Aliyu, Almustapha A.; Abdullyhi, Nuruddeen Abba; Bakare, Taophic Olarewaju

Article

Capital adequacy and financial performance of deposit money banks with international authorization in Nigeria

ISSN: 2635-2966 (Print), ISSN: 2635-2958 (Online).

Available online at http://www.atreview.org

Original Research Article

Capital Adequacy and Financial Performance of Deposit Money Banks with International Authorization in Nigeria

ALIYU, Almustapha A.[1], ABDULLAHI, Nuruddeen Abba[2] & BAKARE, Taophic Olarewaju[3]

[1] *Department of Accounting and Finance, Usmanu Danfodiyo University, Sokoto, Nigeria* *mustaphaa101@gmail.com*
[2] *Dangote Business School, Bayero University, Kano, Nigeria,* *naabdullahi@yahoo.com*
[3] *Department of Accounting and Finance, Usmanu Danfodiyo University, Sokoto, Nigeria,* *abubackrie@gmail.com*

For Correspondence, email: *abubackrie@gmail.com*

Received: 1/11/2020 Accepted: 20/12/2020

Abstract

This study examines the nexus between capital adequacy and financial performance of deposit money banks (DMBs) in Nigeria. Secondary data were obtained from the audited financial statements of all the *eight (8) deposit money banks with International Authorization listed on the Nigerian Stock Exchange spanning from 2012 - 2019. Data were analysed using panel regression techniques. Results showed that loans and advances (LAD) have a positive and significant effect on the financial performance of DMBs with international authorisation in Nigeria. The study concluded that capital adequacy has positive relationship with the financial performance of DMBs in Nigeria. It recommends that the Central Bank of Nigeria need to increase the minimum capital base of deposit money banks in Nigeria, since the current ₦25 billion and ₦50 billion minimum capital base license requirement for DMBs with national and international authorisation cannot justify the banking reality of today, especially as a result of the continuous depreciation of the value of local currency naira in the foreign exchange market.*

Keywords: Capital Adequacy, Basle Accord, Loans and Advances, Return on Equity, Banks

JEL Classification Codes: G21, O16

Citation: Aliu, A.A., Abdullahi, N.A., & Bakare, T.O. (2020). Capital adequacy and financial performance of deposit money banks with international authorization in nigeria. Accounting and Taxation Review, 4(4): 78-91.

1. INTRODUCTION

The banking industry is one of the most highly regulated sectors of the economy all over the world. The significance of the sector is premised on the fact that it plays an important role in economic growth and development through the mobilisation of funds from within and outside the country and at the same time channeling such funds to various sectors of the economy. Deposit Money Banks are considered to be the primary channel of savings and allocations of credits in an economy (Harley, Afolabi, & Adegbola, 2018). The banking sector serves as a bridge between savers and borrowers or investors thereby execute all tasks concerned with profitable and secure channeling of funds (Ariccia & Marquez, 2004). The regulation of the sector is aimed to protect depositors as well as to prevent financial distress in a country, and foster an efficient and competitive banking system that facilitates financial intermediation (Mitchell, 1984).

Generally, deposit money banks are expected to make profit and to absorb loss from their normal earnings. Without profits, no firm can survive and attract outside capital to meet its investment needs. Thus, an increase in the financial performance of deposit money banks plays an essential role in persuading depositors to supply funding as well as deposits cash on good terms. Profit is the essential element to the survival of financial institutions (In & Eze, 2018). Capital adequacy can be noted as an engine for effective running of the banking business. Adequate capital is therefore considered a *sine qua non* to profitability operations in the financial sector. It involves setting minimum requirements for market risk in the books of deposit money banks. This includes specifying standards, covering risk management, and solvency ratio requirements (Torbira & Zaagha, 2016).

According to the Basel Committee on Banking Supervision (1999), loans are the largest and most obvious source of credit risk. Hence, it is a requirement for every Bank worldwide to identify, measure, monitor, and control credit risk and determine how credit risks could be lowered. Deposit money banks must hold adequate capital against these risks to absorb any shocks and reduce the likelihood of failures. The holding of adequate capital accentuates the ability of the banks to attract more customers and make better investment opportunities (Aymen, 2013). Equally, the deposit money banks are responsible for ensuring that they are adequately compensated for risks incurred.

The Basel Committee introduced capital adequacy regulation in 1988, which required banks all over the world to maintain a minimum capital equal to 8% of risk-adjusted assets with a capital consisting of Tier I capital (equity capital and disclosed reserves) and Tier II capital (long term debt, undisclosed reserves and hybrid instruments) that more than 100 countries

have adopted (Jacobson, Linde & Roszbach, 2002).

The bitter experience from the financial crises in Nigeria during the last decade had severe consequences for the banking industry, mainly due to weak capital adequacy and the resultant effects on the fortunes of the stakeholders (depositors, investors, shareholders and government) and the economy. It became obvious that the health and safety of the entire banking system depend largely on capital adequacy. Although the Central Bank of Nigeria (CBN) had in the past fifteen years introduced several banking reforms, mainly aimed at increasing the capital base of banks, the deposit money banks were faced with the problems of undercapitalisation, insolvency, high level of non-performing loans and weak corporate governance among others (Ede, 2018).

Since 2015, there had been a continuous decline in the international price of crude oil (the main revenue base of Nigeria), volatile foreign exchange market, spiral inflation rate, implementation of Treasury Single Account (TSA), and a sharp decline in Gross Domestic Product (GDP). These, coupled with other factors, affected the going concern status of some deposit money banks in Nigeria due to insufficient capital adequacy (Ukinamemen & Ozekhome, 2019). Notwithstanding the relative stability experienced by financial institutions during the post-consolidated era and the improved public confidence due to reforms introduced by the CBN, the health of some financial institutions in Nigeria appears appears

The motivation of this study is derived from the narratives on the challenges faced by the financial institutions, especially the deposit money banks (DMBs). Although, there had been several researches on capital adequacy and Bank's financial performance in the last two decades, only a few focus on the effects of the Basle Accord on the financial performance of DMBs in Nigeria. Thus, this study examines the nexus between capital adequacy and financial performance of DMBs using Basle Accord approach to understand the impact of the Accord on Nigerian banks. The specific objectives of the study are to: assess the extent to which total assets influence the financial performance of deposit money banks in Nigeria; and examine the effect of loans and advances on the financial performance of deposit money banks in Nigeria.

2. REVIEW OF RELATED LITERATURE

Conceptual Framework: **Bank Capital Adequacy**

Bank capital may be defined as the value of its net assets (total assets minus total liabilities). Thus, the sum of the paid-up share capital and its accumulated reserves (Torbira & Zaagha, 2016). Bank capital serves as a means of assessing the strength of a bank, which assures the regulatory authorities that the financial system is not threatened or weakened by any crisis in a single bank or group of banks vis-à-vis assures the public that depositors' funds are safe. It also ensures a bank's safety and helps the Bank avoid the risk of insolvency and supports the credit risk a bank is called upon to assume in a normal business lending. The larger the capital resources or base, the more loans and advances the Bank could grant both on the aggregate and for individuals (Ejoh & Iwara, 2014).

The Central Bank of Nigeria (2004) defines capital adequacy as a situation where the adjusted capital is sufficient to absorb all losses and fixed assets of the Bank having

enough surpluses for the current operations and future expansion. Its regulatory adjusted capital is made up of ordinary share capital, statutory reserves, general reserves, net provisions for non-performing loans, including other losses arising from frauds, forgeries and theft, and loan capital that satisfies certain conditions. A bank is considered to have adequate capital when it has enough funds to meet the stipulated amount for its level of business, ensure safe operation and retain public confidence, and enough to acquire the infrastructure needed for sound operations (Rose & Hudgin, 2008). Adequate capital creates an avenue for better standards in any business establishment. It spurs business capacity and better performance. It is in this wise that the CBN from time to time prescribes the minimum regulatory capital adequacy ratio (capital to total risk-weighted assets) for banks based on the relevant risk factors and the internal capital adequacy assessments of each Bank. This is to ensure that the capital held by a bank is commensurate with the Bank's overall risk profile. Therefore, a higher level of minimum capital adequacy ratio may be prescribed for a bank under the Pillar 2 framework based on its individual risk profile and its risk management systems.

Consequently, deposit money banks in Nigeria are encouraged to maintain a higher level of capital commensurate with their risk profiles. The existing definition of the constituents of capital, deductions from total qualifying capital and restrictions within and between primary (Tier 1) and supplementary (Tier 2) capital are generally consistent with the Basel Accord. According to CBN Guidance Notes on Regulatory Capital issued in 2015, "the elements of Tier 2 capital is limited to a maximum of one-third (i.e. 33.33%) of Tier 1 capital, after making deductions for goodwill, deferred tax asset and other intangible assets but before deductions of investments". In contrast, bank Regulatory Risk reserve is not recognised as a component of qualifying capital.

Based on the Basel Accord's level of capital adequacy ratio as an acceptable limit, a commercial bank may be classified as under-capitalised, significantly undercapitalised, critically under-capitalised, and insolvent (Ejoh & Iwara, 2014). Besides the requirement for the capital adequacy ratio, the CBN also directed that all commercial banks should employ a credit rating ratio agency to update their credit daily continuously and, at the close of each year, submit the ratings to the Bank. The banks also disclose their credit ratings prominently in their published annual reports (CBN, 2010).

Basel Accord Background

The Basel Committee's major aim is to enhance financial stability by improving the quality of banking supervision worldwide. Thus, it formulates broad supervisory standards and guidelines and recommends statements of best practice in banking supervision. The Basel Capital Accord or Committee establishes a measure of capital and a measure of risk, ~~which is~~ known as 'risk-weighted assets. The Basel "Concordat" was first issued in 1975 and revised several times over the years, and the Committee has established a series of international standards for bank regulation, most notably its Basel Accords on Capital Adequacy, which are commonly referred to as Basel I, Basel II and Basel III (BIS website, 2020).

Basel I - Basel Capital Accord or Basel I was released to banks in 1988 towards

achieving a multinational accord to strengthen the stability of the international banking system and to remove a source of competitive inequality arising from differences in national capital requirements. The Accord recommended capital adequacy regulation, which required globally active banks to maintain a minimum capital equal to 8% of risk-adjusted assets, with capital consisting of Tier I capital (equity capital and disclosed reserves) and Tier II capital (long term debt, undisclosed reserves and hybrid instruments (Jacobson, Linde, & Roszbach, 2002). Banks and other financial institutions' capital adequacy ratio requirement aimed to avoid risks and bankruptcy in the financial system. In reality, this framework affected banks in member countries and virtually all countries with active international banks. The Basel I Accord defined regulatory capital, measures of risk exposure, and rules specifying the level of capital to be maintained in relation to these risks. It introduced a *de facto* capital adequacy standard, based on the risk-weighted composition of Bank's assets and off-Balance-sheet exposures, which ensured that an adequate amount of capital and reserves was maintained to safeguard solvency (Rose, 2008). However, the Basel I Accord's observed inadequacies to provide an effective means to ensure that capital requirements matched a bank's real risk profile precipitated the demand for a new capital accord (Greuning, 2009).

Basel II Accord - was issued in 2004 with new proposals on capital adequacy framework to replace the Basel I Accord. It was designed to improve the way regulatory capital requirements reflect underlying risks and better address the financial innovation in the ensuing years. The Basel II provided for critical aspects, namely Minimum Capital Requirement – calculated to include credit, market and operational risks; Supervisory Review – providing key principles for reviewing, risk management guidance and supervisory transparency and accountability; Market II Accord, credit risk includes market risk. More so, operational risk is taken into cognisance in the calculation of the capital adequacy ratio. The Basel II Accord focuses on three pillars: developing a set of disclosure requirements that allow market participants to assess key information on risk exposure, risk assessment process, and capital adequacy of a bank (Singh & Milan, 2018).

Basel III Accord - The financial crisis of 2008 was the propelling force behind the introduction of the Basel III guidelines released in December 2010. It was motivated by the need to strengthen further the system as banks in the developed economies were under-capitalised, over-leveraged, and had a greater reliance on short-term funding (Ariccia & Marquez, 2004). Also, the quantity and quality of capital under Basel II were deemed insufficient to contain any further risk. Under Basel III, the minimum capital adequacy ratio banks must maintain 8%, also known as Capital to Risk (Weighted) Assets Ratio (CRAR). The rationale is to promote a more resilient banking system by focusing on four vital banking parameters: capital, leverage, funding, and liquidity. The Basel III capital requirement would also have a positive impact on banks. It raises the minimum core capital stipulation, introduces countercyclical measures, and enhances the bank's ability to conserve core capital in the event of stress through a conservation capital buffer. On the other hand, the stipulated liquidity requirements would bring uniformity in the liquidity standard followed by the banks globally. This liquidity standard requirement would

be of immense benefit to Nigerian banks to manage liquidity pressure in a stress scenario more effectively.

Since the inception of banking regulation in Nigeria, there has always been a directive issued from time to time by the regulatory authorities on the minimum (paid-up) capital requirement before a bank can be licensed to operate. OOver the years, the the years, the stipulated minimum capitahad witnessed a steady growth in amount since the issuance of the first Nigerian banking law in 1952. The Nigerian Banking Ordinance of 1952 stipulated a minimum capital requirement of ₦25,000 and ₦200,000 for indigenous and expatriate commercial banks in the financial system. This was increased to ₦600,000 and ₦1.05 million for indigenous and expatriate banks, respectively, by the Banking Act of 1962. Until 1991, the minimum capital requirement for both commercial and merchant banks was ₦20 million. However, the issuance of Bank and Other Financial Institution Decree (BOFID) has increased the minimum capital requirement for a banking license to ₦50 million and ₦500 million in 1991 and 1997 for both commercial and merchant banks. Subsequently, the minimum capital requirement for banks was increased from ₦2 billion to ₦25 billion in 2004.

The rationale of the increase in a minimum capital requirement for deposit money banks is predicated on the need to boost the liquidity capacity of the bank to absorb any losses that could arise from its business. More importantly, having adequate capital would enable for greater protection of the bank's depositors from unforeseen contingencies. Indeed, capital adequacy is used to promote the stability and efficiency of financial systems, and indeed, an important parameter for judging the strength and soundness of the the banking system (Nikhat, 2014). Therefore, it is no doubt that the Basle Accord has influenced the bank recapitalisation policy in Nigeria over the years. A review of banks' prudential ratios showed that average capital adequacy ratios (CAR) for deposit money banks in Nigeria stood at 17.7 per cent and 15.9 per cent at the end of December 2015 and 2014 (Michael, Etukafia, Akpabio & Etuk, 2018). These average ratios suggest that Nigerian deposit money banks had maintained significantly higher CAR than the 8 per cent minimum prescribed by the Basle Accord.

2.2 Empirical Review

There are numerous empirical studies related to capital adequacy and bank financial performance (Reynolds & Ratanakomut, 2000; Kosmidou, 2008; Sufian, 2009; Asikhia & Sokefun, 2013; John & Oke, 2013; Agbeja, Adelakun & Olufemi, 2015; Torbir & Zangha, 2016; Mamoud, 2017; Ede 2018; Agu & Nwankwo, 2019; Ukinamemen & Ozekhome, 2019). Whereas many studies indicated a considerable positive link between bank profitability and capital adequacy, there are others with contrary results.

It is essential to review some literature related to the present study to give a background perspective. Agbeja, Adelakun and Olufemi (2015) examine whether or not the capital adequacy ratio affects bank profitability. The study also analyses the impact of capital adequacy ratio on banks' exposure to credit risk. Using secondary data from financial statements of commercial banks, the study shows a positive and significant relationship between capital adequacy and bank profitability. This suggests that banks with more equity capital

are perceived to have more safety, and such an advantage can translate into higher profitability.

Mamoud (2017) examines the impact of capital adequacy on the performance of Nigerian banks using the Basel accord framework. Data from nine deposit money banks with significant foreign operations were used in the study. The ordinary least square (OLS) regression results show that a positive relationship exists between capital adequacy and profitability. Furthermore, the results indicate that all the sampled banks were far more stable and diversified than deposit money banks with national authorisation only in Nigeria. It was clear that deposit money banks with foreign operations tend to attract large deposits and high customer confidence than those with domestic operations only. It was concluded that capital adequacy has a significant impact on the performance of banks with international authorisation in Nigeria.

In another study, Michael, Etukafia, Akpabio and Etuk (2018) examine capital adequacy and the value of banks in Nigeria using secondary data from the financial statements of selected banks for the period spanning 2006 to 2016. The data were analysed using Ordinary Least Square (OLS) regression technique, and the results showed that capital has a positive and statistically significant relationship with deposit money banks' total assets. In a separate study, Abba, Okwa, Soje & Aikpitanyi (2018) attempt to analyse the bank-specific determinants of capital adequacy ratio (CAR) in the Nigerian Deposit Money Banks (DMBs) using balanced panel data from financial statements of 12 selected listed DMBs over ten years 2005-2014. The study found that the capital adequacy ratio of Nigerian DMBs is well above the regulatory minimum set by the CBN and the Basel Accord requirthe and the Basel Accord requirementst was concluded that CAR is primarily determined by the banks risk-portfolio, deposit level, profitability and asset quality.

Another study, Ini, and Eze (2018) examines the effect of capital adequacy requirements on the performance of commercial banks in Nigeria. The study employed the ordinary least squares regression method to analyse data of commercial banks for the period 1986 to 2016 obtained from the NDIC and CBN Annual and Bank Supervision Reports. The results show that capital adequacy impacts positively on the financial performance of commercial banks in Nigeria.

Ukinamemen and Ozekhome (2019) explore the influence of capital adequacy on the financial performance of listed banks in Nigeria. Regression results revealed that banks' capital adequacy ratio has a positive and significant impact on the financial performance of banks in Nigeria. Agu and Nwankwo (2019) investigate capital adequacy on a commercial bank's financial performance in Nigeria in a separate study. The study used secondary data obtained from the audited financial report banks audited financial reports covering 2010 - 2017. The regression model was applied on the data in determining the extent of the effect of loans and advances, owners' equity and total deposits on commercial bank financial performance in Nigeria. It was found that the owner's equity has a positive but no significant impact on the net interest income of commercial banks in Nigeria.

It is evident from the above that the empirical literature has indicated a mix of

results regarding the link between capital adequacy ratio and deposit money banks' financial performance in Nigeria. This study will add to the existing literature on the subject area and give more significant insights from the perspective of the the Basel Accord.

Theoretical Framework

In the light of divergence theories of capital adequacy (Buffer Theory, Deposit Insurance Theory, and Expense Theory), this study mainly relied on the Buffer Theory of Capital Adequacy as propounded by Calem and Rob (1996). The theory hypothesises that banks tend to hold a 'buffer' of excess capital to minimise the risks of falling below the regulatory minimum capital requirements. It also implies an apparent trade-off between capital adequacy and the amount of risk a bank undertakes. Therefore, the setting of minimum capital requirements and capital adequacy ratios for banks seem to be consistent with the buffer theory of capital adequacy (Hunjra, Zureigat & Mehmood, 2020). It is also pertinent to note that the Central Bank of Nigeria regulation on minimum capital adequacy ratios for deposit money banks, which was predicated on the Basle Capital Accord approach, justifies using the buffer theory in the present study (Ikepefan, 2012).

3. METHODOLOGY

Model Specification

This study adopted a panel regression model that used Ukinamemen and Ozekhome (2019) to establish the nexus between capital adequacy and financial performance of deposit money banks in Nigeria. The model was adopted and modified to suit the objectives of this study as specified below:

PRF = *f*(TAS, LAD)

$ROE_{it} = \alpha + \beta_1 TAS_{it} + \beta_2 LAD_{it} + \mu_{it}$

Where:

PRF= ROE= Return on Equity while capital adequacy was measured using Total Assets and Loans and Advances. μ_{it} = Total error term, β_1, β_2, represent intercept. *A priori* expectation is that $\beta_1 - \beta_2 > 0$.

Decision rule; null hypothesis is rejected if the prob (p-value) is < 5% significance level, otherwise, it is accepted.

Research Design

This study employs *ex-post facto* research design because the study is carried out on a group of listed deposit money banks (cross sectional) and for more than a year (time series). *Ex-post facto* helps to investigate possible cause and effect as well as relationship among the variables under study by first identifying some existing consequence and searching back by analysing causal factors. This is in view of the fact that the study entailed the use of annual audited financial statements of deposit money banks with international authorisation listed on Nigeria Stock Exchange aimed to establish the nexus between capital adequacy and financial performance of deposit money banks in Nigeria.

Population and Sample Size

The population of this study is the entire 24 deposit money banks (DMBs) which comprises of eight (8) depost money banks with international authorization, eleven (11) deposit money banks with national authorization, three (3) deposit money banks with regional authorization, and two (2) non-interest banks. listed on Nigerian stock exchange since it borders on the nexus between capital adequacy and financial performance of deposit money banks in Nigeria. A sample consisting of all the eight (8) DMBs with International Authorization listed on the Nigerian Stock Exchange was

selected for the study since the Basle Accord Framework requirements are more compelling on banks operating internationally. More so, it is pertinent that the findings based on these selected DMBs could well be generalised for all the deposit money banks in Nigeria. The selected banks are Access Bank Plc, Fidelity Bank Plc, First City Monument Bank Plc, First Bank Plc, Guaranty Trust Bank Plc, Union Bank of Nigeria Plc, United Bank for Africa Plc and Zenith Bank Plc with International Authorization listed on the Nigeria Stock Exchange for the period, 2012 to 2019.

Variable Measurement

This study has two independent variables (Total Assets and Loans & Advances) to measure capital adequacy in line with the studies conducted by Mammoud (2017); Michael, Akpabio and Etuk (2018); Agu & Nwankwo (2019); Arekhnadia & Hassan (2019). These variables were measured through the data obtained from the audited annual financial statements of deposit money banks under study. The study used return on equity as a dependent variable, which was regressed against two independent variables of the study.

Return on Equity: as a measure of performance/earnings quality, explains the efficiency of using shareholders capital in the business. It is used to analyse the effect of decision-making in the achievement of perpetuity by company management on shareholder's rate of return. It is calculated as:

$$\text{ROE} = \frac{\text{Profit After Tax}}{\text{Total Equity}}$$

Total Assets: total assets are the sum of non-current and current assets, and this total should equal the sum of stockholders' equity and total liabilities combined.

Loans and Advances: loans are money granted by creditor to a debtor to be paid in a future fixed period with an interest. This is categorically specified in the audited annual financial reports.

Analysis and Discussion of Result

Table 1: Normality Test for the Study

Test	ROE	TAS	LAD
Skewness	1.525274	0.972344	2.688494
Kurtosis	9.450709	2.328453	8.472504
Jarque-bera	159.1171	13.22745	183.9384
Prob	0.0000	0.0013	0.0000

Source: Author's Computations, (2020).

The main statistical tests for normality available in most of the statistical programs are skewness, kurtosis and Jarque-bera. A non–significant result (P-value of more than 0.05) indicates that the distribution is normal. Meanwhile, a significant result (P-value of less than 0.05) indicates that the distribution violates the assumption of normality which is common in large samples (Pallant, 2005). In this study the normality test that were used are skewness, kurtosis and Jarque-bera, and the result shows that the P-value of all the variables is less than 0.05. Therefore, this model violates by normal distributions. This model used large sample size and, therefore, there is no serious departures from the assumption of normality of the error terms detected.

Table 2: Correlation Matrix

	ROE	TAS	LAD
ROE	1.0000		
TAS	0.4113	1.0000	
LAD	0.0421	0.0329	1.0000

Source: Author's Computations, (2020).

In the table 2 above correlation matrix reflects the relative strength of the linear

relationship between these variables. According to Gujarati (2004), multi-collinearity could only be a problem if the pair-wise correlation coefficient among regressors is above 0.80. However, it is obvious that the variables in Table 1 are orthogonal (statistically independent) and do not pose correlation concern for the study.

Table 3: Variance Inflation Factor

Variable	VIF	1/VIF
TAS	1.08	0.9862
LAD	1.07	0.9858
Mean VIF	1.06	

Source: Author's Computations, (2020).

It is an implicit assumption when using panel least square estimation method that the exogenous variables are not perfectly correlated or near perfect correlation with one another. If there is no relationship between the explanatory variables, they would be said to be orthogonal to one another. Hence, Table 2 displays the relationship between the independent variables of this study with the aid of variance inflation factor (VIF). The result show absence of multi-collinearity among the variables Total Assets and Loans; and Loans and Advances as indicated by VIF of each variable falling below 10.

Table 4: Breusch-Pagan/Cook-Weisberg Test for Heteroskedasticity

Variable	Chi^2	P-value
Model	0.73	0.7342

Source: Author's Computations (2020).

Heteroskedasticity show in the table specified if the variances of the error-t`erm of the different observations are different. This study analysed Breusch-Pagan test to check if there is the problem of heteroskedasticity. The Breusch-pagan tests of the null hypothesis that the error variances are all equal against the alternative that the error variance is a multiplicative function of one or more variables. Table 3 above shows that the result of P-value (0.7342) is greater than 5% significance level; the null hypothesis was rejected. Therefore, the model does not face any heteroskedasticity problem. This implies that the correlation coefficients between the independent variables are relatively small.

4. Regression Results

Table 5: Hypothesis Testing

Dependent Variable: Financial Performance (Return on Equity)

Variables	Pool OLS Model	Fixed-effects Model	Random-effects Model
Constant	57.642	14.731	29.167
	(0.098)	(0.780)	(0.455)
Total Assets (TAS)	0.5967	1.214	6.4310
	(0.296)	(0.151)	(0.001)
Loans and Advances (LAD)	86.054	108.77	42.843
	(0.020)	(0.005)	(0.003)
F-stat	6.18	9.67	
	(0.0025)	(0.0009)	

Wald X^2			10.92 (0.0003)
Hausman Test		9.02* (0.0724)	
Breusch and Pagan Lagrangian Multiplier Test	5.02 (0.0214)		

* : Significant value at 5% level.
(): P-value, while the value denotes Coefficients
Source: Author's Computations, (2020).

Table 4 shows the panel regression analysis indicating the nexus between capital adequacy and financial performance of deposit money banks with international authorisation in Nigeria. The table shows the result of the pool OLS, fixed-effects and random-effects of the model. Hausman test was computed to check the model that is appropriate between fixed-effects and random-effects, the result shows that random-effects model is appropriate as indicated by P-value (0.0724) greater than 0.05 level of significant.

It was further double checked with the use of Breusch and pagan Lagrangian multiplier test to the model that is appropriate between pool OLS model and random-effects model, the result confirms that random-effects is appropriate as indicated by P-value 0.0214 less than 0.05 significance level.

In terms of the sign of the coefficient that signify the nexus between capital adequacy and financial performance of deposit money in Nigeria, the result shows that two variables total assets (TAS), and loans and advances (LAD) concur with *a priori* expectation with negative sign, this implies that there is inverse relationship between total assets, loans and advances and financial performance of deposit money banks in Nigeria as measured by return on equity (ROE).

The first objective of the study was achieved with the magnitude coefficient of variables total assets (TAS) which has significant effect on financial performance of sampled deposit money banks in Nigeria (ROE) as indicated by coefficient (6.4310) with P-value (0.001) at 5% significance level. The null hypothesis was rejected. This implies there is significant relationship between sampled Nigeria deposit money banks' total assets and return on equity. The finding is consistent with Ajayi, Ajayi, Enimola, and Orugun (2019).

Furthermore, the second objective of the study was achieved with the magnitude coefficient of variables loans and advances (LAD) which has significant effect on return on equity (ROE) as indicated by coefficient (42.610) with p-value (0.005) at 5% significance level. The null hypothesis was rejected; this implies that there is significant relationship between sampled deposit money Nigeria banks' loans and advances proportion and return on equity, which means that 1% changes in the loans and advances proportion will induce 14.7% negative changes in the level of return on equity.

Overall, the results of the Wald X^2 of (10.92) with P-value (0.0003) at 5% level of significance show that capital adequacy has significant effect on financial performance of sampled deposit money banks. This

implies that if there is proper structure, monitoring and implementation in place, there will be improvement in the financial performance level of the deposit money banks in Nigeria.

5. Conclusion and Recommendations

Based on the findings from the analysis above, the study concluded that capital adequacy has a positive and statistical relationship on deposit money banks' financial performance in Nigeria. The efficient and effective management of deposit money banks by those in the helms of affairs stimulate and improve financial performance of deposit money banks through efficient portfolio management. The findings of this study can be generalised for all deposit money banks in Nigeria, since the average capital adequacy ratio requirements of all deposit money banks is far above the 8 percent recommended by the Basle Accord. Notwithstanding that the CAR has a positive impact on the financial performance of deposit money banks, there is the need to increase the minimum capital requirements for DMBs in Nigeria, from the current ₦25 billion and ₦50 for with national and international authorisation. This is because the current amount cannot be justified in the context of the banking reality of today, especially as a result of the depreciation of the local currency in the foreign exchange market.

References

Abba, G.O., Okwa, E., Soje, B. and Aikpitanyi, L.N. (2018). Determinants of Capital Adequacy Ratio of Deposit Money Banks in Nigeria, *Journal of Accounting & Marketing*, 7(2), *12-23.*

Agbeja, O., Adelakun, O.J., and Olufemi, F.I. (2015). Capital Adequacy Ratio and Bank Profitability in Nigeria: A Linear Approach 1. *International Journal of Novel Research in Marketing Management and Economics*, 2(3), 91-99. www.noveltyjournals.com

Agu, B.O. and Nwankwo, S.N.P. (2019). Effect of capital adequacy on commercial bank's financial performance in Nigeria, 2010-2017. *European Journal of Accounting, Finance and Investment*, 5(4), 58-67.

Ajayi, S.O., Ajayi, H.F., Enimola, D.J. and Orugun, F.I. (2019). Effect of Capital Adequacy Ratio (CAR) on Profitability of Deposit Money Banks (DMB's): A Study of DMB's with International Operating License in Nigeria, *Research Journal of Finance and Accounting*, 10(10), 84 – 91.

Ariccia, D.G. and R.Marquez (2004). Information and Bank Credit Allocation. *Journal of Financial Economics*, 72(1), 185-214.

Asikhia, O. and Sokefun, F. (2013). Capital Adequacy and Bank Profitability: Empirical Evidence from Nigeria, *American Internal Journal of Contemporary Research*, 3(10), 10-21.

Aymen, B. M. M. (2013). Impact of capital on financial performance of banks: the case of Tunisia, *Banks and Bank Systems*, 8(4), 47 – 54.

BIS website (2020), Bank of International Settlement website. www.bis.org

Calem, P., and Rob, R. (1996). The impact of capital-based regulation on bank risk-taking. *Journal of Financial Intermediation*, 8, 317-352.

CBN Statistical bulletin (2004). http://www.cbn.gov.ng/documents/statbulletin.asp

CBN Statistical bulletin (2010). http://www.cbn.gov.ng/documents/statbulletin.asp

Ejoh, N.O and Lovara U.U (2014). Impact of Capital Adequacy on Deposit Money Banks Profitability in Nigeria, *Research Journal of Finance and Accounting*, 5(12), 42-35.

Greuning, H.V., and Bratanovic, S. (1999). Analysing Banking Risk, Maxwell Publishing House.

Harley, T.W., Afolabi, T.S. and Adegbola, D.D. (2018). An Empirical Investigation of the Determinants of Capital Adequacy of Financial Institutions in Nigeria. *International Review of Social Sciences*, 6(7), 375-386.

Hunjra, A.I., Zureigat, Q. and Mehmood, R. (2020). Impact of Capital Regulation and Market Discipline on Capital Ratio Selection: A Cross Country Study *International Journal of Financial Studies*, 8(21), 1 – 13.

Ikepefan, O.A. (2012). Bank Capitalisation and Performance in Nigerian Banking Industry (1986-2006): Empirical Evidence, European Journal of Accounting Auditing and Finance Research, 1(4), 12-32.

Ini, S.U. and Eze, O.R. (2018). Effect of Capital Adequacy Requirements on the Profitability of Commercial Banks in Nigeria. *International Research Journal of Finance and Economics*, 4(165), 79-89.

Jacobson, T., Linde, J. and Roszbach, K. (2002). The IRB Approach in the Basel Committee's Proposal for new Capital Adequacy Rules: Some Simulation-based illustrations, *Economics Review*, 4, 35-72.

John, E.E. and Oke, M.O. (2013). Capital Adequacy Standards, Basle Accord and Bank Performance: The Nigerian Experience (A Case Study of Selected Banks in Nigeria), *Asian Economic and Financial Review*, 2013, 3(2):146-159.

Kosmidou, K. (2008). The Determinants of Banks' Profits in Greece during the Period of EU Financial Integration. *Managerial Finance*, 34(3), 146-159.

Mammoud, J.A. (2017). Impact of capital adequacy on the performance of Nigerian banks using the Basle Accord framework. *East Africa Research Paper*.

Michael, E. I., Etukafia, N. I., Akpabio, E. E. and Etuk, M. I. (2018). Capital Adequacy and the Value of Banks in Nigeria: A Post-Consolidation Review. *Journal of Finance and Bank Management*, 6(2), 64-75.

Mitchell, K. (1984). Capital Adequacy at Commercial Banks, *Economic Review*, September/October, Federal Reserve Bank of Kansas.

Nikhat, F. (2014). Capital Adequacy: A Financial Soundness Indicator for Banks, *Global Journal of Finance and Management*, 6(8), 771-776. © Research India Publications http://www.ripublication.com

Olalekan, A. and Adeyinka, S. (2013). Capital Adequacy and Banks' Profitability: An Empirical Evidence from Nigeria. *American International Journal of Contemporary Research*, 87-93.

Reynolds, S.E. and Ratanakomut, S.G. (2000), "Bank Financial Structure in Pre-crisis East and South East Asia", Journal of Asian Economy, 11(3), 319 – 331.

Rose, P.S. and Hudgin, S.C. (2008). Bank Management and Financial Services. (Seventh Edition). Boston: McGraw Hill.

Singh, Y. and Milan, R. (2018). An Empirical Analysis of Capital Adequacy Ratio and Financial Performance of Selected Banks in India. *International Research Journal of Management and Commerce*, 5 (3), 83-95.

Sufian, F., (2009). Determinants of Bank Profitability in a Developing Economy: Empirical Evidence from Bangladesh. *Journal of Business Economics and Management*, 10(3), 207-217.

Torbira, L.L. & Zaagha, A.S. (2016). Capital Adequacy Measures and Bank Financial Performance in Nigeria: A Cointegration Analysis, *Journal of Finance and Economic Research*, 3(1), 23-34.

Ukinamemen, A.A. & Ozekhome, H.O. (2019). "Does Capital Adequacy Influence The Financial Performance Of Listed Banks In Nigeria?," *Oradea Journal of Business and Economics*, 4(2), 69-80.