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Financial Institutions' Regulation, Banking Sector Competitiveness and Stability of the Banking Sector in Nigeria

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ABSTRACT

The paper examined the effect of financial institutions' regulation, banking sector competitiveness and stability of the banking sector in Nigeria from 1996 to 2021. The study disaggregated financial institution's regulation into capital adequacy ratio, liquidity, and private sector credits, while the banking sector competitiveness was measured by Lerner Index. More so, stability of the banking sector was measured by Z-Score. The study embraced the Ex post facto research design. Data were collected for the twenty-one (21) DMBs from 1996 to 2021. Data were sourced from CBN statistical bulletin, CBN financial stability report and World Bank database, 2021. The Robust Least Square Estimation Technique was adopted. The regression estimate clearly revealed that, liquidity ratio, Capital Adequacy Ratio, and banking sector competitiveness have high contributive effect on the stability of Nigerian banks but private sector credits exposed banks to high incidence of bank instability. Hence, the paper concludes that, financial institution's regulations, banking sector's competitiveness are perquisite for the financial stability of banks in Nigeria within the reviewed periods. As such, the Apex bank should ensure that all the Nigerian banks should sustain the current minimum CAR of 15%. Lastly, Nigerian banks are encouraged to invest in income remunerative ventures as this have a high contributive effect on their financial stability.

Keywords: Financial Institutions' Regulation, Banking Sector Competitiveness, Bank Stability.

1. INTRODUCTION

Globally, banks help to bridge the funding gap between the surplus (savers) economic unit and the deficit (investors) economic unit within an economy through its financial intermediation function (Erhijakpor & Oko, 2021). This therefore underscores the need why the banking industry seems to be the most regulated industry in the world. As stated by Eferakeya and Erhijakpor (2020), should the banking industry fail, the economy will fail. As such, a healthy, stable, financially resilient, highly competitive, sound, efficient, dogged banking industry that is highly regulated is critical to bank stability. Worthy of note is that the hallmark of regulating the banking industry is targeted towards the stability of the banking industry.

Additionally, the global financial crisis of 2008 brought to the consciousness of policymakers the need to put in place necessary measures, such as minimum reserve requirement, minimum capital reserve requirement, credit control measures, interest rate and necessary risk management procedures to help abate the negative effect pose by non-regulation, which could result into bank failure and ultimately affecting the economy (Anarfo & Abor, 2020). Financial regulation is an instrument used by policymakers to ensure that banks are financially stable, depositors' funds are protected and banks are not seen as a channel through which illicit funds are being transmitted (Gupta & Kashiramka, 2020). Despite the regulatory measures put in place by regulatory authorities, there are still a significant number of banks failure globally as such, international organizations such as World Bank and International Monetary Fund (IMF) has suggested the adoption and implementation of the best regulatory policies by regulatory bodies in the performance of its supervisory and regulatory functions (Anarfo & Abor, 2020).

Financial regulation as noted by Eferakeya and Erhijakpor (2020) could lead to forceful closure of banks who are capital deficient as they would be faced with shortage of working capital, as well as reduced bank credit available to customers thereby posing barrier to entry in the banking industry which can discourage competitiveness in the banking sector as there will be fewer banks in the system to provide banking services to the public. Oduor et al. (2017) posit that financial institutions regulation is a tool employed by financially stable banks in the banking sector to restrain entry into the banking sector and to prevent competition. In the same vein, financial institution regulation can lead to merger of small banks or banks which are not able to meet up with the regulatory requirement.

Bank competition and stability of banks has always been a subject of widespread concern among scholars and policy makers. Competition in the banking industry leads to technological innovation and discovery of new ideas of providing customers with the best services (Susanto, 2022). The essence of competition in the banking industry is to make banking service providers treat customers as the king they are and ensure they retain their customers as a major objective of financial institutions (protection of customers). The stiff competition that follows these principles has raised concerns about its implications on the financial performance of the banks, particularly given the fallout of the 2005 bank consolidation exercise and the 2008 global financial crisis. The 2005 consolidation exercise was implemented with the sole aim of increasing competition in the banking industry as well as enhancing its financial performance, the global financial crisis of 2008 led to the failure of the majority of banks in Nigeria.

In Nigeria, banking instability can be traced back to 1930-1950 when about 21 banks failed due to low capital reserve, weak corporate governance, low liquidity of banks and high non-performing loans. The regulatory authorities in the banking sector (Central Bank of Nigeria (CBN) and Nigeria Deposit Insurance Corporation (NDIC)) has made severally effect to stable the Nigerian banking industry through the enactment of regulations guiding the operations of the banking sector of the Nigerian economy. Despite the regulations of the financial institutions in Nigeria, a considerate number of banks have recorded failure. Thus there would be need to reexamine to what extend regulation or otherwise have affected the banking sector stability and competitiveness in the Nigerian context. The few existing studies on financial institutions regulation focused more on its effect on financial performance of banks (Akani, 2023; Akujuobi et al., 2021; Igbinosa et al., 2017; Isibor et al., 2017; Obadire & Obadire, 2023). Justifiably, some of the existing research on bank competition and stability of banks (Yuan et al., 2022, Bamigboye et al., 2022; Yahaya et al., 2015).

The existing studies on financial institutions regulation and competition have conflicting findings and majority of the studies focused majorly on the effect of financial regulation on performance of DMBs. It therefore became imperative to fill the existing gaps in literature and contribute to existing knowledge by conducting a study on financial institutions regulations, banking sector competitiveness and stability of the banking sector in Nigeria from the period of 1996 to 2021.

2. LITERATURE REVIEW

2.1. Conceptual Framework

2.1.1. Financial institutions regulations

Financial institutions are subjected to rules, regulations, principles or agreed behavior given by the government or regulatory institutions in the financial sector of an economy or self-imposed by the industry governing the operations of institutions in an industry to ensure effectiveness and efficiency in services rendered. According to Berger et al. (2008) financial regulation involves constraints imposed on financial institutions (banks) resources, race and financial entry and exit. Financial institutions (Banks) need to be regulated to avoid systemic failure which can erode the confidence of the public in the banking sector. The regulatory bodies (CBN, NDIC) are responsible for ensuring financial institutions comply with the regulatory framework guiding the financial sector in Nigeria. For the purpose of this study, financial institutions regulations are proxied by liquidity ratio-LIR, capital adequacy ratio-CAR and private sector credit-PSC.

2.1.2. Liquidity ratio (LIR)

Lalithchandra and Rajendhiran (2021) surmised that liquidity is the ability of an organization or company to raise funds to meet their obligations as they mature. The liquidity requirement upholds that banks should have enough liquid assets to augment for working capital needs of the organization. Banks must ensure that they have adequate liquid assets because low liquidity leads to loss of confidence by the banks' customers and creditors, poor credit rating and eventual closure of such banks. In the same vein banks are to avoid excess liquidity as idle assets yield no returns.

2.1.3. Capital Adequacy Ratio-CAR

In 2005, the CBN increased the minimum capital requirements of the commercial banks to twenty-five billion naira as a way of strengthening the banking sector of the Nigerian Economy and reducing the numbers of failures of banks recorded in the system. Onuorah et al. (2023) stated that CAR is the total amount of capital required by the CBN as the regulator of the financial institutions to declare a bank sound and efficient. This ensures the bank has adequate capital to meet unplanned losses that may arise while performing their banking functions. In order to reduce risk encountered by shareholders and stakeholders, banks must adhere to best banking practices as relates to capital adequacy.

2.1.4. Private Sector Credit-PSC

PSC involves the advancement of trade credits, loans and other receivables to the private individuals and enterprises in an economy by the depository institutions (banks). Ibenta et al. (2019) posit that PSC is the main function performed by the banks in an economy. Banks as the major financial intermediary ensure the transmission of financial resources (credit) to the private sector. The funds transferred to the private sector are then used by firms (small and medium scale businesses-SMSEs) in productive activities which contribute to the growth of the economy.

2.1.5. Banking Sector Competitiveness

This is targeted towards ensuring efficiency of financial services rendered by banks to their customers. According to Bamigboye et al. (2022) competition amongst banks leads to stability of banks which in turn brings a high level of confidence in the banking system. In a bid to remain competitive, banks are forced to identify creative, technological and innovative financial ideas in the industry that tends towards effectiveness and higher profitability of banks. Lerner index is used to proxy banking sector competitiveness in this research work.

2.1.6. Lerner Index

The existence of competition in the banking sector affects both banks and the economy generally. Banks as the main intermediaries in the financial sector ensures the transmission of savings in form of loans to the deficit units thereby playing an important role in the development of the economy. There is no clear-cut definition of the effect of competition on banks as it both affects the banks positively and negatively. On the positive side, bank competition results in low transaction cost, improvement of bank credit to firms and efficiency of banks. On the negative side, competition leads to restricted access to credit by firms, financial instability, and lending among banks as there is limited information about banks in the economy because of competition (Igan et al., 2021).

2.1.7. Financial Stability

This is described as the state of being able to efficiently allocate resources, manage financial risks, maintain relative stability of domestic prices, and attain a high rate of high rate employment (Erhijakpor, Enakirerhi & Eferakeya, 2022). A bank is said to be stable, if it has the ability to absorb shocks and prevent disruptive effects of unforeseen events on the financial system of an economy. Banks financial stability is measured by Altman Z-score.

2.1.8. Altman Z-score

Altman Z-score was introduced by Edward I. Altman in 1968 as a surrogate of stability of corporate bodies using their published financial statements. It can be used to predict bankruptcy or failure of a business entity. Nguyen (2021) stated that Banks financial stability refers to lack of instability in financial

2.2. Theoretical Underpinning

This study is hinged on the normative theory of regulation. The normative theory of regulation was developed by Wittman in 1977. The theory opines that regulatory bodies should support healthy competition among institutions and reduce the cost associated with getting information in the business environment. The theory also suggests that incentives should be given to improve performance of business enterprises and financial institutions regulators should provide a price structure that tends to the efficiency, credibility and transparency of the regulation and supervision process. The argument of Wittman (1977) is that regulation should ensure cost-benefit analysis of the instruments of regulation used by the regulatory bodies.

Notably, Igbinosa et al. (2017) suggest that regulation of an industry is expected to strengthen, instill ethical standards in business operations and to stop systemic risk in the sector. In Nigeria, there have been some notable regulations in the banking sector such as the reduction of banks MDs and CEOs tenure, introduction of Bank verification number (BVN), cashless policy, and minimum capital requirement.

Previous work in consonance with Wittman (1977) normative theory of regulation includes: Adeleke and Ibrahim (2022), Alber and Ramadan (2022), Igbinosa et al. (2017), Akinkunmi (2017), and Olalekan and Adeyinka (2013).

2.3. Empirical Review

Obadire and Obadire (2023) studied the degree to which bank regulation affects bank performance before the Covid-19 era. Their findings showed the existence of a positive relationship between CAR and ROE and ROA of banks in Africa while MCR and liquidity has a contradictory (negative) influence on performance (ROE and ROA).

In a study by Waridin et al. (2024) assessed regulation of banks and financial deepening of private enterprises from 2001 to 2022. Data was obtained from the CBN statistical database. Using the Autoregressive distributed lag (ARDL), the result reveals that on the long run, leverage requirement (LEVR) and capital adequacy ratio (CAR) significantly reduces private sector credit (CPS/GDP) while provisional policy (PRP) and liquidity requirement (LIR) increases the volume of credit to private sector (CPS/GDP). The researcher therefore concludes that bank regulation has a significant contribution to financial deepening in Nigeria.

Akani (2023) analyzed banking sector reforms-BSR and the performance of selected deposit money banks-DMBs in Nigeria from 2010 to 2019. The researcher employed the panel data in analyzing data. It was evidenced that bank credit allocation-BCA and asset quality-ASQ on financial performance (ROE) while capital adequacy ratio-CAR and deposit mobilization have negative effect on financial performance (ROE).

Bamigboye et al. (2022) assessed the extent to which competition affects the stability of listed Deposit money banks on the Nigerian Exchange Group for the period of 10 years. Their findings reveal that competition affects financial stability (Z-score) negatively.

Igbinosa and Ogiemudia (2022) studied the effect of financial sector regulation-FSR on bank failure both in Nigeria and USA. The researchers adopted the panel data approach. The researcher evidenced that, capital adequacy-CAR and liquidity ratio-LIR are the major factors which reduced bank failure in USA but non-performing loans-NPL, private sector credit-PSC and LIR unigranger cause bank failure.

Osakwe et al. (2022) conducted an empirical study on CBN regulation (proxied by monetary policy rate, treasury bills rate, lending rate and cash reserve ratio) and performance (proxied by return on asset) of DMBs in Nigeria spanning from 2000-2018. They found that MPR has a significant positive effect on performance of DMBS measured by ROA while Treasury bill rate has positive but insignificant effect on ROA. Bank lending rate-BLR has negative significant impact and Cash reserve ratio-CRR has negative insignificant effect on ROA.

Yuan et al. (2022) empirically examined the impact of banking sector competitiveness on the stability of banks in the USA. It was revealed that a positive (U-shaped) relationship between competitiveness of banks and stability of the banking sector in the USA. Also, bank franchise value leads to bank instability while operational cost and borrowing cost leads to bank stability.

Akujuobi et al. (2021) examined the Nigerian regulatory framework and the operations of banks from 1981-2018. The findings reveals a significant relationship between the regulatory framework (loan-to-deposit ratio-LDR), Treasury bill rate-TBR, liquidity ratio-LR, cash reserve ratio-CRR and monetary policy rate-MPR) in Nigeria and the operations (commercial bank credit to private sector-PSC) of the banking industry both on the short and long run.

Nwanna and Odia (2018) assessed the influence of CBN regulation on profitability of some selected DMBs in Nigeria from 2004-2016. Banks are regulated to ensure safety of depositors' funds and a sound financial sector of an economy. The Statistical package for social sciences software (SPSS) was used to test the hypotheses raised. The result evidenced that MPR and LIR had a positive significant influence on EPS. MPR has a positive effect on both ROA and ROE while LIR has a negative impact on both ROA and ROE of the selected DMBS which is evidence that the purpose of regulations has not been fully achieved in the Nigerian banking sector.

Isibor et al. (2017) investigated the effect of regulation and financial soundness on the performance of banks in Nigeria for a period of 30 years. The result of the study evidenced that MPR, non-performing loans-NPL and CRR had a positive effect on banks performance (ROE).

Below is a summary of empirical other works on financial institutions' regulations, bank competitiveness and stability of the banking sector in Nigeria.

Table 1. Summary of Empirical Review

Authors	Country	Sample size	Results
Obadire, A. M., & Obadire, K. (2023)	South Africa, Nigeria, Kenya Malawi, Uganda, and Tanzania	45 listed banks from six African nations	MCR= Negative significant CAR= Positive significant DCBP= Positive significant LCR= Negative significant
Agada, F. A. & Ekadi, H. E. (2023).	Nigeria	10 DMBs	LEVR= Negative significant CAR= Negative significant PRP= Positive significant LIR= Positive significant
Akani, H. W. (2023)	Nigeria	13 DMBs	CAR= Negative significant BC= Negative significant BD= Positive significant AQ= Positive insignificant
Bamigboye, O.A., Akinrinlola, M. O. & Erin O.A. (2022)	Nigeria	13 DMBs	Lerner index = Negative significant E-LERNER= Negative significant Firm size= Positive significant GDP= Positive insignificant
Igbinosa, S. O. & Ogiemudia, O. A. (2022)	Nigeria and USA	All Banks in Nigeria and USA	Model for Nigeria CAQY= Negative significant NPL= Negative significant LIQR= Negative significant

			CPS= Positive significant Model for USA CAQY= Negative insignificant NPL= Positive significant LIQR= Negative insignificant CPS= Positive insignificant
Osakwe, C. I., Udoye, O. N., & Akunna, R. C. (2022)	Nigeria	21 DMBs	MPR= Positive significant TBR= Positive insignificant LR= Negative insignificant CRR= Negative insignificant
Yuan T., Gu, X., Yuan, Y., Lu, J., & Ni, B. (2022)	US	4631 banks	Lerner index = Negative significant Borrowing cost= Positive significant Franchise value= Positive significant
Akujuobi, N. E., Anyanwu, G. I. & Eke, C. K. (2021)	Nigeria	21 DMBs	CRR= Negative insignificant LDR= Negative insignificant LR= Negative insignificant MPR= Negative significant TBR= Positive significant
Nwanna, I. O., & Chukwufumnanya, O. B. (2018)	Nigeria	5 DMBs	MPR= Positive significant LIR= Positive significant
Isibor, E. (2017)	Nigeria	21 DMBs	CRR= Negative significant MPR= Positive insignificant FS= Positive significant

Source: Authors' Compilation

3. RESEARCH METHODS

The study embraced the Ex post facto research design. The use of the ex-post facto research design is justified by fact that data are historical in nature and cannot be manipulated by the researcher. The study population comprises of the twenty-one (21) DMBs in Nigeria. Data were extracted for the 21 DMBs for twenty six (26) years spanning from 1996 to 2021. Data were gleaned from CBN statistical bulletin, CBN financial stability report and World Bank data base.

The regression equation used is stated below:

$$\text{Z-score} = \beta 0+\beta 1LIR+\beta 2CAR+\beta 3PSC+ \beta 4BCO +\mu t$$

Where:

LIR=Liquidity ratio

CAR= Capital Adequacy Ratio

PSC= Private Sector Credit

BCO= Bank Competition

Z-score = Altman Z-score

Table 2. The regression equation methods

S/N	Variable Denotations	Type of Variable	Measurement	Apriori Expectation
1	Z-Score	Dependent	Financial stability measured by Altman Z-score ʒ=1.2A+ 1.4B + 3.3C +0.6D+1.0E Where: ʒ= Altman Z-score A = working capital / total assets ratio B = retained earnings / total assets ratio C = EBIT / total assets ratio D = Equity / total liabilities ratio E = sales / total assets ratio	
2	LIR	Independent	Current assets /current liabilities	Positive
3	CAR	Independent	Bank's Capital/ Risk of weighted assets	Positive
4	PSC	Independent	Private sector credit/ gross domestic Product (GDP)	Negative
5	BCO	Independent	Bank competition measured by Lerner index Lerner index= PTAit- MCTAit/ PTAit Where: PTAit = output prices MCTAit = marginal costs.	Positive

Source: Author's Computation (2023)

4. RESULTS AND DISCUSSION

This section takes into consideration data sourced from the World database, 2021 and the CBN Statistical Bulletin on bank z-score (measure of financial stability or extent to which the bank is exposed to financial instability), bank liquidity (liquidity needs purposes to keep the banks afloat), CAR (buffer purposes), PSC (loans given to the private sector for industrialization purposes), and bank competition (using Lerner Index to measure the degree of competition among banks). To analyze the sourced data, three (3) analyses were considered. These include the following: (i) descriptive statistics (mean, median, maximum, and standard deviation); (ii) inferential statistics (correlation analysis, trend analysis, and Robust Least Estimation Technique); (iii) diagnostic test (Multicolinearity test and unit root test).

4.1. Descriptive Statistics

Table 3. Summary of Descriptive Statistics

	Mean	Maximum	Minimum	Std. Dev.	Observations
Z-Score	7.248585	7.604400	6.480400	0.287236	26
LIR	51.69423	104.2000	26.39000	16.25447	26
CAR	16.51000	25.29000	10.48000	4.102223	26
PSC	10334.20	32868.49	238.5966	10336.93	26
BCO	0.234003	0.333982	0.109160	0.051054	26

Source: E-Views Version 9.0 (2023)

From table 3, bank z-score has an average value of 7.248585 suggesting that the possibility of quoted DMBs to fail is 7.248585 units yet has a volatility value of 0.287236. Meanwhile, bank z-score reported maximum and minimum values of 7.604400 and 6.480400. More so, LIR, CAR, PSC, and BCO reported average values of 51.69423, 16.51000, 10334.20 billion, and 0.234003 but varied by 16.25447, 4.102223, 10336.93, and 0.051054 respectively. More so, they reported maximum values of 104.2000, 25.29000, 32868.49, and 0.333982 and minimum values of 26.39000, 10.48000, 238.5966, and 0.109160 respectively.

Table 4. Normality Test

Variables	Jarque-Bera	Probability	Observations	Decision
Z-SCORE	7.872057	0.019526	26	Deviated from Normality
LIR	14.98144	0.000558	26	Deviated from Normality
CAR	3.782610	0.150875	26	Normally Distributed
PSC	2.655373	0.265090	26	Normally Distributed
BCO	0.878418	0.644546	26	Normally Distributed

Source: E-Views Version 9.0 (2023)

Table 5. Correlation Analysis

	Z-SCORE	LIR	CAR	PSC	BCO
Z-SCORE	1.000000				
LIR	0.716845	1.000000			
CAR	0.463474	-0.111945	1.000000		
PSC	0.519226	0.283268	-0.333805	1.000000	
BCO	-0.318892	0.179199	0.034109	-0.142339	1.000000

Source: E-Views Version 9.0 (2023)

From the correlation analysis presented in table 3, LIQ is positively correlated with bank financial stability with a correlation coefficient of 0.716845. This reveals that, higher LIR leads to bank stability. Meanwhile, CAR & PSC are positively and moderately relate with bank stability with specific focus on a correlation coefficient of 0.463474 & 0.519226. However, BCO is negatively related with bank stability. To further ensure that, the model is free from multi-collinearity problem, the model is presented below:

Table 6. Multi-collinearity Tests

Variables	Centered VIF	Tolerance Value	Decision
LIR	1.4937	0.6695	No Multi-collinearity
CAR	1.2013	0.8324	No Multi-collinearity
PSC	1.2978	0.7705	No Multi-collinearity
BCO	1.0855	0.9213	No Multi-collinearity
Average	1.2696	0.7984	No Multi-collinearity

Source: E-Views Version 9.0 (2023)

4.2. Unit Root Test

In order to establish the degree of integration, stationarity test was conducted. Justifiably, time series is said to be stationarity if the statistical properties (mean, variance, standard deviation, and covariance) of the study variables do not change (vary) with time, or not a function of time (Alper, Alper, Cil, Iscan, & Eren, 2023). More so, stationarity (absence of unit root) means series without Seasonal components or Trend. The essence of using this approach is to avoid spurious result. Justifiably, the presence of a unit root implies that the time-series data under investigation is non-stationary; while the absence of a unit root shows that the stochastic process is stationary (Bayraktar, Koc, Toprak, Ozyılmaz, Olgun, Balsalobre-Lorente, & Soylu, 2023). The null hypothesis (H0) is that, the series possess presence of unit root (non-stationarity) while the alternative hypothesis (H1) suggests that, the series either possess stationarity, explosive or trend stationarityroot depending on the form of unit root test conducted. Consequently, the outcome of the Unit root test conducted is presented in table below:

Table 7. Group unit root test: Summary

Series: Z-SCORE, LIR, CAR, PSC, BCO
Date: 08/31/23 Time: 02:45
Sample: 1996 2021
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	2.55048	0.9946	5	124
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-0.62021	0.2676	5	124
ADF - Fisher Chi-square	25.7761	0.0041	5	124
PP - Fisher Chi-square	27.9730	0.0018	5	125

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Source: E-Views Version 9.0 (2023)

From the group unit root test presented in table 2, all the study variables reported a Levin, Lin & Chu t* value of 2.55048 and 0.9946 suggesting that all the study variables possess unit root (non-stationary) at level otherwise known as order 0. In this instance, the model cannot be relied upon for policy formulation since it possesses likelihood of Spuriosity. When tested further (first differencing), the outcome is presented thus:

Table 8. Group unit root test: Summary

Series: Z-SCORE, LIR, CAR, PSC, BCO
Date: 08/31/23 Time: 02:46
Sample: 1996 2021
Exogenous variables: Individual effects
Automatic selection of maximum lags
Automatic lag length selection based on SIC: 0 to 1
Newey-West automatic bandwidth selection and Bartlett kernel

Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	-10.2526	0.0000	5	119
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat	-9.88864	0.0000	5	119
ADF - Fisher Chi-square	88.4232	0.0000	5	119
PP - Fisher Chi-square	95.4570	0.0000	5	120

** Probabilities for Fisher tests are computed using an asymptotic Chi -square distribution. All other tests assume asymptotic normality.

Source: E-Views Version 9.0 (2023)

4.3. Regression Estimate and Discussions

The study used the Robust Least Square Estimation Technique. Justifiably, this regression estimation overcomes the challenges posed by outliers alongside influential data observations unlike the Ordinary Least Square Estimation Technique. For ease of reference, the regression estimate is presented thus:

Table 9. Model 1: 1996 to 2021 (T = 251)
Dependent variable: Z-SCORE

	Coefficient	*Std. Error*	*t-ratio*	*p-value*	
Const	2.62179	1.18033	2.221	0.0272	**
LIR	0.875479	0.0777847	11.26	<0.0001	***
CAR	0.852924	0.0717961	11.88	<0.0001	***
PSC	−0.733315	0.0558772	−13.12	<0.0001	***
BCO	0.994506	0.0393700	25.26	<0.0000	***
Median depend. var	198.5400		S.D. dependent var	53.59607	
Sum absolute resid	503.7076		Sum squared resid	1754.468	
Log-likelihood	−599.8122		Akaike criterion	1209.624	
Schwarz criterion	1227.252		Hannan-Quinn	1216.718	

Source: E-Views Version 9.0 (2023)

From the regression estimate presented above, the coefficient of each variable gives a clear cut explanation of the direction and magnitude of linearity between the independent and the dependent variables. The coefficients for each variable are detailed in the coefficients table. The coefficient of each variables are discussed below:

Hypothesis One: The regression estimate clearly revealed that, liquidity ratio has a positive coefficient value of0.875479 units. By implication, if the stock of the target company rises by 1%, open stock for the preceding year will increase by a significant rate of 80.73%. Put differently, if the highest stock price of the target company falls by 1%, open stock for the preceding year will fall by a significant rate of 87.55%. This suggests that both liquidity ratio and financial stability of Nigerian banks move in linear direction. This further reaffirmed that a highly financially liquid banking industry is instrumental to higher financial stability of quoted banks in the periods under reviewed. This again revalidates the liquidity management theory.

Hypothesis Two: The regression estimate clearly revealed that CAR has a positive coefficient value of0.852924 units. By implication, if the CAR of the Nigerian banking industry rises by 1%, financial stability for the preceding year will increase by a significant rate of 85.29%. The study further reaffirmed that, beyond a highly liquid base, bank capital adequacy ratio is a major precondition of an efficient, sound, and resilient (dogged) banking industry. This is in tandem with the buffer theory of capital.

Hypothesis Three: The regression estimate clearly revealed that, private sector credit has a negative coefficient value of−0.733315 units. By implication, if private sector credit increases by 1%, banks would become more susceptible to financial instability by −0.733315 units. This suggests that both private sector credit and financial stability of quoted Nigerian banks moves in a non-linear direction. The rationalization is that the cost of borrowing is high in the Nigerian case. This result deviated from the general belief that private sector credit would result in higher financial stability. This result deviated from Akujuobi, Ayanwu and Eke (2021) findings.

Hypothesis Four: The regression estimate clearly revealed that bank competitiveness has a positive coefficient value of0.994506 units. By implication, if the level of competitiveness in the Nigerian banking industry rises by 1%, banks' possibility to fail will reduce by 99.45%. This suggests that, the higher the level of bank competition, the more stable the banking industry would become. This result is in tandem with the studies of Yuan et. al. (2022) and Akujuobi et al. (2021).

5. CONCLUSIONS

On the overall, the regression estimate strongly evidenced that a substantial and favorable link exists between financial regulations and financial stability of quoted banks in Nigeria within the periods under review. Hence, the paper concludes that, financial institution's regulations, banking sector's competitiveness are perquisite for the financial stability of banks in Nigeria within the reviewed periods. Therefore the apex bank should ensure that all the Nigerian banks should sustain the current minimum CAR of 15%. Furthermore, Nigerian banks should be encouraged to invest in income remunerative ventures as this has a high contributive effect on their financial stability. The apex banks must ensure that the high cost associated with lending to the private sector should be addressed. Also, to sustain the current level of competitiveness, the apex banks should give customer-centric yet financially innovative banks high premiums.

6. References

Adeleke, I. A., & Ibrahim, U. A. (2022). Effect of prudential regulation on the financial performance of quoted deposit money banks in Nigeria. *WSEAS Transactions on Business and Economics*, *19*, 1195–1205.

Akani, H. W. (2023). Banking sector reform and financial performance of deposit money banks in Nigeria. *Nigerian Journal of Management Sciences Vol*, *24*(1b).

Akinkunmi, A. (2017). Regulatory impact of bank performance in Nigeria: Application of stochastic frontier analysis. *Applied Economics and Finance*, *4*(4), 32–43.

Akujuobi, N. E., Anyanwu, G. I., & Eke, C. K. (2021). Regulatory framework and bank operations in Nigeria: A VECM approach. *International Journal of Development and Management Review*, *16*(1), 148–160.

Alber, N., & Ramadan, H. (2022). The effect of applying banking regulations on banking performance of MENA region countries. *European Journal of Business and Management Research*, *7*(1), 170–185.

Anarfo, E. B., & Abor, J. Y. (2020). Financial regulation and financial inclusion in Sub-Saharan Africa: does financial stability play a moderating role? *Research in International Business and Finance*, *51*, 101070.

Bamigboye, O. A., Akinrinola, M. O., & Erin, O. A. (2022). *Competition and financial stability of listed deposit money banks in Nigeria*.

Berger, A. N., Klapper, L. F., Peria, M. S. M., & Zaidi, R. (2008). Bank ownership type and banking relationships. *Journal of Financial Intermediation*, *17*(1), 37–62.

Eferakeya, E. I., & Erhijakpor, E. O. (2020). Determinants of operating efficiency of Nigeria's banking sector. *PalArch's Journal of Archaeology of Egypt/Egyptology*, *17*(7), 13151–13166.

Erhijakpor, A. E. O., & Oko, E. O. (2021). Does Financial Intermediation Indicators Affect Economic Growth? Empırıcal Evidence From The Nigerian Economy. *Nigerian Journal of Management Sciences Vol*, *22*(2).

Gupta, J., & Kashiramka, S. (2020). Financial stability of banks in India: does liquidity creation matter? *Pacific-Basin Finance Journal*, *64*, 101439.

Ibenta, S. N. O., Nkechukwu, G. C., & Omogbai, C. A. (2019). Bank credit to the private sector and the performance of the banking sector in Nigeria. *International Journal of Advanced Research in Management and Social Sciences*, *8*(6), 667–684.

Igan, D., Pería, M. S. M., Pierri, N., & Presbitero, A. (2021). *When they go low, we go high? Measuring bank market power in a low-for-long environment*. International Monetary Fund.

Igbinosa, S. O., & Ogiemudia, O. A. (2022). Financial Regulation and Bank Failure in Nigeria and USA. *Amity Journal of Management Research*, 308–323.

Igbinosa, S., Sunday, O., & Akanji, B. (2017). *Empirical assessment on financial regulations and banking sector performance*.

Isibor, A., Ojo, J., & Ikpefan, O. (2017). Does financial deregulation spurs economic development in Nigeria? *Journal of Applied Economic Sciences*, *12*(8).

Lalithchandra, B. N., & Rajendhiran, N. (2021). Liquidity ratio: an important financial metrics. *Turkish Journal of Computer and Mathematics Education (Turcomat)*, *12*(2), 1113–1114.

Nguyen, M. S. (2021). *Capital adequacy ratio and a bank's financial stability in Vietnam. Banks and Bank Systems, 16 (4), 61*.

Nwanna, I. O., & Odia, B. (2018). Effect of Central Bank of Nigeria (CBN) regulation on the profitability of selected deposit money banks (2004-2016). *European Journal of Accounting, Finance and Investment*, *4*(12), 99–123.

Obadire, A. M., & Obadire, K. (2023). The Impact of Bank Regulation on Bank Performance: A Novel Analysis of the Pre-Covid Era with Cross-Country Evidence. *American Journal of Industrial and Business Management*, *13*(3), 118–139.

Oduor, J., Ngoka, K., & Odongo, M. (2017). Capital requirement, bank competition and stability in Africa. *Review of Development Finance*, *7*(1), 45–51.

Olalekan, A., & Adeyinka, S. (2013). Capital adequacy and banks' profitability: an empirical evidence from Nigeria. *American International Journal of Contemporary Research*, *3*(10), 87–93.

Onuorah, A. C., Ehiedu, V. C., & Egugbo, R. U. (2023). *Camels Rating and Its Effects on Fugaz Banks'performance in Nigerıa*.

Osakwe, C. I., Udoye, O. N., & Akuna, R. C. (2022). The Effect of Central Bank of Nigeria Regulation on the Performance of Deposit Money Banks. *International Journal of Multidisciplinary and Current Educational Research*, *4*(1), 92–103.

Susanto, A. (2022). Digital transformation of the insurance industry: the potential of insurance technology (insurtech) in Indonesia. *Journal of Humanities, Social Sciences and Business (JHSSB)*, *2*(1), 172–180.

Waridin, Islam, G. M. N., Maria, N. S. B., Robertus, M. H., Al-hafidz, Z., & Musliha, C. (2024). Exploring Trends and Challenges in Technological Innovation: A Bibliometric Analysis in Agriculture. *ISRG Journal*, *2*(6).

Wittman, D. (1977). Prior regulation versus post liability: The choice between input and output monitoring. *The Journal of Legal Studies*, *6*(1), 193–211.

Yahaya, O. A., Farouk, B. K. U., Lamidi, S. Y., Yusuf, M. J., & Dania, I. S. (2015). Impact of competition on the financial performance of listed deposit money banks in Nigeria. *Journal of Economics and Sustainable Development*, *6*(18), 52–61.

Yuan, T.-T., Gu, X.-A., Yuan, Y.-M., Lu, J.-J., & Ni, B.-P. (2022). Research on the impact of bank competition on stability—empirical evidence from 4631 banks in US. *Heliyon*, *8*(4).