



Bank Soundness Indicators And Nigerian Banking Sector's Performance

Ndah, Francis, C.¹, Onuorah, A.C.² & Ehiedu, Victor, C.³

**Department of Banking and Finance,
Faculty of Management Sciences,
Delta State University, Abraka, Nigeria**

ABSTRACT

This study examined bank soundness indicators (BSI) and the Nigerian banking industry's performance spanning from 1991 to 2021. Various BSI proxies considered are capital adequacy-CAQ ratio, asset quality-ASQ, management efficiency-MAE, liquidity-, and sensitivity to market risk-SMR while banks' performance proxy considered is aggregate return on asset-AROA. The study sourced data from the Central Bank of Nigeria (CBN) Bulletin (2021), CBN Annual report (2021), Nigerian Deposit Insurance Corporation (NDIC) Annual Report (2021), and the World Bank Annual report (2021). The Autoregressive Distributed Lag model-ARDL was adopted. The study reported that, CAQ Ratio, MAE, and LIQ improves bank performance in Nigeria significantly both on the short and long run. Meanwhile, ASQ improves AROA minimally both on the short and long run. However, SMR reduces bank performance significantly in Nigeria both on the short and long run. Hence, the study concluded that CAQ ratio, MAQ, and bank LIQ are most significant drivers of financial performance of DMBs in Nigeria. Premised on this, the study submitted that the apex bank must advocate for total compliance of all its directives and that the Nigerian banking industry should increase its capital base. Again, regulators must ensure that, banks are always liquid as it improves banks' performance to a very large extent.

Keywords: Bank Soundness Indicators, Nigerian Banking Sector's Performance

INTRODUCTION

The banking industry all over the globe play strategic role in both monetary policy transmission process and actualization of macro-economic policy goals of any economy. Being financial intermediaries, banks help to bridge the financial (savings-investment) gaps which exist in the economy and also help fasten the payment system. However, since the global bank instability/fragility which occurred from 2008 to 2009 (Onuorah, Ehiedu, & Okoh, 2022), the concept of bank soundness remains a major recurring construct. So far, the global financial crises overturned a number of paradigms due to the fact that many large financial institutions with international presence faced liquidation and called for the intervention of the Central Bank though credit rating agencies once claimed that they have lower credit risk exposure. Thus, pose series criticisms on the efficacy of financial ratings.

One of the major argument raised before now is that, one of the major reasons behind the global crises lies in the fact that management of banks failed to incorporate management efficiency into their corporate planning (Luck, 2017; Caporale, Lodh & Nandy, 2017). Hence, most banks were prone to financial instabilities during the global financial crises. The raised is that even if a bank is highly capitalized, if its management team is not efficient, it is still possible for such bank to experience bank run. For instance, even after the bank con
(Lu

Ndah et al.Int. J. Business & Law Research 10(4):134-143, 2022

More so, even till date, it is still difficult to actually determine which of the bank soundness indicators seem to be the most effective parameters that have the capacity to affect bank performance most. While some scholars like Kombo and Njuguna, (2017), hold that a soundness bank is one that is highly capitalized but failed to consider other CAMELS' parameters; some others like Aigul, Xin, and Omaima (2020) ; Manoj, Thomas, and Abraham, (2018); Hammond (2017) hold strongly that, beyond capital adequacy, for banks to be sound, banks must

be highly liquid and that their asset based must record low non-performing loan. Meanwhile, some others like Ndungu (2019); Kiemo, Olweny, Muturi, and Mwangi (2019); Latief, Ashraf, and Nawaz (2019); Sotiropoulou, Giakoumatos, and Petropoulos (2019) stressed that, even with the high capital base; banks may face a run when sensitivity to market risk is not accounted for. This issue became the overriding issue which prompted us to examining the study.

On individual base, it is still very difficult to measure the amount of asset that banks should have to be termed soundness or stable. In terms of liquid base, it is still very difficult to determine the extent to which a bank should be liquid for it to be termed soundness or stable. Meanwhile, management efficiency and sensitivity to market risk still remain highly debatable. This again is another overriding issue which prompted us to examining the study.

So far, prior empirical studies on the nexus between bank soundness indicators and bank performance exhibits missing link in that most of the existing studies seem be silenced on the effects of management efficiency and sensitivity to market risk on bank performance though studies which examine the effects of management efficiency and sensitivity to market risk on bank performance exist. In light of these perceived gaps, the present study examined the effect of bank soundness indicators on the Nigerian banking industry’s performance.

Conceptual Clarification

The term ‘bank Soundness Indicators accounts for those parameters for measuring the extent to which the banking industry is safe from macroeconomic vagaries. Conceptually, the term bank (financial) soundness in its narrow sense is conceived as bank (financial) stability. While financial stability can also be extended to cover the functioning of financial markets, asset price volatility, risk management practices of institutions, etc., financial soundness of banks is still at the center of stability concerns (Ebrahimi, Bahraminasab, & Fard, 2017).

The most common measures are: bank soundness indicators measured by Capital Adequacy (CAQ), Asset Quality (ASQ), Management Efficiency (MAE), Earnings (EAR), Liquidity (LIQ), sensitivity to Market Risk (SMR). Specifically, capital adequacy ratio-CAR is the proportion of the regulatory capital to Risk-Weighted Assets ratio for all the banks in Nigeria. It is a measure of the resilient of the banking industry to macro-economic instability. Again, asset Quality is expressed as the ratio of DMBs’ loans to its asset of all the banks in Nigeria. Meanwhile, an efficient management is expressed as the ratio of operating income to interest expense ratio of all the banks in Nigeria. More so, a bank is said to be sensitive to market risk it considers changes in the macroeconomic environment.

Furthermore, bank Performance is a measure of the financial condition of the banking industry over a financial year. This can be measured by the aggregate returns on assets for all the banks in Nigeria.

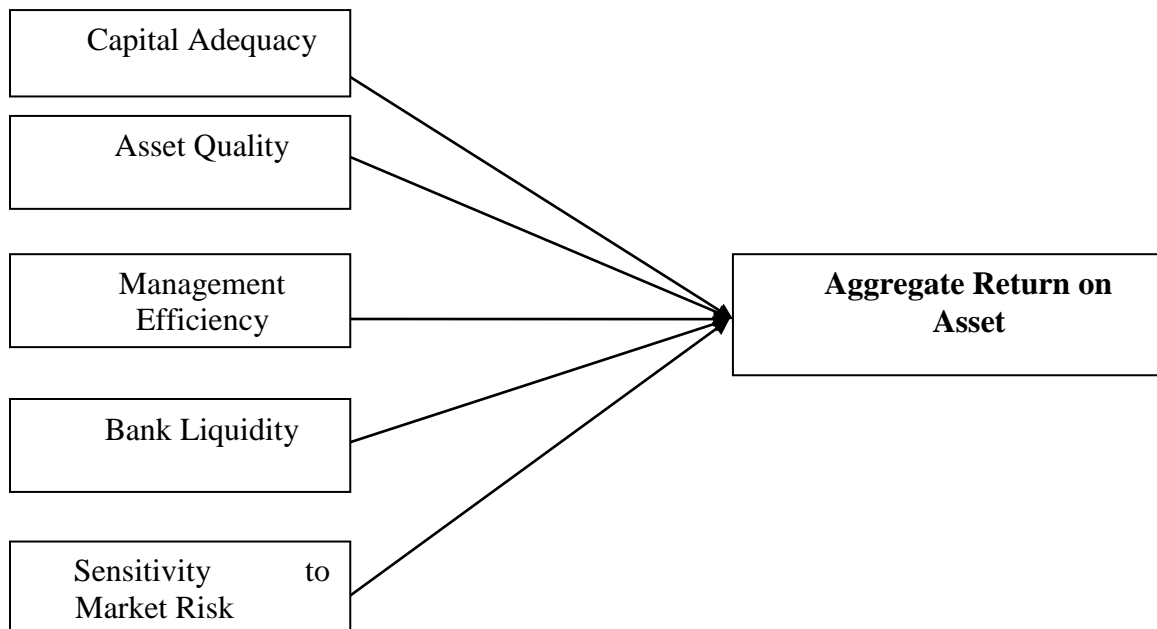


Fig. 1: Bank Soundness Indicators and Banks’ Performance

Source: Researcher’s Model, 2022

2.2. Theoretical Underpinning

The bank lending channel theory states that, smooth flows of banks credit channels improves banks' performance but disruption of the process reduces banks' performance. In this wise, banks had to hold three assets in the form of reserves, loans, and short term bonds and have to issue only one liability which is bank deposits) (Ozili, 2018). By implication, when bank reserve reduces, lending activities of banks will reduce as well. This will in turn reduces the investment opportunities which ultimately reduce banks' returns (Bernanke & Blinder, 1988; Onuorah, & Odita, 2013). This signals that, a sound banking industry is one whose lending process is efficient.

Empirical Findings

In relation to CAQ Ratio and banks' performance, Adaramola and Adejayan (2020); Izhar (2018); Asima et'al (2017) in separate studies evidenced that, CAQ Ratio improves banks' performance significantly but Jesuwunmi, Nzewi, Adewoyin, and Agbadua (2019); Onyekwelu, Chukwuani, and Onyeka (2018); and Irwan (2017) proved otherwise.

Caporale, Lodh and Nandy (2017); & Tamiru and Worede (2016) in separate studies found that, an efficient management improves banks' performance. However, Sarker, Sultana, and Prodhan (2017) reported that, efficient management does not improves banks' performance.

Furthermore, Aigul, Xin, and Omaima (2020) found that, bank liquidity improves banks' performance. However, Koskei (2020) reported that bank liquidity reduces banks' performance.

With regards to related studies on SMER and banks' performance, Olweny, Muturi, and Mwangi (2019); Latief, Ashraf, and Nawaz (2019); Sotiropoulou et'al (2019); Ngaira, and Miroga (2018); Hawkesby (2017) found that, the more a bank is sensitive to changes in the market, the more the bank performs better. However, Kahihu, Wachira, and Muathe (2021); Ali and Puah (2019); Ozili (2018); and Lucky (2017) reported otherwise.

METHODOLOGY

This study adopted the ex-post facto (after the fact) research design. Our sampling frame was drawn from all the 25 listed commercial banks as at 31st December, 2021. Data for the study was obtained from the CBN Annual Bulletin, 2021, Annual report, 202; NDIC Annual Report (2021), and the World Bank Annual Report(2021). The variable sourced are: Capital Adequacy Asset Quality, Management Efficiency, Earnings, Liquidity, Sensitivity to Market Risk, and Aggregate Return on Asset from 1990-2020. The technique adopted is Auto Regressive Distributed Lag (ARDL) model. This is with a view to test the short and long run dynamics of the study variables.

Econometrically, the study modeled after the works of Lucky (2017) but differs from his model as the current study included sensitivity to market risk into the model which was not present in Lucky (2017) model. The advanced bank soundness model is expressed as:

$$AROA = \beta_0 + \beta_1CAQ + \beta_2ASQ + \beta_3MAE+ \beta_4EAR + \beta_5LIQ + \beta_6SMR+ \eta_{it}. \quad (1)$$

AROA = Aggregate Return on Assets

CAQ = Capital Adequacy

ASQ = Asset Quality

MAE = Management Efficiency

EAR = Earnings

LIQ = Liquidity

SMR = Sensitivity to Market Risk

β_0 = Constant Value

$\beta_1- \beta_6$ = Parameter Estimates

Table 3.1: Analysis of Study Variable’s Apriori (Economic) Expectations:

Denotation	Description	Nature of Variable	Apriori Expectation
AROA	Aggregate net profit after tax to total assets of all the quoted banks in Nigeria	Regressand	Nil
CAQ	Regulatory Capital to Risk-Weighted Assets ratio	Regressor	+
ASQ	Ratio of DMBs’ loans to its asset	Regressor	+
MAE	operating income to interest expense ratio	Regressor	+
LIQ	Aggregate bank liquidity Ratio	Regressor	+
SMR	Market Risk	Regressor	-

Source: Researcher’s Compilation (2022)

RESULTS AND DISCUSSIONS

4.1. Data Analysis

The regressed data were analysed using trend analysis unit root test, and ARDL cointegration test. While figure 2 to 7 accounts for the trend analysis while table 1 and 2 accounts for the unit root test, and ARDL cointegration test

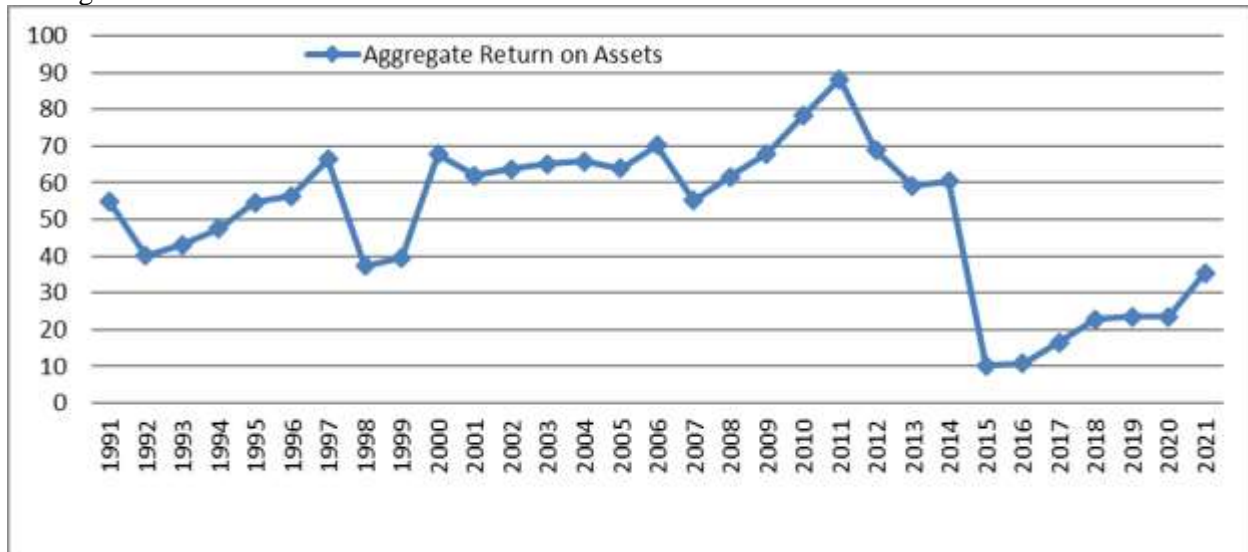


Figure 2: AROA Trend Analysis from 1991 to 2021

Source: Researcher’s Compilation, 2022

Figure 2 evidenced clearly that, the AROA for all the Nigerian banks have not been relatively stable over the years. However, it was at its peak in 2011 with AROA value of 88.3%.

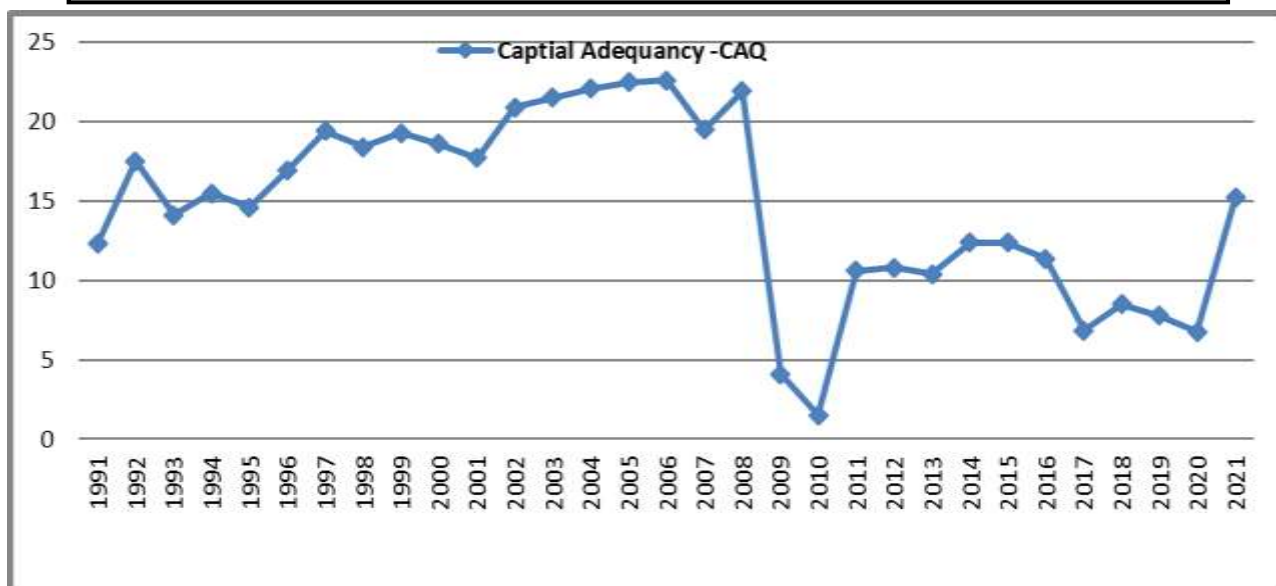


Figure 3: CAR Trend Analysis from 1991 to2021

Source: Researcher’s Compilation, 2022

Figure 3 clearly evidenced that the CAQ Ratios for all banks in Nigeria have not been relatively stable over the years. However, CAQ ratio for Nigerian banks was at its peak in 2006 with CAQ value of 22.6.

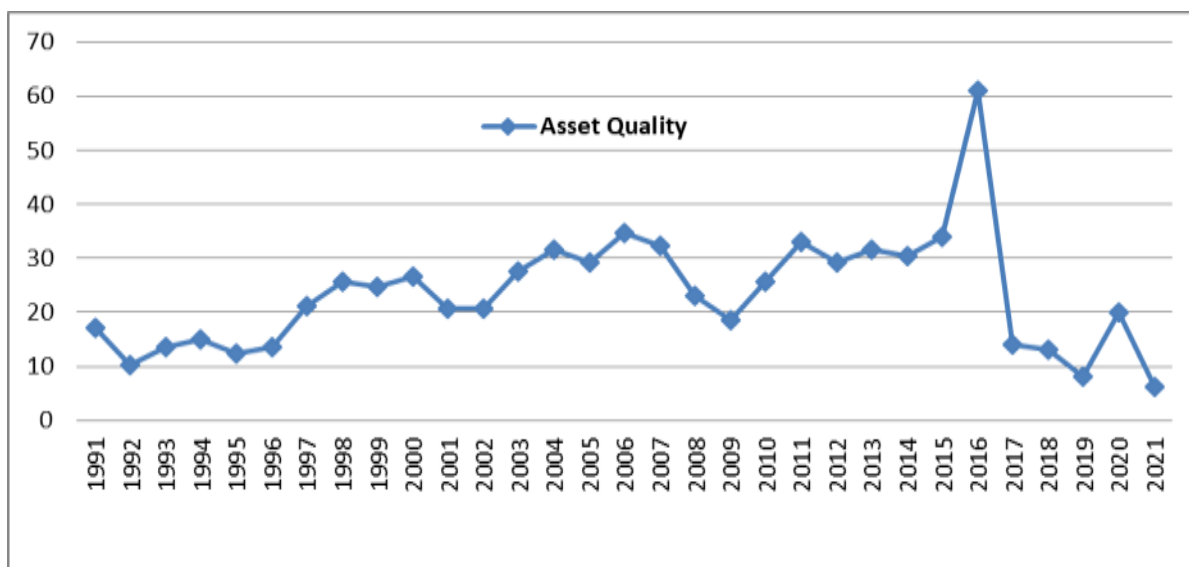


Figure 4: Trend Analysis of Asset Quality of Nigerian Banks from 1991 to2021

Source: Researcher’s Compilation, 2022

Figure 4 evidenced clearly that the ASQ have not been relatively stable over the years. However, it was at its peak in 2016 with ASQ value of 61.05%.

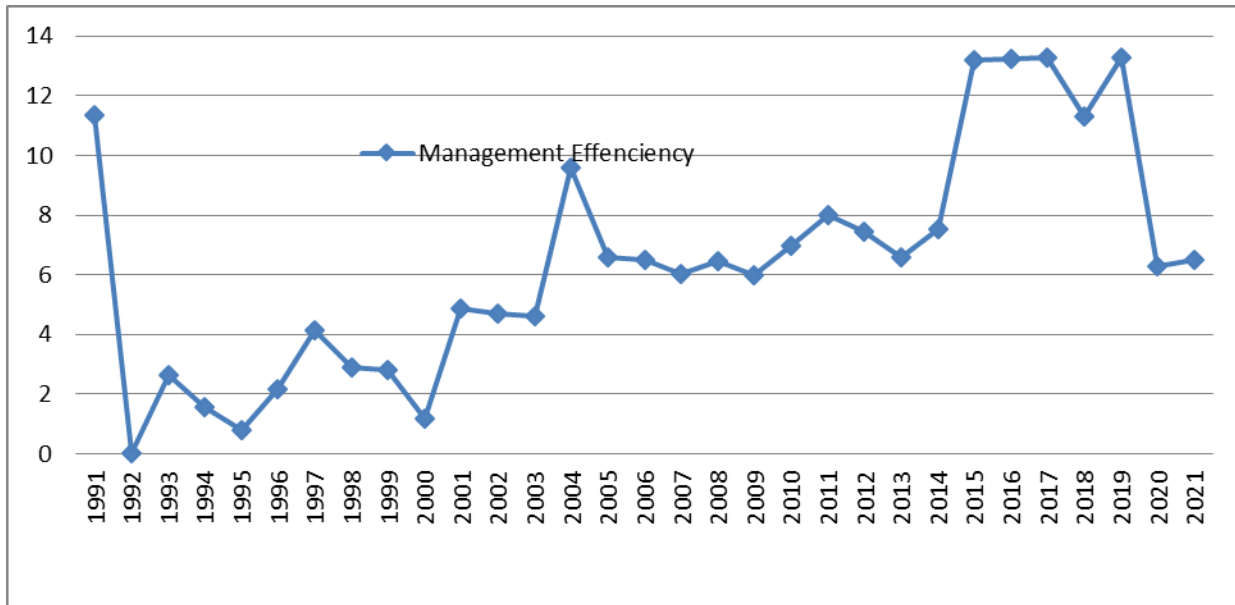


Figure 5: Management Efficiency Trend Analysis from 1991 to2021

Source: Researcher’s Compilation, 2022

Figure 5 evidenced clearly that the MAE have not been relatively stable over the years. However, it was at its peak in 2019 with MAE value of 13.28.

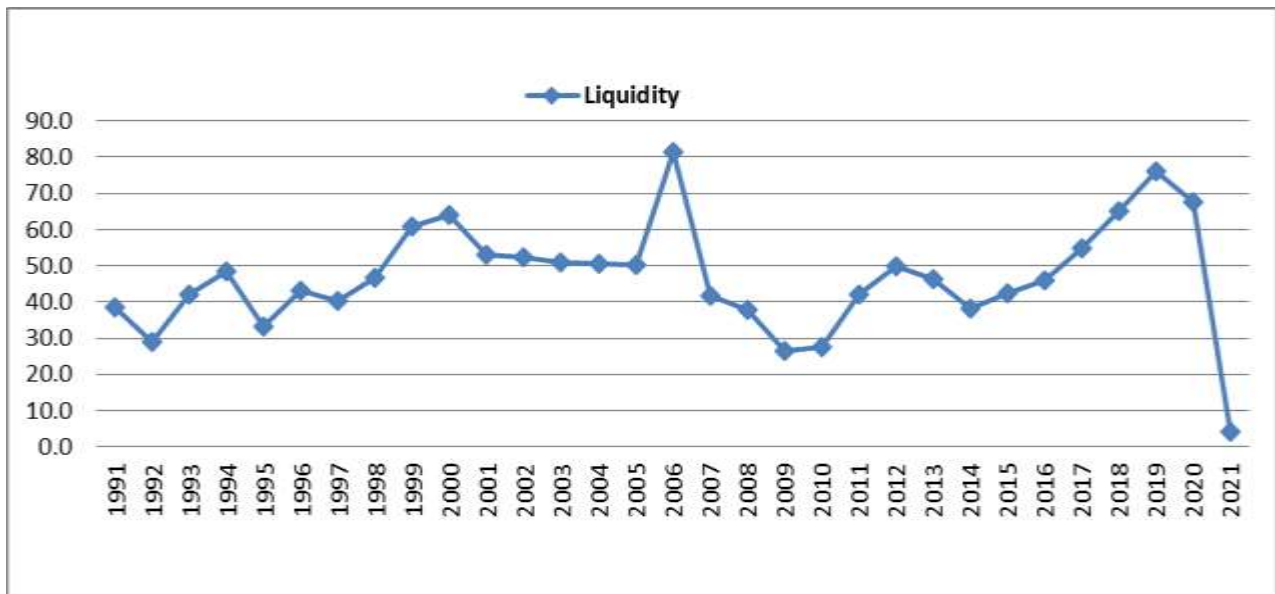


Figure 6: Bank Liquidity Trend Analysis from 1991 to2021

Source: Researcher’s Compilation, 2022

Figure 6 evidenced clearly that the LIQ have not been relatively stable over the years. However, it was at its peak in 2006 with LIQ value of 81.42.

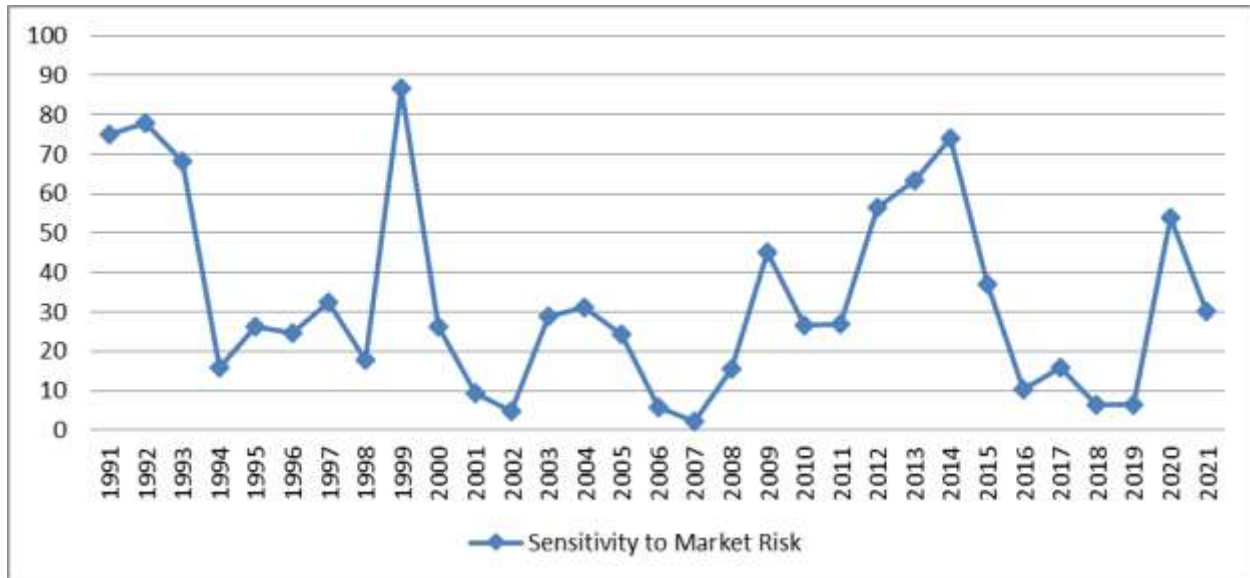


Figure 7: Sensitivity to Market Risk Trend Analysis from 1991 to 2021

Source: Researcher’s Compilation, 2022

Figure 7 evidenced clearly that the SMR have not been relatively stable over the years. However, it was at its peak in 1999 with SMR value of 86.76%.

Table 2: Summary of ADF Test

ADF test at Level (1)(0)				
Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Decision
AROA	-1.869910	-2.963972	0.3412	Non-stationary
CAQ	-2.214958	-2.963972	0.2054	Non-stationary
ASQ	-3.135631	-2.963972	0.0345	Stationary
MAE	-2.963972	2.963972	0.1099	Non-stationary
LIQ	-3.109176	-2.963972	0.0366	Stationary
SMR	-3.738699	-2.963972	0.0085	Stationary
ADF test at First Difference (1)(1)				
Parameter	ADF test statistic	Test critical value @ 5%	Prob.*	Decision
AROA	-5.703907	-2.967767	0.0001	Stationary
CAQ	-5.629419	-2.967767	0.0001	Stationary
ASQ	-7.417169	-2.967767	0.0000	Stationary
MAE	-9.127139	-2.967767	0.0000	Stationary
LIQ	-4.214709	-2.967767	0.0027	Stationary
SMR	-6.583131	-2.967767	0.0000	Stationary

Source: Econometric Views Version 9.0 (2022)

The table 2 evidenced mixed integration. Since the series are stationary at levels and first differencing justify the need to test for long run effects. the ARDL cointegration (long run) estimate is presented in table 3:

Test Statistic	Value	K
F-statistic	5.038136	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
5%	2.62	3.79

Source: Econometric Views Version 9.0 Output (2022)

Table 3 suggests that, bank soundness indicators have long run effect on the performance of quoted banks in Nigeria

4.2. Regression Results

Prior to main result was presented; the model was subjected to diagnostic tests such as: Heteroskedasticity (HE) Test, and Ramsey RESET (RR)Test. They are presented and discussed below:

F-statistic	0.546300	Prob. F(6,23)	0.7677
-------------	----------	---------------	--------

Table 4.8: Ramsey RESET Test

Equation: UNTITLED				
F-statistic	0.269209	(1, 22)	0.6090	

Source: Econometric Views Version 9.0 Output (2022)

From the table 4.8, the P-value of the chi-square which stood at 0.6090. This gives us prove that there is none of the study variables are omitted since it is not significant at 5%. On this note, the study boldly state the model is reliable and fit for prediction.

Having ascertained that the model is Homoskedastic and that none of the study variables are omitted, the main regression result is presented in table 4.9;

Table 4.9: ARDL Cointegrating and Long Run Form

Regressand: AROA				
Optimal Model Lag: ARDL(1, 0, 0, 0, 0, 0)				
Included observations: 30 (1992 to 2021)				
Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CAQ)	0.591120	0.248089	2.382695	0.0263
D(ASQ)	0.089360	0.270350	0.330535	0.7440
D(LIQ)	0.526397	0.226491	2.324142	0.0320
D(MAE)	0.497852	0.220002	2.262945	0.0334
D(SMR)	-0.152302	0.113065	-1.347035	0.1911
CointEq(-1)	-0.700961	0.139122	-5.038478	0.0000
Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
CAQ	0.656140	0.274826	2.387475	0.0256
ASQ	0.298824	0.859881	0.347518	0.7314
LIQ	0.604957	0.285080	2.122063	0.0453
MAE	0.483171	0.186294	2.593597	0.0157
SMR	-0.150931	0.131274	-1.149741	0.2621
C	6.485420	1.964397	3.301481	0.0029
R-squared	0.775258	Durbin-Watson stat		2.173662
F-statistic	6.899074	Prob(F-statistic)		0.000270

Source: E-Views (2022)

The cointEq-1 which stood at -0.700961 means that the model corrects its previous periods disequilibrium at a speed of 70.10% estimated annually. In other words, increasing the monetary policy variables at a steady state of 37.87% annually, the financial stability will improve significantly in the long run.

The R² value of 77.53% and the adjusted R² as 66.29% presumes that, the model is fit for prediction. The F-Probability value also confirmed that the model is okay. Again, the Durbin Watson Statistics clearly revealed that the model is not serially correlated since its value is within the accepted region of acceptance. The result evidenced that, CAQ ratio, LIQ and MAE improves banks' AROA to a very large extent. This signals that they are highly instrumental to banks' performance both on the short and long run. However, SMR reduces AROA insignificantly. More so, ASQ improves AROA minimally. This is due to the fact that, some of the asset base of the Nigerian banking industry is toxic.

CONCLUSIONS AND RECOMMENDATIONS

The study concluded that CAQ ratio, MAE, and bank liquidity are most significant drivers of financial performance of DMBs in Nigeria. Consequently, the study submits that,

1. The apex bank should advocate that all Nigerian banks must not allow its capital base to fall below 15%.
2. To ensure that its asset base is in good shape, bank managers should adopt effective/efficient assets/liabilities management strategies.
3. Bank regulators should ensure that, those at management cadre practice good ethical banking practices.
4. The current liquidity base should be retained.
5. Bank regulatory authorities should embark on robust banking reforms that are targeted at ensuring that banks receptive to macroeconomic stability.

REFERENCES

- Adaramola, A.O., & Adejayan A.O. (2020). Determinants of financial stability of deposit money banks in Nigeria. *International Journal of Innovative Research*, 9(4), 255-262.
- Aigul, P.S. Xin, Z. & Omaima, A.G.H. (2020). An assessment of the financial soundness of the Kazakh banks. *Asian Journal of Accounting Research*, 1(1), 1-20.
- Ali, M. & Puah, C.H. (2019). The internal determinants of bank profitability and stability. *Management Research Review*, 42(1) 49-67.
- Bernanke, B.S. & Blinder, A.S. (1988). Credit, money, and aggregate demand. *American Economic Review*, 78(2), 435-439.
- Caporale, G. M., Lodh, S., & Nandy, M. (2017). The performance of banks in the MENA region during the global financial crisis. *Research in International Business and Finance*, 42(1), 583-590.
- Ebrahimi, S. K., Bahraminasab, A., & Fard, M. Y. (2017). Performance Assessment of Banks listed on Tehran Stock Exchange based on CAMEL Indicators. *International Journal of Economics and Financial Issues*, 7(5), 128-136.
- Hammond, D. A. (2017). Effect of corporate liquidity on firm performance: evidence from listed financial institutions on the Ghana Stock Exchange. Doctoral dissertation, University of
- Hawkesby, C. (2017). Maintaining financial system stability: the role of macro-prudential indicators. Reserve of New Zealand: Bulletin, 63(2), 39-52.
- Irwan, C. (2017). The effect of financial ratios on Islamic rural bank performance in Indonesia. *International Journal of Scientific & Technology Research*, 6(8), 384-390.
- Izhar, M. (2018). Stability Analysis of the banking system of Pakistan and India. *International Journal of Business Management*, 12(2), 47-60.
- Jesuwunmi, C.A. D., Nzewi, U.C., Adewoyin, A. O., & Agbadua, O. B. (2019). Financial soundness indicators and Nigeria deposit money banks' performance. *Canadian Contemporary Research Journal*, 2 (1), 83-120

- Kahihu, P.K. Wachira, D.M. & Muathe, S.M. (2021). Managing market risk for financial performance: experience from micro finance institution in Kenya. *Journal of Financial Regulation and Compliance*, 29(5), 1-10.
- Kiemo M.S, Olweny T.O, Muturi W.M, Mwangi W.L.(2019) Bank-specific determinants of commercial banks financial stability in Kenya. *Journal of Applied Finance and Banking*. 9(1), 119-145.
- Koskei, L. (2020). Determinants of banks' financial stability in Kenya Commercial Banks. *Asian Journal of Economics, Business and Accounting*, 18(2), 48-57.
- Latief, R. Ashraf, S. & Nawaz, S. (2019). Financial stability index for the financial sector of Pakistan. Available at <https://www.mpdi.com/journal/econommmies>. Accessed on 1st March, 2022.
- Lucky, A.L. (2017). Prudential determinants of commercial bank soundness in Nigeria. Unpublished M.Sc. dissertation Submitted to the Postgraduate School, Rivers State University of Science And Technology, Nkpolu-Oroworukwo, Port Harcourt.
- Ndungu, R.N. (2019). Determinants of financial distress in Kenyan commercial banks.(Thesis, Strathmore University). Retrieved from <http://su-plus.strathmore.edu/handle/11071/6587>
- Ngaira, A. P., & Miroga, J. (2018).Determinants of financial stability of listed commercial banks in Kenya.*The Strategic Journal of Business & Change Management*, 5(4), 1074 – 1097.
- Onuorah, A.C. & Odita A.O. (2013). Relationship between macro-economic variables and budget deficit. *International Journal of Management Sciences*, 1(10), 416-426
- Onuorah, A.C. (2020). Role of non oil exports in the economic growth of Nigeria. *Journal of Emerging Trends in Economics and Management Sciences*, 9(3), 132-140.
- Onuorah, A.C. Ehiedu, V.C. & Okoh, E. (2022). Covid-19 crises and stock market volatility in Nigeria: A garch model approach. *International research Journal of Management, IT & Social sciences*, 5(2), 69-77.
- Onyekwelu, U. L., Chukwuani, V.N. & Onyeka, V. N. (2018). Effect of liquidity on financial performance of deposit money banks in Nigeria. *Journal of Economics and Sustainable Development*, 9(4), 19-28
- Ozili, P.K. (2018). Banking stability determinants in Africa. *International Journal of Managerial Finance*, 14(6), 34-47.
- Sarker, M. N., Sultana, A., & Prodhana, A. S. (2017). Financial Performance Analysis of Islamic Bank in Bangladesh: A Case Study on Al-Arafah Islami Bank Limited. *World*, 3(1), 052-060.
- Sotiropoulou, T., Giakoumatos, S.G. & Petropoulos, D.P. (2019). Financial development, financial stability and economic growth in European union: a panel data approach. *Advances in Management and Applied Economics*, 9(3), 55-69.
- Tamiru, T., & Worede, N. (2016). Comparative study on financial performance of commercial banks in Ethiopia: problems and prospects. . *Abstract of Economic, Finance and Management Outlook*, 5, 1-5.