Acta Universitatis Danubius
ŒCONOMICA

Capital Adequacy, Asset Quality and Banking Sector Performance

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Abstract: The purpose of this paper is to examine the effect of capital adequacy and asset quality on banking sector performance in Nigeria using annual panel data in the period 2010 to 2019. The study employs the system generalized method of moments (SGMM) in analysing data obtained from audited financial statements of twelve banks listed on the floor of the Nigeria stock exchange for the period 2010 to 2019. The twelve banks used control about 95% share of the market. The outcome of the study revealed that capital adequacy and asset quality both affect bank performance positively in Nigeria. Thus, suggesting that capital adequacy and asset quality enhance and stimulate banking sector performance in the country. Also, the findings of the study indicate that adequate capital and sound asset quality translate to improved earnings and performance of the banks.

Keywords: Capital adequacy; Assets quality; Bank performance; SGMM; Nigeria

JEL Classification: E58; G21; G28

1. Introduction

Banks play a vital role in any economy especially in the mobilisation of funds from the surplus unit to the deficit unit. Most developmental economists recognised this fact since it is impossible for an economy to grow without a vibrant banking sector. Studies in the empirical literature have shown that capital adequacy of banks is necessary for banks not to fail and perform its intermediating function since inadequate capital can result in a run on the bank, thereby making banks not meet its depositors' demand and settle recurring short-term and long-term obligation. More

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so, it can result in a loss of depositor confidence and impair the profitability of the bank.

To ensure financial soundness and stability, the central bank of countries specify the capital requirement of banks in a bid to protect depositor's funds, ensure an effective and efficient banking system that can compete with its sphere in the globe, avoid run on the bank and ensure bank performs its intermediation function effectively and efficiently (Udom & Eze, 2018). As noted by Saona (2011), the Basel accord demand that bank needs to access the risk they are taking since a poor banking system not only threatens the stability of a country economy but also affects the bank performance. According to Onuh (2002), bank capital is considered adequate if it can cover the bank's operational expenses, meet the withdrawal needs of its customers and also protect depositors against loss in the event when the bank is financially distressed. Several studies in the literature have shown that capital adequacy affects bank performance positively (Ezike & Oke, 2013; Torbira & Zaagha, 2016) others reported that capital adequacy affects bank performance adversely (Onoalapo & Olufemi, 2013).

Aside, a bank having adequate capital, its asset quality is also very important and key for the survival of the bank since asset quality involves the examination of the bank asset in a bid to ascertain the size and level of credit risk linked with its activities. A key component of the credit profile of a bank is the asset quality and poor asset quality is often regarded as one of the root causes of bank going distress. Hence, bank regulator is also concern of the asset quality of banks since a weak asset quality not only affects the profitability and operations of the banks but also affect the financial stability of the economy (Abata, 2014; Richard & Prakash, 2019). For instance, as documented by Yin (1999), one of the immediate causes of the Asian financial crisis was the deterioration of the asset quality of the bank. In the empirical literature, studies on the effect of asset quality on bank performance are mixed. While some studies reported that asset quality affects bank performance positively (Afiriye & Akotey, 2013; Buchory, 2015; Bhattarai; 2016) others argued that asset quality has an adverse effect on the bank performance (Ongore & Kusa, 2013; Ozurumba; 2016; Kadioglu, Telceken & Oscal, 2017).

Most of the studies either investigates the effect of capital adequacy on bank performance and ignore asset quality or investigates the effect of asset quality on bank performance and ignore capital adequacy ratio. This study examines both capital adequacy and asset quality on the performance of Nigeria bank. More so, two measures of bank asset quality were used in the study. Finally, the study employed the two-step system GMM which takes care of autocorrelation and heteroscedasticity.

The study is divided into five sections. The second section examines the theories and literature, while the third section throws insight into the data and methodology.

Section four discusses the research findings while section five concludes and proffer policy recommendations.

2. Theories and Reviews of Empirical Literature

2.1. Theories

The buffer theory of capital adequacy was established by Calem and Rob (1996). According to the theory, a capital buffer may raise the bank performance as a result of the reduced lending rate that raises the loan demand. Besides, the theory asserts that an excessive rise in capital than required reduces bank risk. Thus, the theory posits that a bank reaching a minimum capital ratio has the incentive to increase its capital to avoid the risk of failure and regulatory costs arising as a result of the breach of the capital requirement.

The commercial loan theory originated in England during the time of the 18th century. The theory also known as the real bill doctrine asserts that a deposit money bank should only grant short-term liquidating productive loans to business organisation and the Central Bank should in turn land on the deposit money bank on the collateral securities of should short-term loan. This will ensure that the risk of the bank is reduced, ensure adequate liquidity for the banks and the country. This theory has however been criticised because it is based on the demand of trade as a key criterion for regulating this category of bank credit.

The shift-ability theory was advanced by H.G Moulton who documented that a certain amount of deposit money bank assets can be shifted on to other deposit money banks for cash without any material loss in case of emergency as there is no need to rely on maturities. The theory assumes that for an asset to be shifted it must be easily transferable without any capital loss when the need for liquidity arises. More so, the theory requires that deposit money banks should have a certain of their assets which can be shifted to the central bank when liquidity needs arise.

2.2. Review of Empirical Literature

In the empirical literature, several studies have explored whether capital adequacy influences banking performance. For instance, the research findings of Ho and Hsu (2010) showed that the limit placed on capital adequacy has indeed induced risky investment of banks in Japan. Al-Sabbah (2004) noted that in Japan, capital adequacy is a key determinant of bank profitability. Similar findings were also reported by Chaudrey (2013) that one of the key drivers of bank profitability is adequate capital. Using the feasible GLS estimator approach, Umoru and Osemwegie (2016) documented that in Nigeria between the period 2007 -2015,

capital adequacy affects bank performance positively although it was noted that the estimated capital adequacy is below 30% an indication that the majority of depositor money has not been adequately assured. The author thus recommends the need for the regulator to constantly review the capital requirement of banks.

Using a linear approach Adbeja, Adelakun, and Olufemi (2015) showed that capital adequacy positively influences the profitability of banks in Nigeria. An indication that banks with adequate capital are deemed to be safe and can generate more return. Amahalu, Okoye, Nweze, Chinyere, & Christian (2017) research finding showed that capital adequacy positively influences the performance of banks in Nigeria. Udom and Eze (2018) concluded that capital adequacy improves the financial performance of deposit money banks in Nigeria. Employing an ordinary least square method, Ezike and Oke (2013) documented that capital adequacy affects bank performance positively in Nigeria using 15 banks between 2008 to 2012. Employing a panel regression method, Dore (2013) documented that capital adequacy has an adverse effect on the profitability of banks in Ghana between the period 2005 to 2011. Musyoka (2017) documented that in Kenya, capital adequacy has an adverse effect on the performance of the banks.

Numerous studies have also been carried out to examine the effect of asset quality of banks on the performance of banks. For instance, employing a panel regression method, Kadioglu, Telceken, and Oscal (2017) research on asset quality and its effect on the profitability of banks showed that between 2005 to 2016, asset quality has an adverse effect on the profitability of fifty-five banks in Turkey. Using data from 15 listed deposit money banks between the period 1980 to 2015 Lucky and Nwosi (2015) concluded that asset quality positively influences bank performance in Nigeria.

Mwendwa (2015) concluded that asset quality affects bank performance positively in Kenya for the period 2006 to 2013. The study used forty-three banks. Richard and Prakash (2019) concluded that for the period 2005 to 2014 in India, asset quality has an adverse effect on banks' profitability when compared to the public sector banks'.

Furthermore, other studies such as Taşkın (2011), Ongore and Kusa (2013), Abata (2014), Duraj and Moci (2015), Adebisi and Mathew (2015), Etale et al. (2016), Bhattarai (2016), Hashem (2016), Musyoka (2017) affirmed that asset quality has an adverse effect on bank's profitability while research findings from the following scholars Afiriyie and Akotey (2013), Adebisi and Matthew (2015), Buchory (2015), documented that asset quality positively influences bank's profitability.

The review of empirical literature indicates a mixed finding. More so, the majority of the empirical literature either investigates the effect of capital adequacy on bank performance and ignores asset quality or investigates the effect of asset quality on bank performance and ignores capital adequacy ratio. This study examines both capital adequacy and asset quality on the performance of Nigeria bank. More so, two

measures of bank asset quality were used in the study. Finally, the study employed the two-step system GMM which takes care of autocorrelation and heteroskedasticity.

2.3. Hypothesis Development

Based on the empirical review of theories and literature, the following hypothesis is developed.

H0a: Capital adequacy and asset quality have no significant effect on the performance of Nigeria bank.

H0b: Capital adequacy and asset quality have a significant effect on the performance of Nigeria bank.

3. Data and Methodology

3.1. Data

Data from audited financial statements of twelve banks listed on the floor of the Nigeria stock exchange for the period 2010 to 2019 were used for the study. The twelve banks used control about 95% share of the market. Table 1 shows the variables, description, measurement, etc. of the data. System generalized method of moments (SGMM) advanced by Arellano and Bover (1995) and Blundell and Bond (1998) were deployed to achieve the study aim. The SGMM was selected because it is very efficient when dealing with panel data that have more cross-sections and less-periods. More so, the SGMM gives room for more instrument which can improve efficiency. In addition, it helps to correct the problem of autocorrelation and heteroscedasticity.

Table 3. Data Description and Measurement

Variables	Description	Measurement
ROE	Return on Equity	Profit available to equity holders ÷ numbers of shares outstanding
CAR	Capital assets adequacy ratio	Capital to risk-weighted asset ratio
NPLL	Asset quality	Non-performing loan ÷ total loan
LLPV	Asset quality	Loan loss provision ÷ total loan
FS	Firm Size	Total asset
RG	Revenue Growth	Growth in turnover
INFL	Inflation	Consumer price index

Source: Authors compilation

3.2. Model Specification

The study adopts the following model based on the review of theories and empirical literature:

$$ROE_{it} = \alpha_0 + \alpha_1 ROE_{it-1} + \alpha_2 CAR_{it} + \alpha_3 NPLL_{it} + \alpha_4 LLPV_{it} + \alpha_5 FS_{it} + \alpha_6 RG_{it} + \alpha_7 INF_{it} + \varepsilon_{it}$$

Where

ROE is return on equity

CAR is capital adequacy ratio

NPLL is non-performing loan

LLPV is loan loss provision

FS is firm size

RG is revenue growth

INF is inflation

Subscript i denote the 12 deposit money banks and t denotes the period i.e. 2010 to 2019.

ε is error term.

4. Result and Discussion

Table 2 displays the descriptive statistic of the variables which revealed that the average return on equity is 7.3%, while the capital adequacy ratio average is 12.1% and the average of non-performing loan to total loan (NPLL) is 7.3%. More so, on average, the firm size is 9.1% while the revenue growth average is 13%. In addition, the average inflation rate is 11.7% within the period observed.

Table 2. Descriptive Statistic

	ROE	CAR	NPLL	LLPV	FS	RGROWTH	INFL
Mean	7.290565	12.05186	7.329466	-6.433540	9.116933	13.87521	11.76864
Median	11.28105	13.76460	3.833700	-1.573850	9.105550	12.74045	11.74500
Maximum	110.6938	28.27530	86.85210	50.27620	9.854100	99.44390	16.50000
Minimum	-394.3182	-103.2676	0.000000	-494.0192	8.303700	-65.94000	8.050000
Std. Dev.	42.20105	15.46706	11.40087	45.66168	0.388259	22.93127	2.742005

Source: Authors computation

Table 3 shows the outcome of the correlation result. A cursory look at the correlation outcome indicates that the variables are not correlated and there is an absence of multi-collinearity among the variables.

Table 3. Correlation

	ROE	CAR	NPLL	LLPV	SIZE	RGROWTH	INFL
ROE	1.0000						
CAR	0.1350	1.0000					
NPLL	-0.0345	-0.4025	1.0000				
LLPV	0.0075	-0.0978	0.0916	1.0000			
FS	0.2459	0.2246	-0.0774	0.0894	1.0000		
RG	-0.1094	0.1891	0.0093	0.0187	0.0089	1.0000	
INFL	0.0075	0.0163	0.0100	-0.1236	0.0686	0.05116	1.0000

Source: Authors computation

Table 4 shows the outcome of the regression estimates of the effect of capital adequacy and asset quality on bank performance using the system GMM. The result in table 2 revealed that the coefficient of the lag return on equity (ROE) is 0.4565 and is statistically significant at 1 percent. This suggests that the ROE of the preceding year has a positive and significant impact on the ROE of the current year. Furthermore, the result also revealed that the coefficient of capital adequacy ratio is 13.801 is positive and significant at 1 percent. This implies that capital adequacy has improved bank performance positively. The result is in tandem with previous studies by (Ezike and Oke, 2013; Torbira and Zaagha, 2016; Nweze, Chinyere, & Christian, 2017; Udom & Eze, 2018) who assert that capital adequacy positively influences bank performance.

Table 4. System GMM Estimates

Variables	Estimates
ROE_{t-1}	0.4565***
CAR	13.8009***
NPLL	14.6507***
LLPV	34,8399***
FS	-114.7786
RG	-4.111**
INF	8.7925***
Observation	107
Number of banks	12
AR (2) test	(0.55)
Hansen test	(0.208)

Notes: The dependent variable is return on equity (ROE), while the independent variables are capital adequacy ratio (CAR) and asset quality measured by two variables (i.e. non-performing loan to total loan (NPLL) and loan loss provision to total loan (LLPV). Control variables used are firm size (FS), revenue growth (RG) and inflation (INF). AR (2) is the second-order residual serial correlation test. Hansen test is the overriding identification test and ***, **, * shows the level of significant at 1%, 5%, and 10%.

Besides, the result in table 2 also indicates that the coefficient of the first measure of asset quality (i.e. non-performing loan to total loan) is 14.6507 and is statistically significant at 1 percent while the second measures of asset quality (i.e. loan loss provision to total loan) showed that the coefficient is 34.8399 and is positive and significant. This indicates that asset quality positively influences banking sector performance in Nigeria. The outcome is similar to previous works done by (Afiriye & Akotey, 2013; Buchory, 2015; Bhattarai; 2016) who showed that asset quality positively enhances the performance of banks.

More so, the p-values of AR (2) which denotes the second-order residual serial correlation test is 0.55 indicate that the estimated result is free from serial correlation. Besides, the Hansen test is 0.208 which indicates that the model is correctly specified and the instrument employed in the analysis is valid and reliable.

5. Conclusion and Policy Recommendations

The study examined the effect of capital adequacy and asset quality on bank performance for the period 2010 to 2019 using 12 deposit money banks listed on the floor of the Nigerian Stock Exchange (NSE). The study found that capital adequacy has a positive and significant effect on the performance of banks in Nigeria. In addition, the study also found that asset quality also influences banks' performance

positively in Nigeria. Based on the study outcome, the study acclaims the need for continuous improvement of the asset quality of the bank by management to ensure a decline in the non-performing loan which can be achieved by properly analysing the C's of credit (i.e. capital, character, capacity, collateral and condition) in line with the customer requesting for the loan business environment.

More so, sound credit culture, policies, and corporate governance are needed to reduce the incidence of non-performing loans that can threaten the survival of the banks. The regulatory authorities, on the other hand, need to strengthen the capital requirement of the bank to ensure that the banks have adequate capital to meet both short and long-term needs. In addition, there is also the need for regulatory authorities to continuously monitor the lending behaviour of banks in the industry to avoid the banks taking an excessive risk that can threaten bank survival. Besides, enhancing the regulatory framework will also ensure that banks can compete favourably with its counterpart on the global level.

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