Effect of Bank Capital Regulation on Stability of selected Deposit Money Banks in Nigeria: A Panel Data Approach

Yusuf Mu'utasim Billah[1], Dr. Umar Abbas Ibrahim[2]

[1]Department of Business Administration, Nile University of Nigeria, Abuja
[1]Department of Business Administration, Nile University of Nigeria, Abuja

Abstract:
Background: *The relationship between capital regulation and stability of deposit money banks (widely known as commercial banks) in Nigeria has become topical among scholars and practitioners given the incessant instability rocking the nation's banking system amid the continuous upward regulation of bank's capital. Thus, this study assessed the effect of Capital Regulation on Deposit Money Banks' Stability in Nigeria.*
Materials and Methods: *Panel data methodology was adopted which necessitated the collection of financial statistics from five commercial banks' financial statements (2004-2018) on Capital Regulation proxied by Liquid Asset Ratio (LAR), Loan Ratio (LR), and Asset Turnover Ratio (ATR) and Deposit Money Banks' Stability (proxied by Z-score). Statistically, these variables together with the data were analyzed using both descriptive statistics and panel regression methods. All analyses were conducted using E-Views 9.1 package.*
Results: *Findings from this study showed that liquid asset ratio, loan ratio and asset turnover ratio are critical drivers of capital regulation which is found to have significantly influence on bank's stability.*
Conclusion: *It was concluded that capitalization improves banks' stability in Nigeria. Thus, it was recommended, inter alia that, capitalization should be prioritized so as to improve stability of banks in Nigeria. specifically, banks' managements* should *strive to invariably keep their liquidity above the threshold (that is, far above the regulatory benchmark); doing this will give them a margin of safety in case of losses arising from their usual credit defaults.*
Key words: *Capital Regulation, Bank's Stability, Commercial Banks, Liquid Assets Ratio, Loan Asset Ratio, Asset Turnover Ratio.*

I. Introduction

The relationship between capital regulation and stability of deposit money banks (widely known as commercial banks) in Nigeria has become topical among scholars and practitioners given the incessant crises and distresses facing the nation's banking system amid the continuous upward regulation of bank's capital. Observably, right from the banking regulation inception in Nigeria, the CBN has been periodically determining the least capital-base that a bank needs to have before it acquires a banking license or continue to operate as a bank (Igbinosa & Ogbeide, 2016; Ozili, 2018; Ikue & Nkoro, 2019). From a modest value of ₦1.5million naira minimum paid-up capital in 1981 to ₦50million in 1991, ₦2billion in 2001, ₦25billion in 2004/05 and ₦50billion in 2009 (for international banks; while national banks remain ₦25billion) (Shittu, 2012; Michael, et al., 2018) which remains till date. Considering the exponential increase in bank capitalization, one would have expected a stable banking system by now.

However, the reality is far from expectation, as the Nigerian banking system has continued to witness pockets of poor stability, too frequently, which has inevitably necessitated the acquisition or outright liquidation of some banks. For instance, commercial banks rose from 20 in 1981 to 65 in 1991, dropped ephemerally to 64 in 1997, but rose astronomically to 90 in 2001, remained the same in 2002 but fell historically to 25 in 2005 and 22 in 2020 (CBN, 2019). Also, reports (such as the Asset Management Corporation of Nigeria 2012, IMF Nigeria Financial Sector Assessment 2013 and the CBN Financial Stability Report, 2018) have criticized the Nigeria's banking system for its poor assets quality, fragility and illiquidity; leading to palpable apprehension with regards to the interrelationship between capital regulation and the stability of the Nigeria's banking system.

Readings from previous studies exposed the division among researchers regarding the capital-stability relationship; while studies (Olarewaju, 2016; Jalloh, 2017; Salami & Uthman, 2018; Oyetayo et al., 2019) suggest that there is a positive relationship between capital regulation and bank stability; however, studies (such as Igbinosa & Naimo, 2020; Okoi, et al., 2019; Obilikwu, 2018; Ikpefan, et al., 2014; Onaolapo & Olufemi, 2012) reported negative (or insignificant) relationship. However, besides the mix bag of findings, whether

---

strong capital base – as being clamored for by the CBN – automatically stabilize the banking industry is generating concerns and appears to have received no substantial empirical attention. Evidence from published studies show that avalanche of existing studies is devoted to financial performance (mostly profitability) of banks despite the fact that bank stability is of utmost importance to the regulatory authorities. Therefore, it is against this background seeks to econometrically analyze the effects of capital regulation and banking stability of selected listed commercial banks using evidence from Nigeria.

Commercial banks are the focus on this study because of their unrivalled financial hegemony. This study spans from 2004 to 2019. The choice of this period is because of the unprecedented capital regulation witnessed during this period and also because of the instability that was experienced by some banks. The outcomes of this study are significant to the government and its policy-makers, analysts (especially researchers) and the general public. As for government, this study outcomes will be an eye-opener on capital-stability interrelationship, thus, enabling policy-makers (like the Ministry of Finance and CBN) to come-up with more effective policies to stabilize the banking system. Also, this study will serve the various needs of analysts and researchers; by improving their knowledge-base while serving as reference-point in their discussions.

1.2 Research objectives
Generally, this study examines the effect of bank capital regulation on stability of selected deposits money banks in Nigeria. In specifics, this study seeks to:
  i. determine the significant effect of liquid asset ratio on bank's stability in Nigeria.
  ii. critically ascertain the significance of loan ratio on bank's stability in Nigeria.
  iii. investigate the significance of asset turnover ratio on bank's stability in Nigeria.

1.3 Research questions
This study answers the underlisted questions:
  i. What significant effect does liquid asset ratio have on bank's stability in Nigeria?
  ii. What significant effect does loan ratio have on bank's stability in Nigeria?
  iii. How significant is the effect of asset turnover ratio on bank's stability in Nigeria?

1.4 Research hypotheses
This study is guided by these underlisted null hypotheses:
H01: Liquid asset ratio does not have significant effect on bank's stability in Nigeria.
H02: Loan ratio has no significant effect on bank's stability in Nigeria.
H03: Asset turnover ratio has no significant effect on bank's stability in Nigeria.

II. Literature Review
2.1 Conceptual Review
Capital regulation connotes the regulatory process of determining the amount of capital needed by a bank to remain financial healthy and sound. Specifically, it is a measure of bank's solvency to withstand the risks emanating from its operations. in banking busines, adequate capitalization is a topical issue because banks trade with depositors' money for their survival, thus, they must strive to ensure that they are adequately capitalized at any time so as to continue to earn their depositors' trusts (Ejoh and Iwara, 2014). The choice of capital regulation as instrument of regulation has been less controversial than regulation per se. Firstly, the viability of capital in checking bank's exorbitant risk while decreasing bankruptcy likelihood is challenged. The universal contention is that capital is a cushion to forestall insolvency. Consequently, the calculus behind the logic of forcing banks to be well capitalized is aimed at decreasing bankruptcy probability (Ngo, 2016). However, researchers differ with regards to bank's capital adequacy hypothesis, on the grounds that capital increase may exacerbates banks' risk-taking propensity (**Cs**) which is the bane of the 2008/09 financial crisis (**Cs**). Besides, regardless of whether capital prerequisites strongly influence bank's real capital choice remains an unsettled issue. This is because existing empirical works bank capital necessity adequacy vis-à-vis real capital levels has differentiating results (Martnova, 2015). Nevertheless, the general belief is that the fundamental purposes of regulating banks' capital is to ensure bank stability by reducing the risk of banks' operational failures, maintaining the confidence in the system and limiting losses to all the stakeholders including the government and economy. Notably, capitally weak banks usually depict low liquid asset ratio, poor loan ratio and poor asset turnover. Thus, regulating bank's capital is expected to be synonymous with these constructs.

Liquid Asset Ratio (LAR): This is the ratio of liquid Assets (LA) to Deposit Ratio (DR), which is LA/DR. Liquid asset includes, cash and cash equivalent, stocks, bonds and bank deposits. LAR depicts the efficiency of management; a firm's ability to settle its short-term obligations. The minimum recommendation

(general benchmark) is 1.0; thus, the lesser the value from 1, the worse the illiquidity, conversely, the more it increases beyond 1, the better the liquidity position. Thus, whenever a bank is declared to be illiquid, it means that its liquidity value has fallen below 1. Konboye and Nteegah (2018) noted that a capitally adequate bank usually doubles the general benchmark threshold so as to absorb shocks which is characteristically of banking business.

Loan Ratio (LR): This connote banks' Loan to Total Asset ratio, that is, L/TA. Also, bank loan depicts management efficiency. Preponderance of bank asset are domiciled in loans because the general trajectory is that the more the loans, ceteris paribus, the more the income generated by banks. This justifies why interest income is the single largest revenue-earning item on banks' statement of income. Thus, the higher the LR, the higher the capital efficiency of bank. in view of the significance of LR, regulators use it to determine the capital adequacy. Taiwo et al. (2017) noted that increase in capital regulation translates into higher LR.

Asset Turnover Ratio: This is an indicator of the efficiency with which a company is deploying its asset. ATR = Revenue/Total Asset. This ratio depicts assets utilization efficiency. bank exists to utilize their assets to generate revenue; higher turnover of assets is needed for banks to survive and grow. Capitally inadequate firm are equally inefficient (Obilikwu, 2018); they experience challenge in efficiently utilizing their assets due to higher frequency of poor asset quality.

2.1.2 Concept of Bank Stability

In this study, banking stability, according to Sere-Ejembi et al (2014), Ozili and Thankom (2018) connotes condition wherein individual financial institutions are sufficiently buoyant to adequately perform their financial intermediation obligation, without seeking assistance or interference from third-party like the regulatory/supervisory institutions or the government. Based on this definition, one pauses and asks – is Nigerian financial system stable? Well, judging by the activities in the last four decades, one might be forced to say otherwise. Following the last (2009) banking crises, the authorities took comprehensive sets of remedial measures notable of which was the injection of "fresh" liquidity into the banking industry. Igbinosa and Naimo (2020) that considerable liquidity was infused – depositors' blanket guaranty, and for interbank including prior banks' credits lines was given – specifically the rationale behind Assets Management Company of Nigeria (AMCON) establishment designated to buy banks' nonperforming loans in return for zero-coupon securities and infuse capital so as to zero capital – guidelines and oversight were reinforced and corporate governance was improved (Ozili, 2019). However, despite these measures, risks still exists. The Nigerian Financial Sector Stability Assessment Reports (2013), noted that the system continuously characterized by frail governances including unclear ownership frameworks, defective accounting system and endemic corruptions perceptions. The weaknesses are highlighted by failures including the several under-capitalizations of several banks which further contributed banks' consolidations, aside the reduction from 89 banks in 2005 to 25 banks in 2005, and from 2005 to 18 banks in 2012, before the new banking license were issued to five banks (Ikue & Nkoro, 2019) bring the total to 22.

Generally, studies ((Runkle, 1993; Beck et al., 2007; Demirgüç-Kunt et al., 2008; Laeven & Levine, 2009; Čihák & Hesse, 2010) agree that, at the individual institutions level, the z-score remains a common measure of stability. It unequivocally looks at cushions (capitalization and returns) with risk (returns instability) to gauge a bank's dissolvability risk. In financial literature, z-score is mathematically characterized as: $z \equiv (k+\mu)/\sigma$, where k connotes equity capital as percent of assets, μ is return as percent of assets, and σ connotes assets returns standard deviation as an intermediary for return volatility. Although the z-score has gained wide prominence and applicability in finance literature, nevertheless, it suffers from few impediments as a proportion of financial dependability. Its main limit is that it explicitly depends on financial information, **C**. This implies that its applicability and usefulness is solely based on the underlying reporting cum auditing structure. Should financial establishments can streamline the accounting information, the z-score may give an excessively certain evaluation of the financial organizations' dependability. Furthermore, the z-score takes a gander at individual financial establishment independently, conceivably ignoring the risk that a default in one financial institution can spillover to others within the financial system, **C.**

2.3 Theoretical Framework

This study adopted the buffer theory of capital adequacy. The theory argues that regulating banks' capital provide a 'buffer' of excess capital to prevent the situation where financial intermediation function will be crippled due to risks. Banking operations are coiled with risks, else, capitally volatile banks risk being consumed. Capital requirements constitute the main banking supervisory instrument in Nigeria (Oyetayo et al., 2019). The CBN less intervenes in banks' activities, though it unswervingly carry-out on-the-spot financial assessment, and occasionally, it assigns its on-site examination to independent auditors (Salami & Uthman, 2018). During the examination, bank capital adequacy tops the list, thus, its breach is regarded as a major banking legislation infringement that attract serious penalty from the CBN (Michael e al., 2018). Banks

remaining undercapitalized for a long-term risk liquidation. As a reminder, the revocation of operating licenses of fourteen banks during the 2004/05 bank capitalization in Nigeria is a case-in-point. Banks will require more capital should they fail to optimally mobilized deposits (Obilikwu, 2018).

Capital is more solid, reliable and useful for making long-term investment plans. Banks' ability to generate adequate deposits forestalls the capital-base from being dissolved. The cradle hypothesis predicts that bank moving toward the administrative least capital proportion may have a motivation to support capital and lessen risk to keep away from the administrative expenses set-off by capital prerequisites breach. Notwithstanding, ineffectively capitalized banks may likewise be enticed to take more risk with the expectation that higher expected returns will assist them with expanding their capital. This marks one way in which risks identifying with lower capital sufficiency influences banking tasks. In case of bankruptcy, bank, its customers as well as the Nigeria Deposit Insurance Corporation (NDIC) absorbed the risks. Currently, NDIC pays a limit of ₦200,000 to a client should a bank fail (that is, liquidates). Thus, clients are worried about bank's capital situation at unsurpassed. Banks are required to protect and pay 15/16 of deposits liabilities increased by 1% to NDIC to empower their customers benefit from the plan. Though this NDIC practice could be found across nations, however, it fluctuates in sum.

2.4 Empirical Review

Preliminary research reveals that noticeable empirical attempts have been made by researchers to examine the influence of capital regulation on banks in Nigeria with the length of period covered by this study. For instance, Okafor et al. (2010) used a Least Square Dummy Variable (LSDV) model to examine how capital adequacy affect bank earnings and profitability in Nigeria using panel data (2000-2003) from 10 strong banks and 10 weak banks. They found that capital adequacy effect on bank performance strongly affect weak banks' performance but weakly affect strong banks' performance. Olamide (2016) employed regression to analyzed the data (1985:01-2010:04) collected from the entire banking industry and found that capitalization has significantly driven credit creation of the commercial banks in Nigeria. In the same vein, findings from the study by Amahalu, et. al. (2017) using regression analysis to test the data (2010-2015) generated from the entire banks showed that a significant positive relationship exists between capital adequacy and financial performance. This agrees with the findings by Ejoh and Iwara (2014), Usman and Fadipe (2014) and Oleka and Mgbodile (2014), Apere (2016), Torbira and Zaagha (2016), Udom and Eze (2018), Micheal et al. (2019), Oyetayo et al. (2019). Studying the relation between capital adequacy ratio and banking risks in Nigeria, Abba et al. (2013) tested data (2007-2011) obtained from 12 banks using regression approach and found that capital adequacy reduces risk levels.

Conversely, using ordinary Least square used data (1999-2008) collected from five banks, Onaolapo and Olufemi (2012) assessed how capital adequacy on Nigerian banking sector profitability and found that return on capital employed, return on assets, efficiency ratio has insignificant effect on the Nigerian banking sector capital adequacy ratio. Similarly, Ikpefan (2013) used regression method to test the panel data (1986-2006) and found that shareholders fund/Total Assets negatively impact banks' asset returns. Using panel least square to test data (2006-2014) obtained from five banks and found that capitalization has insignificant positive impact on bank performance in Nigeria. Another more recent study by Igbinosa and Naimo (2020) using a panel least square regression method to test data (2007-2016) sourced from four sub-Saharan African countries found that capital adequacy has a statistically negative effect on bank stability. Corroborating this finding, comparative study by Ugwuanyi and Ewah (2015) used a t-test statistical method to test data (2000-2009) collected from the entire banking industry to perform a pre-and-post bank performance comparative analysis due to capital increase. The authors found insignificant difference in bank performance between the pre- and post-bank performance despite the capital increase. While this study was supported by similar study by Ugwuanyi and Ewah (2015) who used chow method to test data (2006-2012) collected from 10 banks aided by the use of CAMEL framework and Ikwuagwu et al. (2016) reported that capital restructuring has statistically insignificant effect on commercial banks' performance, it was contradicted by Agbeja et al. (2015).

Apparently, findings from related and relevant documented empirical studies have shown that conflicting results have been produced. Majorly, the findings have been largely divided alongside significance or insignificance of capital regulation vis-à-vis different endogenous variable (risks, profitability and bank's value). Apart from the mixed findings, very few studies have tested the capital-stability relationship besides the recent study by Igbinosa and Naimo (2020), yet, it is conventional that stability is foremost to bank's survival. It connotes the soundness of bank to absorb shocks arising from their financial intermediation without affecting their operational efficiency. It is far more than profitability which connotes ability to generate consistent profits. This implies that a bank has to be stable before being profitable. This therefore justifies and strengthen the necessity of this study.

III. Methodology

This study adopts the quantitative methodology which relies on numerical data and scientific techniques to validate hypotheses. Specifically, the ex-post facto research design which utilizes existing data on past events (Onwumere, 2009); such data are already in existence as such they are incontrollable. This implies it is an empirically-based research process that denied researcher's interference o direct control over the independent variables. Specifically, this study sought to address the problem of uncertainties surrounding the effect of capital regulation in Nigeria and how it affects bank stability, hence, the justification for adopting ex-post facto research design.

This research covers the entire commercial banks existing in Nigeria as at December 31 2018. According to the Updated List of Deposit Money Banks (DMBs) information released by the CBN (2017), there are twenty-two (22) non-interest-based banks but information obtained from the Securities Exchange Commission (SEC) website shows that only sixteen (16) of these banks are listed. Thus, this study population covers the entire listed commercial banks in Nigeria.

The sample size of this study is five (5) banks, namely, Access, United, Guarantee Trust, Unity and Wema Bank Plc. A simple random sampling was used to select these banks. In this sampling, sample selection is purely due to chance (Alvi, 2016). It is the most random of sampling methods.

This study utilized only secondary data sourced from the annual reports of the sampled banks from 2004 to 2019. Panel data involving both time-series and cross-sectional data is used. The time-series data were taken for the period between 2004 and 2019, while the cross-sectional data were taken from selected commercial banks. The adoption of the panel data was prompted by the requirement of the model and tool of analysis adopted and that the variables of the study consist of Capital Regulation and Bank's Stability in Nigeria. The Z-score used to measure banking system stability and the Liquid Asset Ratio (LAR), Loan Ratio (LR), and Asset Turnover Ratio (ATR) are extracted from the Notes to the Accounts and Statement of Financial Position (that is, Balance Sheet) respectively.

This study adopted econometric approach by employing the panel regression analysis using E-Views 9.1 package. The panel data model encompasses longitudinal or cross-sectional time –series data which allows for the cross-time observation of behavioral entities. Its preference in this study because it helps to account for individual heterogeneity, besides providing more informative data, variability, degree of freedom cum efficiency as well as less co-linearity among research variables, (Gujarati & Sangeetha, 2007). To improve the robustness of findings, panel regression diagnostics such as panel normality test and Hausmann test were performed.

By expressing the general prediction equation in the variables under consideration, we have:

Bank Stability (BSTAB) = f(CAPREG)- - - - - - *-i*

The functional equation model above is re-written in econometric form as follow:

$BSTAB_{it} = \Omega_0 + \Omega_n [(CAPREG)_{it}] + \mathcal{E}_{it}$- - - - - - *-ii*

By specifying the Capital Regulation into the three characteristics [Liquid Asset Ratio (LAR), Loan Ratio (LR), Asset Turnover Ratio (ATR)] and Bank Stability proxied by Z-score, we have:

$BSTAB_{it} = f(\eta_0 + \eta_1 LAR_{it} + \eta_2 LR_{it} + \eta_3 ATR_{it} + \mathcal{E}_{it})$- - - - *-iii*

Where: $\eta_1 - \eta_3$ = Beta coefficients of the explanatory variables;

LAR_{it} = a vector of size of ratio of LAR variables of bank, i in time, t;

LR_{it} = a vector of LR variables of bank, i in time, t;

ATR_{it} = a vector of ATR variables of bank, i in time, t;

Expected signs of the apriori are: LAR $\beta>0$, LR; $\beta>0$ and ATR $\beta>0$

Z score: as a measure of banking system stability, it is computed as follows (Mercieca et al., 2007):

$$Z - score = \frac{ROA + \frac{E}{A}}{\sigma(ROA)}$$

where:

ROA = Returns on Assets

E = Equity

A = Assets

$\sigma(ROA)$ = standard deviation of return on assets

IV. Analyses and Findings

4.1 Analyses

4.1.1 Descriptive Analysis

Table 1: Panel Descriptive Results

	BSTAB	LAR	LR	ATR
Mean	40.58775	26.74838	39.05857	11.25128
Maximum	966.0922	166.5231	56.26652	55.35152

Minimum	-2.839050	2.249217	5.723706	5.522658
Std. Dev.	138.4232	22.99559	12.06626	5.813233
Skewness	5.373780	3.182708	-0.481362	5.982263
Kurtosis	33.14098	19.44337	2.602177	45.53655
Jarque-Bera	3199.965	971.5722	3.390939	6101.587
Probability	0.000000	0.000000	0.183513	0.000000
Observations	80	80	80	80

Source: Author's Computation using E-Views, 9.1

The descriptive results show that BSTAB shows a mean and std. dev. values of 40.58 and 138.42 which indicates that there is wide variation with regards to selected banks' stability as supported by the max. and min. values of 966.09 and -2.83. Impliedly, this means that BSTAB varies widely across banks; while some banks have high stability; some banks have low stability. BSTAB is positively skewed (5.37) with a leptokurtic value of 33.14 that suggests the existence of major fluctuations with the observed period. The implication of this is that notable instabilities have been recorded within the period of observation.

The LAR shows a mean and std. dev. values of 26.74 and 22.99 which implies that there is high variation with regards to the studied banks' LAR as confirmed by the max. and min, values of 166.52 and 2.24; suggesting that the banks' loans-to-assets ratio differ widely across sampled banks. The implication of which is that some banks credit extension far outweighs their assets; while the reverse is the case for some banks. LAR is positively skewed (3.18) with a leptokurtic value of 19.44 which suggests the existence of major fluctuations with the observed period.

Also, the LR shows an average value of 39.05 and a std. dev. of -0.48 which indicates that there is a wide variation with regards to the selected banks' LR. This is supported by the max. and min, values of 56.26 and 12.06 that suggests that the banks' LR widely deviated. This implies that the liquidity of studied banks is not spread evenly across sampled banks and this implies that some banks are not strong in terms of high liquidity. This further buttresses the looming instability crises in the Nigerian banking industry. LR is negatively skewed (-0.48) with 2.60 platykurtic value which suggests the existence of major fluctuations with the observed period.

Furthermore, the ATR has a mean and std. dev. values of 11.25 and 5.81. This implies that wide deviation exists among the selected banks in distribution of ATR. This is further attested to by the range between the max. and min. values of 55.35 and 5.52. Financially, this suggests that wide difference exists in the selected banks' efficiency. This also attests to the perceived instability brewing in the nation's banking industry as efficiency performance is widely dispersed. ATR is positively skewed (5.98) with a leptokurtic value of 45.53 which suggests the existence of major fluctuations with the observed period. The implication of this is that notable ATR have been recorded within the period of observation.

From the Normality Test result above, it is conspicuous that not all the variables [BSTAB (p-value=0.0000), LAR (p-value=0.0000), LR (p-values=0.1835) and ATR (p-value=0.0000)] have a p-value higher than 0.05 (5%). And for presence of abnormality in the data distribution, econometricians agreed that the probability value (simply known as the p-value) should be less than 5%. However, it is evident from the above that only the variable (LR) has its p-values higher than 5% unlike the remaining variables (BSTAB, LAR and ATR).

4.1.2 Econometric Analysis

Result from the Hausman test shows that a Chi-Sq. statistic has a value of 8.110975 with a p-value of 0.0021 which is lower than the 5% critical significance level, the implication of which is that the Fixed Effect Model is the most appropriate for our regression model and is therefore adopted.

Apparently, from the FEM results below, the LAR has a positive coefficient value of 0.4118 and a p-value of 0.0019 on BSTAB. This means that 1% increase in LAR will lead to 41.18 percent decrease in bank stability. The result is significant in view of the p-value. Also, the LR has a positive coefficient value of 0.1305 and a p-value of 0.0042 on BSTAB. This means that 1% increase in LR will lead to 13.05 percent decrease in banks' stability. The result is significant in view of the p-value. Furthermore, the ATR has a positive coefficient value of 0.2497 and a p-value of 0.0077 on BSTAB. This means that 1% increase in ATR will lead to 24.97 percent increase in the banks' stability. The result is insignificant in view of the p-value.

Table 2: Fixed-Effect Regression Results

Dependent Variable: BSTAB		
Method: Panel Least Squares		
Date: 01/30/21 Time: 15:39		
Sample: 2004 2019		

Periods included: 16				
Cross-sections included: 5				
Total panel (balanced) observations: 80				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.140785	0.513316	2.219062	0.0014
LAR	0.411875	1.129700	3.310074	0.0019
LR	0.130541	0.810095	3.194229	0.0042
ATR	0.249732	0.406320	2.499421	0.0077

R-squared 0.729951   Adjusted R-squared 0.654179   Prob(F-statistic) 0.000331

Source: Author's Computation using E-Views, 9.1

The coefficient of determination, $R^2 = 0.729$ shows that 72.9 percent of variation in bank stability of the selected banks is explained by the independent variables (capital regulation variables: LAR, LR and ATR). The Adjusted R-square shows that the model could still explain about 65% of banks' stability variations, with the remaining 35% left unaccounted for, though captured by the model the stochastic disturbance term. Durbin Watson statistic indicates the autocorrelation non-existent as depicted by the D.W values of 1.949 that confirms that the residuals are uncorrelated. Overall, the model was statistically significant since the calculated F- value of 9.883 was greater than the critical F-value at 5% level of significance; implying that overall; regression model is statistically significant, valid and fit.

4.2 Findings

Findings from this study showed that liquid asset ratio, loan ratio and asset turnover ratio are critical drivers of capital regulation which is found to have significantly influence on bank stability. Therefore, their null hypotheses were rejected. This result agrees with many empirical studies, Ikpefan et al. (2014) reported that highly capitalized banks positively equity-holders' returns. Also, Konboye and Nteegah (2018) empirically asserted that banks' capital significant influence banks' profitability, implying that, as business capital increase, ceteris paribus, business profit is expected to increase as well. Finding from these studies (Ikpefan et al., 2014; Konboye & Nteegah, 2018) reaffirmed that capital adequacy remains a key driver of bank strength. Regardless of managerial body competence and capability, an ailing bank cannot be revived if it is weakly capitalized. In essence, capital requirement directly envelops bank's investment risk profile, consequently, it affects its profitability target level ability. Thus, the calculus behind capital regulation is to manage/re-structure balance sheet as a result of the empirical and theoretical relationship among bank profitability; core capital ratio and the risk- based capital ratio. Expectedly, capital increase strengthens earnings by reducing expected cost of financial distress including bankruptcy; Akani and Lucky (2015), Onikoyi and Awolusi (2014), Taiwo et al. (2017), Salami and Uthman (2018), Michael, et al. (2018). Also, empirical evidence from the fourth hypothesis shows that there is significant effect of shareholders' funds on banks' deposits. This means that increase in shareholders' funds signals their robustness and this serve as confidence booster to depositors about the safety of their investments with the bank.

Regulating banks' capital through improved assets-to-turnover ratio implies bank's soundness. The implication of this is that, banks cannot give more than they have; therefore, loans and advances extended by banks are function of their capital-base. Thus, the 2004 and 2009 reform exercise which jerked-up the capital of banks were deemed necessary owing to the fact that a well-capitalized bank is capable of withstanding shocks arising from loans defaults. Similar finding was made by Udom and Eze (2018), Micheal et al. (2019), Oyetayo et al. (2019). Also, from the second, it was found that the occasional adjustment to shareholders funds impact on banks' total assets. By this result, it suggests that the volume of assets a bank acquires linearly depends on the bank's shareholders' funds levels (Torbira & Zaagha, 2016). This means that the more banks' shareholders' funds, the more their ability to acquire more and more assets. Usman and Fadipe (2014) and Oleka and Mgbodile (2014) states that shareholders' funds influence bank assets, argues that in the arithmetical sense, shareholders' funds return grow, ceteris paribus, due to reduction in capital proportion declines, because high capital volume engenders higher asset volume. Unlike a poorly capitalized bank, an adequately capitalized bank certainly attracts more public confidence. Amahalu, et. al. (2017) and Olamide (2016) emphasized that banks should be well-capitalized to gain depositors' trust and confidence; as capital base erodes, aggregate assets automatically become weakens. Only a bank that is capital adequate can be liquid enough to be profitable. Corroboratively, Olarewaju and Adeyemi (2015) who found no association between bank's liquidity and profitability. Though this contradicts the position of several works (Onaolapo and Olufemi (2012; Ikpefan, 2013; Yahaya & Bala, 2015; Ugwuanyi and Ewah (2015) that report significant position relation between banks profitability levels and liquidity. This suggests that optimal use of liquidity remains a sine qua non for banks'

profitability growth. Overall, this study asserts that regulating banks' capital critically drives banks' performance in Nigeria. consequently, capital adequacy is a very effective strategy for bank's stability in the Nigerian financial industry.

V. Conclusion and Recommendations

Based on the findings of this study, it is not inconceivable that strong capital-base improves the stability of commercial banks via robust financial intermediation as it strengthened the ability of banks to face the challenges and shocks in the global financial market and also to face the competitive banking environments. Conclusively, capitalization is an important component of reforms in the Nigerian banking industry, owing to the fact that a bank with a strong capital base has the ability to absolve losses arising from non-performing liabilities and also restore the credibility and confidence in Nigeria's banking sector. Sequel to the empirical discoveries, it is suffced to conclude that: capitalization improves banks' stability and the general economy performance, all things being equal.

The following recommendations were put forward:
i. Banks' managements should strive to invariably keep their liquidity above the threshold (that is, far above the regulatory benchmark); doing this will give them a margin of safety in case of losses arising from their usual credit defaults.
ii. For banks to have strong asset-base, shareholders' fund needs systemic and periodical evaluation. Specifically, CBN should put in place, appropriate mechanisms towards addressing issue of bank poor assets quality in the industry.
iii. Also, the banks' managements should maximize their assets to generate more and more revenues (interest incomes). Specifically, banks are advised to strictly follow the CBN prudential guidelines to ensure that only high-earning assets are kept in their portfolio.

Reference

[1]. Akani, H. W. & Lucky, L. A. (2015). Econometrics analysis of capital adequacy ratios and the impact on profitability of commercial banks in Nigeria. *Journal of Economics and Finance,* 6(6), 11-24.
[2]. CBN (2018). Financial Stability Report. Retrieved from (12/17/2020) from shorturl.at/dhBVY.
[3]. CBN (2019). List of financial institutions: commercial banks. Retrieved (12/17/2020) from https://rb.gy/wnshca.
[4]. CBN (2019). Statistical Bulletin Financial Sector e-copy excel version. Retrieved from (12/17/2020) from https://www.cbn.gov.ng/documents/statbulletin.asp
[5]. Igbinosa, S. O. & Naimo, F. A. (2020). Capital adequacy and bank stability/soundness in sub-Sahara Africa. *European Journal of Accounting, Finance and Investment,* 6(5), 38-54.
[6]. Ikpefan, O. A., Okorie, U. E., Agwu, M. E. & Achugamonu, B. U. (2014). Bank capitalization and cost of equity on profitability of nigeria deposit money banks – general moment approach. *International Review of Management and Business Research,* 3(4), 1928-1947.
[7]. Ikue, N., & Nkoro, E. (2019). Dynamics of capital adequacy and profitability of internationalized deposit money banks in Nigeria. *Bussecon Review of Finance & Banking,* 1(1), 18-25.
[8]. Konboye, l. E. & Nteegah, A. (2018). Banking sector capitalization and deposit money banks' profitability in Nigeria. *Int. J. Soc. Sc. Manage.,* 3(3), 203-213.
[9]. Michael, E. I., Etukafia, N. I., Akpabio, E. E. & 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.
[10]. Obilikwu, J. (2018). The impact of capital, concentration, size and liquidity on banking industry performance in Nigeria. *International Journal of Economics and Financial*, 8(4), 54-60.
[11]. Okoi, I. O., Ocheni, S. I. & Orok, A. B. (2019). Impact of banking sector reforms on economic growth in Nigeria. *European Journal of Scientific Research*, 154(2), 230-240.
[12]. Oyetayo, O. J., Osinubi, T. S. & Amaghionyeodiwe, L. (2019). Capital adequacy and banks performance: a case study of selected banks in Nigeria. *International Journal of Economics, Commerce and Management,* VII(9), 63-78.
[13]. Ozili, P. K. (2017b). Bank profitability and capital regulation: evidence from listed and non-listed banks in Africa. *Journal of African Business,* 18(2), 143-168.
[14]. Ozili, P. K. (2018). Banking stability determinants in Africa. *International Journal of Managerial Finance,* 14(4), 462-483.
[15]. Ozili, P. K. (2019). Financial stability: Does social activism matter? *Journal of Financial Regulation and Compliance*, 3(2), 33-45.
[16]. Ozli, P. K. (2019). Determinants of banking stability in Nigeria. Online at https://mpra.ub.uni-muenchen.de/94092/ MPRA Paper No. 94092.
[17]. Salami, A. A. & Uthman, A. B. (2018). Bank capital, operating efficiency, and corporate performance in Nigeria. Acta Univ. *Sapientiae, Economics and Business,* 6 (2), 61–87.
[18]. Taiwo, A. M.; Ijaiya, M. A.; Adekunle, A. O. & Abidoye, M. K. (2017). Capitalization and bank performance: Evidence from Nigerian Banking Sector, e-Finanse: Financial Internet Quarterly, ISSN 1734-039X, University of Information Technology and Management, Rzeszów, 13(4), 67-75.