree of risk, as returns varied at both sides of the scale by as large a margin as 0.33. Finally, return on equity measured by profit before interest and tax and shareholders' equity has a mean of 2.35, but the standard deviation of 8.27 shows a diversity of ROE among DMBs, while the minimum and maximum of values are -41.42 and 40.83 respectively. In other words, each one Naira equity invested generates averagely ₦2.35 and at worst the banks sustained a loss of -41.42 per one Naira equity invested while the maximum profit to earn per one naira invested is ₦40.83.

4.2 Regression Results on Capital Adequacy and Return on Assets (ROA) of DMBs

The regression results of the Ordinary least Square (OLS), Random effects (RE) and Fixed effects (FE) estimation techniques are presented in Table 2.

Table 2 presents the regression results of the relationship between dependent variable (ROA) and the explanatory variables of the paper (capital adequacy, PBIT, age and total asset). The heteroscedasticity test reveals the absence of homoscedasticity in the model. Therefore, OLS regression robust test was carried out with the view to validating the result. In addition, Random effect estimate results is going to be discussed.

The OLS regression results in Table 2 of model 1 reveals the cumulative R^2 (0.32) which is the coefficient of determination gives the proportion of the total variation in the dependent variable explained by the explanatory variables jointly. Hence it shows 32% indicating that the variables (capital adequacy, PBIT, age and total asset) considered in the model accounts for about 32% change in the dependent variable that is ROA, while the remaining of the change is as a result of other variables not addressed by this model. Likewise the value of F statistics of 4.93 at 5% level of significance proved the model to be fit. Hence, the finding of the study is relied upon.

Moreover, from the OLS and RE result in Table 2 it can be seen clearly that capital adequacy (CA)

has insignificant positive correlation with corporate profitability (ROA) at 0.97 and 0.33 in both OLS and RE. The null hypotheses is accepted as the P-value of CA 0.33 is higher than 0.05, and for a null hypotheses to be rejected the P-value has to be lower than 0.05 (for a 95% confidence level) or an alpha of 0.10 (for a 90% confidence level). In general, the overall probability is positively significant at 5%, however, for all the explanatory variables in this study; no significant influence had experienced on the dependent variable as their p-values are higher than 0.05.

Therefore, Considering the association between capital adequacy and ROA, the results in Table 2 reveals that capital adequacy has a positive but insignificant impact on the corporate profitability at 0.97 and 0.33 in both OLS and RE respectively. This signifies that relationship between the capital adequacy and profitability of DMBs in Nigeria is insignificantly positive. This is consistent with the findings of Hassan & Bashir [28], Naceur [26], Sufian [27] Almazari (2013) who argued that capital adequacy enhance the level of corporate profitability positively. In addition, regulatory consensus has viewed capital adequacy as an essential tool to limit risk in banking industry. This implies that well capitalized banking face lower expected costs of financial distress and such an advantage will then be translated into profitability. However, the finding is contrary to the work of Ojong, Ejoh and Ubi [14] who found significant impact of capital adequacy on profitability of commercial banks.

Furthermore, for the control variables (Age) which is measured by number of years a firm has since listed, the result shows that age has positive but insignificant impact on the profitability of DMBs for both OLS robust and RE with positive coefficient in both estimations. This confirms that as a reputation variable the older the firm, the greater the shareholders confidence in its strength, growth and long term survival. The finding is consistent with Viverita et al. [33] who found that, age has positive impact on profitability. Therefore, banks age has positive association with corporate profitability. Likewise, Total Assets as the second control variable has insignificant positive relationship with corporate profitability proxy by ROA. This is in line with Kakilli and Ertugrul [34] who suggest that logarithm of total asset has positive impact on the profitability of the DMBs but insignificant. The study contradicts the findings of Sohail, Iqbal, Tariq and Mumtaz [35] who found that assets

Table 3. Model Two Regression Result on Capital Adequacy and Return on Equity (ROE) of DMBs

IND.VARS	OLS				RANDOM				FIXED			
	Coefficient	Std error	t	P>/t/	Coefficient	Std error	Z	P>/z/	Coefficient	Std error	t	P>/t/
Constant	2.3094	1.8426	1.25	0.214	2.3094	1.8426	1.25	0.210	-4.9884	6.7435	-0.74	0.462
CA	0.0593	0.1180	0.50	0.617	0.0593	0.1180	0.50	0.615	0.0778	0.1294	0.60	0.550
PBIT	1.33.e-1	1.57e-1	8.47	0.000	1.33e-1	1.57e-1	8.47	0.000	1.39e-1	1.60e-1	8.69	0.000
AGE	-0.0545	0.0653	-0.83	0.407	-0.0545	0.0653	-0.83	0.404	0.3040	0.3376	0.90	0.371
TA	-5.28e-1	1.07e-1	-0.49	0.625	-5.28e-1	1.07e-1	-0.49	0.623	-1.26e-1	1.52e-1	-0.83	0.409
R squared	0.5569											
Adj. R Squared	0.5138											
F Value	12.93											
Sig	0.0000											
R squared:					0.5629				0.5737			
Within					0.5595				0.1003			
Between					0.5569				0.3520			
Overall					0				0.5423			
Rho									3.43			
F value-i=									0			
0												
P value												

composition is positively and significantly related with corporate profitability.

Also, PBIT as the third control variable is found to be positively related with corporate profitability but insignificant for both OLS robust and RE regression.

In view of the reported result with regard to capital adequacy, showing all the variables are insignificantly positive in influencing the corporate profitability this therefore provides evidence for acceptance of hypothesis of the paper. This was due to the fact that capital adequacy has no significant influence on the dependent variable. Likewise, for a null hypothesis to be rejected the P- value has to be lower than 0.05 (for a 95% confidence level) or an alpha of 0.10 (for a 90% confidence level). Thus, the independent variable (capital adequacy) has no significant influence on the dependent variable (ROA) as the P- value in both OLS robust and RE regression is higher than 0.05 as such null hypothesis is accepted.

4.3 Regression Results on Capital Adequacy and Return on Equity (ROE) of DMBs

Table 3, shows the regression result of ordinary least square OLS, Random Effect (RE) and fixed effect (FE). The dependent variable used in this model is the return on equity (ROE). Although the three results are shown, analysis and interpretation would only be made on the OLS and RE due to the fact that RE is more efficient.

Table 3 displayed the OLS regression results: it reveals the cumulative R^2 (0.56) which is the multiple coefficient of determination gives the proportion of the total variation in the dependent variable explained by the explanatory variables jointly. Hence, it indicates that 56% of total variation in ROE of DMBs is caused by their firm size, capital adequacy, management efficiency, liquidity, PBIT, age and total assets of the banks. In the same vein, the result of the F statistics value of 12.93 implies that the model is fit and the explanatory variables are properly selected combined and used as substantial value (56%) of the corporate profitability is accounted for by the explanatory variables.

The regression result in Table 3 reveals that capital adequacy has insignificant positive association with corporate profitability (ROE) at 0.50 and 0.62 in both OLS and RE as the P-

value of CA is higher than 0.05, and for a null hypotheses to be rejected the P-value has to be lower than 0.05 (for a 95% confidence level) or an alpha of 0.10 (for a 90% confidence interval), thus the CA has no significant influence on the dependent variable (ROE) as the P-value of 0.50 is higher than 0.05, based on that the null hypotheses is accepted. This indicates that as the value of capital adequacy increase the corporate profitability of DMBs rises. Similarly, the same result was obtained in all the remaining independent variable in addition to CA.

Capital adequacy is positively related but insignificant with ROE of DMBs in Nigeria in both OLS and RE estimation with values 0.50 and 0.62 respectively. This indicates that capital adequacy make banks better able to absorb losses with their own resources without becoming insolvent or necessity a bailout with public funds. Thus, ensure the stakeholders confidence and enhance healthy operations. This signifies that capital adequacy enhances corporate profitability positively insignificant. The finding is consistent with prior studies by Okafor, Ikechukwu and Adebimpe, (2010); Ponce (2010); Borulelissa [31] that found positive relationship between capital adequacy and ROE.

Conversely the finding contradicts that of Almazari (2013) who find negative relationship between capitalization and profitability represented by ROE of DMBs. This is in line with Kidwell et al. [14] who observed that the primary goal of banks' management is long term profit maximization achievable through high leverage. This implies that, constant supervision is required by CBN/NDIC to protect depositors, ensure monetary stability and effective/efficient payment system as well as to provide the oversight functions required to preserve the integrity of and promote public confidence in the banking system.

Furthermore, PBIT as control variable has positive relationship and it statically significant at 1% level of significance in both OLS and RE estimation. The significance is confirmed with positive coefficient. This means that every business should earn sufficient profit to survive and grow over a long period of time. This is consistent with the finding of Keynes [16] who discovered that profit is the engine that drives the business enterprise. This implies that profit is the index to the economic progress, improved national income and rising standard of living.

The result of the regression show that age as control variable has a positive but insignificant impact on the profitability of DMBS. All things being equal, older companies might have in the course of their growth, developed operating efficiency that is capable of controlling cost and able to make more profit compared to younger companies. This is in line with Yakumar [36] who uncovered that age has a positive impact on corporate profitability. Moreover, Assets being a control variable is positively correlated but insignificantly with corporate profitability. This implies that assets quality has a positive contribution to banks profitability. This finding is consistent with Ojong, Ekpuk, Ogar, Emori [4] who suggest that asset has a positive association with profitability of DMBs in Nigeria.

In view of the results reported in respect of capital adequacy showing insignificant positive influence on the corporate profitability, this provides evidence for the acceptance of null hypothesis of the paper. All thing been equal, banks should not only center on capital adequacy but also on efficiency and innovation to maintain banks' financial strength and stability in Nigeria.

5. CONCLUSION AND RECOMMENDATION

5.1 Conclusions

Based on the data presented, analyzed, interpreted and the subsequent test of hypotheses, the following conclusions are drawn;

Capital Adequacy does not have Significant impact on the profitability of listed DMBs in Nigeria is reported. This test used documentary data to measure the relationship between the two variables using Random Effect Regression analysis. The analysis of the results show that capital adequacy is positively related to corporate profitability, however, the relationship is insignificant. This is in line with the findings of Ponce (2010); Elsiefy (2013); Borulelissa [31] who find that capital status is not significantly enough to affect the profitability of banks. Therefore, in this direction capital adequacy increases the profitability of firm in the Nigerian Deposit Money Banks. On the other hand, banks should not only center on capital adequacy but also on efficiency and innovation to maintain banks' financial strength and stability in Nigeria.

5.2 Recommendations

The question of how much capital a bank needs to ensure the stakeholders confidence and sustain healthy operations is determined by the supervisory and regulatory authorities. In this regard, the management of Deposit Money Banks should ensure compliance with minimum capital adequacy ratio set by the international standard 8%-Basel and a minimum of 10 percent of the total risk-weighted assets of a bank is required to be maintained as capital funds [11]; the idea is that, as capital increases and future insolvency become less likely thereby ensuring corporate going concern and growth, as such banks would enjoy depositors' confidence and at the same time, better able to withstand negative shocks, bad & doubtful debt and contribute to the stability of the financial system. For example, in spite of lost suffered by First Bank Nigeria PLC amounting to One hundred and thirty-one million, seven hundred thousand dollars (\$131,700,000) due to unauthorized loan granted by the then MD/CEO Bernard Ojeifo Longe to Investors International London Limited (IILL) being (10%) of acquisition of 51% of NITEL to BPE, the bank was able to absorbed the loss and still declared profit [5]. This was because of its adequate capital as well as high profitability standing. Hence, safeguards both the survival of the bank and the stability of the financial system. Similarly, efficiency can be achieved through reduction in cost of operation and be able to innovate by providing unique services to its customers.

COMPETING INTERESTS

Author has declared that no competing interests exist.

REFERENCES

1. Siddiqui MA, Shoaib A. Measuring performance through capital structure: Evidence from banking sector of Pakistan. *African Journal of Business Management*. 2011;5:1871-1879.
2. Almazari AA. Capital Adequacy, Cost Income Ratio and the Performance of Saudi Banks (2007-2011). *Human Resource Management Academic Research Society, International Journal of Academic Research in Accounting, Finance and Management Sciences*. 2013; vol. 3(4), pages 284-293, October.
3. Almazari AA. Impact of Internal Factors on Bank Profitability: Comparative Study

- between Saudi Arabia and Jordan. *Journal of Applied Finance & Banking*. 2014; vol. 4, issue 1, 7
4. Makkar A, Singh S. Analysis of the financial performance of Indian commercial banks: a comparative study. *Indian Journal of Finance*; 2013.
 5. Ongore VO, Kusa GB. Determinants of Financial Performance of Commercial Banks in Kenya. *International Journal of Economics and Financial Issues*; 2013.
 6. Ojong CM, Ekpuk A, Ogar A, Emori EG. Banking sector reform in Nigeria: A regulatory imperative for a sustainable banking industry. *Research Journal of Finance and Accounting*. 2014;5(13): 2014.
 7. Longe OB, First Bank of Nigeria, Plc. 3 NWLR (Pt.967). 2006;228.
 8. Basel Committee on Banking Supervision. *The Application of Basel II to Trading Activities and the Treatment of Double Default Effects*; Bank for International Settlements Press & Communications, Switzerland, July; 2005.
 9. Ebhodage Lipunga A. Determinants of Profitability of Listed Commercial Banks in Developing Countries: Evidence from Malawi. *Research Journal of Finance and Accounting*. 2014;5(6).
 10. Elsiefy E. Comparative Analysis of Qatari Islamic Banks Performance versus Conventional Banks Before, During and After the Financial Crisis. *International Journal of Business and Commerce*. Vol. 3, No.3: Nov 2013[11-41] (ISSN: 2225-2436) Published by Asian Society of Business and Commerce Research 11.
 11. Greuning HV, Baratanovic S. *Analysing banking risk*. Maxwell Publishing House; 1999.
 12. Klise ES. *Money and Banking*; South Western Publishing Co. Cincinnati, Ohio, Fifth Edition; 1972.
 13. Arogundade AO. Capital adequacy and capacity issues; *Focus on Nigeria*, July-Dec; 1999.
 14. CBN/NDIC. *The Nigerian financial system at a glance*. Department of Monetary Policy; 2017.
 15. Nwankwo GO. *Bank management, principles and practice*. Malthouse Press Ltd, Lagos; 1991.
 16. Rose PS. *Commercial bank management*; Irwin McGraw-Hill, 4th Edition; 1999.
 17. Kidwell DS. *Financial institutions, markets and money*. The Dryden Press, Harcourt College Publishers; 2000.
 18. Basel Committee. *Capital adequacy requirements: Bank for International Settlements*, Press & Communications, Switzerland, June; 1988.
 19. <https://ndic.gov.ng/about/ndic-history/1995>.
 20. <https://www.myaccountingcourse.com/accounting-dictionary/capital>.
 21. Keynes JM. *A Treatise on Money*. How John Maynard Keynes Changed the World of Economics; 1930.
 22. Ikhide, S. *Efficiency of Commercial Banks in Namibia*. BON Occasional Paper. 2000;4.
 23. Ayanda AM, Christopher EI, Mudashiru MA. Determinants of banks' profitability in developing economy: evidence from Nigerian banking industry. *Research Journal of Finance & Accounting* (2013;5(6)).
 24. Podder B. Determinants of profitability of private commercial banks in Bangladesh: An empirical study; 2012.
 25. Ojong NE, Ubi UI. The impact of capital adequacy on deposit money banks' profitability in Nigeria. *Research Journal of Finance and Accounting*; 2014. ISSN 2222-1697 (Paper) ISSN 2222-2847 (Online) Vol.5, No.12.
 26. Mamoud JA. Impact of capital adequacy on the performance of Nigerian banks using the Basel accord framework. *East Africa Research Papers in Business, Entrepreneurship and Management EARP-BEM No. 2017:07*
 27. Olalekan A, Adeyinka S. Capital adequacy and banks' profitability: An empirical evidence from Nigeria. *American International Journal of Contemporary Research*. 2013;3(10).
 28. Ojong CM, Ekpuk A, Ogar A, Emori EG. Banking sector reform in Nigeria: A regulatory imperative for a sustainable banking industry. *Research Journal of Finance and Accounting*. 2014;5(13).
 29. Obamuyi T. Determinants of banks profitability in a developing economy: Evidence from Nigeria. *Organizations and Markets in emerging economies*. 2013;4(2):(8).
 30. Molyneux P, Thornton J. Determinants of European Bank profitability: A note. *Journal of Banking and Finance*; 1992.
 31. Vong A, Hoisi C. Determinants of Bank Profitability in Macao; 2008.

32. Naceur SB. The determinants of the Tunisian banking industry profitability: Panel evidence. University Libre de Tunis Working Papers; 2003.
33. Sufian F. Factors influencing Bank profitability in a developing economy. Empirical evidence from Malasia. Global Business Review July/December. 2009;10(2225 – 241).
34. Soumadi, M. & Aldaibat, B. Growth Strategy and Bank profitability case of Housing Bank for Trade and Finance (HBTF). European Scientific journal October. 2010;8(22).
35. Hassan M, Bashir A. Determinants of Islamic Banking Profitability; 2002.
36. Ponce A. What determines the profitability of banks? Evidence from Spain. Accounting and Finance. 2013: 53(2):561-586

APPENDIX A
STATA VERSION 14.0 GENERATED RESULTS FOR RETURN ON ASSET (ROA)

```

----- (R)
/ _ / _ / _ /
_ / / / / / / 14.0 Copyright 1985-2015 StataCorp LP
Statistics/Data Analysis StataCorp
4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)
    
```

Variable	Obs	Mean	Std. Dev.	Min	Max
roa	80	.0583396	.3326502	-1.851842	1.256466
capad	80	5.292635	16.65464	.0006055	73.89596
pbit	80	1.73e+07	4.72e+07	-2.80e+08	1.16e+08
age	80	22.875	13.50984	1	44
assets	80	1.01e+09	9.57e+08	5276423	4.13e+09

```
. regress roa capad pbit age assets
```

Source	SS	df	MS	Number of obs	=	80
Model	2.83239017	7	.404627167	F(7, 72)	=	4.93
Residual	5.90944546	72	.082075631	Prob > F	=	0.0001
Total	8.74183562	79	.110656147	R-squared	=	0.3240
				Adj R-squared	=	0.2583
				Root MSE	=	.2864

	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
roa					
capad	.0057117	.0058606	0.97	0.333	-.0059712 .0173945
pbit	1.22e-09	7.82e-10	1.57	0.122	-3.34e-10 2.78e-09
age	.0000379	.0032421	0.01	0.991	-.0064251 .006501
assets	-2.70e-11	5.34e-11	-0.51	0.614	-1.33e-10 7.94e-11
_cons	.0001424	.0915261	0.00	0.999	-.1823116 .1825963

```
. estat vif
```

Variable	VIF	1/VIF
capad	9.17	0.109052
assets	2.51	0.397793
age	1.85	0.541532
pbit	1.31	0.761607
Mean VIF	3.77	


```

Random-effects GLS regression           Number of obs   =           80
Group variable: id                     Number of groups =            8

R-sq:                                  Obs per group:
  within = 0.1816                       min =           10
  between = 0.9743                       avg =          10.0
  overall = 0.3240                       max =           10

corr(u_i, X) = 0 (assumed)              Wald chi2(5)    =           .
                                           Prob > chi2     =           .
    
```

roa	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
capad	.0057117	.0058606	0.97	0.330	-.0057749	.0171982
pbit	1.22e-09	7.82e-10	1.57	0.117	-3.08e-10	2.76e-09
age	.0000379	.0032421	0.01	0.991	-.0063165	.0063924
assets	-2.70e-11	5.34e-11	-0.51	0.613	-1.32e-10	7.76e-11
_cons	.0001424	.0915261	0.00	0.999	-.1792455	.1795302
sigma_u	0					
sigma_e	.29938309					
rho	0	(fraction of variance due to u_i)				

. xtreg roa capad pbit age assets

```

Fixed-effects (within) regression       Number of obs   =           80
Group variable: id                     Number of groups =            8

R-sq:                                  Obs per group:
  within = 0.1849                       min =           10
  between = 0.9109                       avg =          10.0
  overall = 0.3144                       max =           10

corr(u_i, Xb) = -0.4461                 F(7,65)        =           2.11
                                           Prob > F       =           0.0552
    
```

roa	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
capad	.0065348	.0074659	0.88	0.385	-.0083757	.0214453
pbit	1.45e-09	9.22e-10	1.57	0.121	-3.92e-10	3.29e-09
age	.0009016	.0194829	0.05	0.963	-.0380084	.0398117
assets	-3.60e-11	8.74e-11	-0.41	0.682	-2.11e-10	1.39e-10
_cons	-.0535588	.3892086	-0.14	0.891	-.8308621	.7237445
sigma_u	.0546838					
sigma_e	.29938309					
rho	.03228569	(fraction of variance due to u_i)				

F test that all u_i=0: F(7, 65) = 0.13 Prob > F = 0.9954

APPENDIX B STATA VERSION 14.0 GENERATED RESULTS FOR RETURN ON ASSETS (ROE)

```

-----
/-----/ /-----/ /-----/ /-----/ (R)
/-----/ /-----/ /-----/ /-----/ 14.0
Statistics/Data Analysis
Copyright 1985-2015 StataCorp LP
StataCorp
4905 Lakeway Drive
College Station, Texas 77845 USA
800-STATA-PC http://www.stata.com
979-696-4600 stata@stata.com
979-696-4601 (fax)
    
```

Variable	Obs	Mean	Std. Dev.	Min	Max
roe	80	2.354586	8.272021	-41.4191	40.83039
capad	80	5.292635	16.65464	.0006055	73.89596
pbit	80	1.73e+07	4.72e+07	-2.80e+08	1.16e+08
age	80	22.875	13.50984	1	44
assets	80	1.01e+09	9.57e+08	5276423	4.13e+09

```
. regress roe capad pbit age assets
```

Source	SS	df	MS	Number of obs	=	80
Model	3010.53609	7	430.076584	F(7, 72)	=	12.93
Residual	2395.14441	72	33.2658946	Prob > F	=	0.0000
				R-squared	=	0.5569
				Adj R-squared	=	0.5138
Total	5405.68049	79	68.4263354	Root MSE	=	5.7677

roe	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
capad	.0592772	.117987	0.50	0.617	-.1759255 .2944799
pbit	1.33e-07	1.57e-08	8.47	0.000	1.02e-07 1.65e-07
age	-.0544857	.0652715	-0.83	0.407	-.1846021 .0756306
assets	-5.28e-10	1.07e-09	-0.49	0.625	-2.67e-09 1.61e-09
_cons	2.309443	1.842627	1.25	0.214	-1.363766 5.982653

```
. estat vif
```

Variable	VIF	1/VIF
capad	9.17	0.109052
assets	2.51	0.397793
age	1.85	0.541532
pbit	1.31	0.761607
Mean VIF	3.77	

```
Random-effects GLS regression          Number of obs = 80
Group variable: id                    Number of groups = 8
```

```
R-sq:
within = 0.5629
between = 0.5595
overall = 0.5569

Obs per group:
min = 10
avg = 10.0
max = 10
```

```
corr(u_i, X) = 0 (assumed)
Wald chi2(7) = 90.50
Prob > chi2 = 0.0000
```

roe	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]
capad	.0592772	.117987	0.50	0.615	-.171973 .2905274
pbit	1.33e-07	1.57e-08	8.47	0.000	1.02e-07 1.64e-07

age		-0.0544857	.0652715	-0.83	0.404	-.1824155	.0734441
assets		-5.28e-10	1.07e-09	-0.49	0.623	-2.63e-09	1.58e-09
_cons		2.309443	1.842627	1.25	0.210	-1.302039	5.920926

sigma_u		0					
sigma_e		5.1871633					
rho		0	(fraction of variance due to u_i)				

. estimate store random

. xtreg roe capad pbit age assets

```

Fixed-effects (within) regression      Number of obs   =      80
Group variable: id                    Number of groups =      8

R-sq:                                  Obs per group:
    within = 0.5737                    min =           10
    between = 0.1003                   avg =          10.0
    overall = 0.3520                   max =           10

                                F(7,65)      =      12.50
corr(u_i, Xb) = -0.4627              Prob > F      =      0.0000
    
```

roe		Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
capad		.0777737	.1293561	0.60	0.550	-.1805683 .3361158
pbit		1.39e-07	1.60e-08	8.69	0.000	1.07e-07 1.71e-07
age		.3039979	.3375642	0.90	0.371	-.3701644 .9781603
assets		-1.26e-09	1.52e-09	-0.83	0.409	-4.29e-09 1.77e-09
_cons		-4.988404	6.743496	-0.74	0.462	-18.4561 8.479288

sigma_u		5.6461187				
sigma_e		5.1871633				
rho		.54228941	(fraction of variance due to u_i)			

F test that all u_i=0: F(7, 65) = 3.43 Prob > F = 0.0035

APPENDIX C

LISTED NIGERIAN DEPOSIT MONEY BANKS DATA SHEET

Access Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0134	7,689,094	7.0000	317,868,678	0.0242	1.8016
	2006	0.0143	8,043,145	8.0000	328,615,194	0.0245	0.2837
	2007	0.0066	19,042,106	9.0000	1,003,945,437	0.0190	0.1108
	2008	0.0108	26,185,429	10.0000	710,326,082	0.0369	0.1414
	2009	0.0104	-34,815,650	11.0000	693,783,938	-0.0502	-0.2068
	2010	0.0089	16,168,870	12.0000	808,823,772	0.0199	0.0922
	2011	0.0015	31,356,396	13.0000	1,629,003,195	0.0192	12.7890
	2012	0.0016	46,142,422	14.0000	1,745,471,746	0.0264	16.8307
	2013	0.0008	43,530,591	15.0000	1,835,466,000	0.0237	30.1287
	2014	0.0006	52,022,290	16.0000	2,104,360,540	0.0247	40.8304
First Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0057	44,862,798	34.0000	897,363,783	0.0499	8.8184
	2006	0.0058	46,284,000	35.0000	911,427,000	0.0508	8.8362
	2007	0.0065	84,341,000	36.0000	1,528,234,000	0.0552	8.4807
	2008	0.0062	53,799,000	37.0000	2,009,914,000	0.0268	4.3275
	2009	0.0067	13,297,000	38.0000	2,174,058,000	0.0061	0.9168
	2010	0.0071	41,299,000	39.0000	2,305,258,000	0.0179	2.5312
	2011	0.0047	39,672,000	40.0000	3,490,871,000	0.0114	2.4315
	2012	0.0052	83,289,000	41.0000	3,128,326,000	0.0266	5.1047
	2013	0.0044	76,853,000	42.0000	3,747,826,000	0.0205	4.7103
	2014	0.0040	81,360,000	43.0000	4,131,635,000	0.0197	4.9865
FCMB Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0137	22,738,371	1.0000	452,899,000	0.0502	3.6675
	2006	0.0082	15,716,000	2.0000	486,485,000	0.0323	3.9290
	2007	0.0093	27,368,000	3.0000	732,038,000	0.0374	4.0012
	2008	0.0078	35,329,000	4.0000	959,184,000	0.0368	4.7345
	2009	0.0874	27,863,000	5.0000	1,066,504,000	0.0261	0.2988
	2010	0.0101	48,456,000	6.0000	1,152,002,000	0.0421	4.1565
	2011	0.0091	62,080,206	7.0000	1,608,652,646	0.0386	4.2187
	2012	0.0085	103,027,923	8.0000	1,734,877,860	0.0594	7.0013
	2013	0.0070	107,091,256	9.0000	2,102,846,415	0.0509	7.2774
	2014	0.0062	116,385,843	10.0000	2,355,876,622	0.0494	7.9090
GT Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.2141	997,283	9.0000	5,276,423	0.1891	0.8827
	2006	2.2128	728,181	10.0000	5,276,423	0.1380	0.0624
	2007	29.7049	2,226,708	11.0000	5,276,423	0.4220	0.0142
	2008	39.7747	7,892,548	12.0000	6281545	1.2565	0.0316
	2009	35.2331	-11,632,428	13.0000	6,281,545	-1.8518	-0.0526
	2010	44.1151	4,954,843	14.0000	6,281,545	0.7888	0.0179
	2011	73.8733	5,640,306	15.0000	7,851,931	0.7183	0.0097
	2012	73.8960	7,499,651	16.0000	7,851,931	0.9551	0.0129
	2013	65.5586	9,310,198	17.0000	10,796,407	0.8623	0.0132
	2014	57.2787	10,747,985	18.0000	14,395,209	0.7466	0.0130
Sterling Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0070	15,588,000	12.0000	829,383,000	0.0188	2.6922
	2006	0.0083	17,577,000	13.0000	70,009,4000	0.0251	3.0358
	2007	0.0051	33,012,000	14.0000	1,128,890,000	0.0292	5.7016

	2008	0.0055	-67,337,000	15.0000	1,238,797,000	-0.0544	-9.9685
	2009	0.0058	-	16.0000	1,160,706,000	-0.2410	-41.4191
			279,786,000				
	2010	0.0068	-23,382,000	17.0000	1,000,691,000	-0.0234	-3.4614
	2011	0.0061	-18,892,730	18.0000	1,108,277,200	-0.0170	-2.7969
	2012	0.0564	27,668,890	19.0000	119,726,730	0.2311	4.0961
	2013	0.0051	29,971,839	20.0000	1,328,792,700	0.0226	4.4370
	2014	0.0052	32,398,282	21.0000	1,290,987,000	0.0251	4.7962
Union Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0044	11,892,000	35.0000	799,862,000	0.0149	3.3977
	2006	0.0040	12,811,000	36.0000	884,137,000	0.0145	3.6292
	2007	0.0048	29,525,000	37.0000	1,191,042,000	0.0248	5.1366
	2008	0.0052	56,815,000	38.0000	1,673,333,000	0.0340	6.5895
	2009	0.0070	13,662,000	39.0000	1,548,281,000	0.0088	1.2676
	2010	0.0080	15,885,000	40.0000	1,617,969,000	0.0098	1.2282
	2011	0.0648	-26,600,000	41.0000	1,920,435,000	-0.0139	-0.2138
	2012	0.0548	52,010,000	42.0000	2,272,923,000	0.0229	0.4180
	2013	0.0471	56,058,000	43.0000	2642,296,000	0.0212	0.4505
	2014	0.0450	56,200,000	44.0000	2,762,573,000	0.0203	0.4517
UBA Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0416	4,556,000	35.0000	120,987,000	0.0377	0.9049
	2006	0.0407	356,000	36.0000	123,842,000	0.0029	0.0707
	2007	0.0379	-56,799,000	37.0000	132,959,000	-0.4272	-11.2808
	2008	0.0463	-28,306,000	38.0000	108,825,000	-0.2601	-5.6219
	2009	0.0549	-8,864,000	39.0000	94,059,000	-0.0942	-1.7178
	2010	0.0295	1,314,200	40.0000	216,984,000	0.0061	0.2050
	2011	0.0301	1,546,500	41.0000	232,768,000	0.0066	0.2209
	2012	0.4212	1,657,897	42.0000	229,760,000	0.0072	0.0171
	2013	0.0583	1,947,308	43.0000	330,872,475	0.0059	0.1009
	2014	0.0679	3,093,940	44.0000	283,949,493	0.0109	0.1604
WEMA Bank Plc.	YEAR	CA	PBIT	AGE	TA	ROA	ROE
	2005	0.0055	2,738,389	14.0000	293,744,884	0.0093	1.6813
	2006	0.0056	2,992,738	15.0000	308,287,338	0.0097	1.7312
	2007	0.0067	2,969,283	16.0000	289,485,859	0.0103	1.5395
	2008	0.0069	3,093,940	17.0000	327,384,849	0.0095	1.3712
	2009	0.0065	3,349,292	18.0000	382,562,312	0.0088	1.3566
	2010	0.0086	3,229,182	19.0000	297,383,844	0.0109	1.2596
	2011	0.0066	3,102,983	20.0000	417,374,894	0.0074	1.1331
	2012	0.0104	3,892,838	21.0000	408,273,839	0.0095	0.9189
	2013	0.0081	4,002,938	22.0000	426,367,474	0.0094	1.1550
	2014	0.0077	5,647,383	23.0000	475,857,584	0.0119	1.5483

Source: generated by the author from annual reports and Accounts 2005-2014 Data of DMBs

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