Central Bank of Nigeria Regulatory Policies and Non-Performing Loans in the Nigerian Banking Industry

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Abstract
This paper examined the nexus between Central Bank of Nigeria (CBN) regulatory policies and banks' non-performing loans in Nigeria between the periods 1990 to 2021. Regulatory policies were captured using monetary policy rate, liquidity ratio and loan-to-deposit ratio as shown in the Central Bank of Nigeria Statistical bulletin 2021 edition, while the non-performing loans data was generated from the World Bank publications. The secondary data were analyzed by the use of vector error correction mechanism (VECM) and the pairwise granger causality tests. Results from the data analysis showed that CBN regulatory policies although influences non-performing loans by way of long run relationship has an insignificant effect on non-performing loans in Nigerian banks. Notably, data analyses further revealed that only loan-to-deposit ratio granger causes non-performing loans. Hence, it was concluded that Central Bank of Nigeria regulatory policies have an insignificant impact on banks' non-performing loans in Nigeria. Thus, it was suggested that in order to effectively manage and reduce the incidents of non-performing loans in Nigerian banks, the apex regulatory body (CBN) should work towards improving on the effectiveness of its regulatory policies especially when it comes to the use of monetary policy instruments in addressing the problems of non-performing loans in Nigerian banks. Stakeholders should from time to time carryout periodic reviews of monetary policy instruments with a view to strengthening monetary policy tools that rely on market forces to transmit their effects.

Key Words*: Monetary policy rate, liquidity ratio, loan-to-deposit ratio, non-performing loans*

Introduction

The business of banking centres on financial intermediation which incorporates lending as an essential function. This part of banking operations (lending) constitute a veritable tool by which banks attend to the credit needs of various economic units in a country. Financial resources mobilized through lending are usually extended to the deficit economic units as loans for investment purposes. To this end, lending is one of the fundamental functions of deposit money banks (El-Maude, Abdul – Rahman and Ibrahim, 2017). Thus, Ojiegbe (2004) opined that the credibility of a bank is based on its ability to attract a sizable proportion of the customer's fund in order not only to earn reasonable returns on its investment but additionally to discharge its custodial functions over such funds entrusted to it in such a manner that both the depositor and borrower have unimpaired access to their demands and needs for fund. Hence, Akpan (2013) observed that in granting loans to individuals, households and business firms, banks take into consideration factors such as liquidity risk, repayment method, source of repayment and purpose for loan. In essence, the qualitative features of bank loans include high liquidity quotient, minimum risk and appropriate maturity structure. These qualitative elements are necessary to guarantee repayment on demand (Akpan, 2013).

However, for countless reasons, there may be default on the part of the borrower whereby he or she may fail to pay the interest and principal upon maturity or as they fall due within the specified period as agreed between the lender (bank) as borrower. Once there is default and the customer defaults as scheduled or retrieval is highly doubtful or it is probable to be protected, the loan turns out to be a non-performing loan which may turn into bad debt with time (El-Maude, Abdul-Raliman and Ibrahim, 2017). According to Ahmed and Bashir (2013), non-performing loans (NPLs) are a burden for both lender and borrower; they contract credit supply, distort allocation of credit, worsen market confidence and slow economic growth.

Non-Performing Loans (NPLs) are those loan facilities which the banks are unable to profit from because payments are not serviced as anticipated. In the banking system in Nigeria, the Non-performing loan problems consist of both old debts that are not performing and new loans that may become non-performing. A critical factor that affects the poor performance of loans in the banking system is economic fluctuations viz; short term inflation, high lending rates, level of risk where the economy is not doing well etc. These NPLs affect the earning power of the banks, which in turn affect the bank's return on capital and lead to poor performance levels (Zikora, 2019).

In order to curtail the consequences of non-performing loans in Nigeria, the operational activities of Deposit Money Banks are constantly supervised and regulated by relevant laws and policies, as may be authorized from time to time by the apex regulatory agency – the Central Bank of Nigeria. Aside the Banks and other Financial Institutions Act (BOFIA),1991 as amended by the legislative arm of government that covers establishment of banks, duties of banks, books and records of account, supervision and the likes), the Central Bank of Nigeria (CBN) as the apex regulatory body comes up with policies from time to time to check-mate the activities of banks. One of such is the issuance of prudential guidelines for Deposit Money Banks. These guidelines are not an act but a streamlined guide on how banking business/transactions are to be carried out. The prudential guideline reform programme in 2010 clearly spelt out loan loss provisioning guidelines.

In addition, the CBN also uses monetary policies to regulate, supervise and checkmate the lending activities of these banks (Aileman, 2012). In this regard, the CBN uses conventional and non-conventional tools of monetary policy. The traditional tools are also known as market weapons because they rely on market forces to transmit their effects to the banking system in particular and the economy at large. Such tools include open market operation (OMO), monetary policy rate, liquidity ratio, and cash reserve ratio. On the other hand, the non-traditional tools or non-market tools strike directly at banks' liquidity and they include special deposits (Supplementary reserve requirements) and variable liquid asset ratio. The application of these instruments depends on the nature of problem the nation is grappling with and the policy direction of government. Nevertheless, all measures are geared towards regulating and controlling the volume cost availability and direction of money and credit (Ezedike, Ekeocha and Ekezie, 2018). This act indirectly affects the volume of non-performing loans at a given time.

According to Atoi (2018), In recent times, NPLs has been trending and becoming a cause of concern for banks' stability in the face of reeling economic downturn. Oftentimes, monetary policy tools are applied to address issues of NPLs of banks, irrespective of size. As recent as October, 2021; the Central Bank of Nigeria's Monetary Policy Committee (MPC) revealed that the average non-performing loans ratio for Nigerian banks is above the regulatory limits of 5%, which is a sign that banks still carry bad loans above what is allowed (Ubah, 2021).

In 2015, the banking industry - large, medium and small bank groups showed vulnerability to the most severe shock of 200 per cent rise in NPLs, but none of the groups could sustain the impact of the same magnitude of shocks in December 2016 as their post-shock capital adequacy ratios fell below the 10 per cent minimum prudential requirement (CBN, 2016). CBN (2022) also observed that the total non-performing loans in the banking sector hit N1.21tn as of the end of February 2022. This is worrisome and a whole lot of reasons has been put forward to be responsible for having a high rate of non-performing loans in Nigeria. Therefore, studies on CBN's regulatory policies on non-performing loans are not lacking in literature (El-Maude, Abdul-Rahman and Ibrahim, 2017; Eniafe, 2020; and Atoi, 2018). However, based on the studies reviewed, it is clear that regulatory policies in respect of monetary policy is lacking including empirical investigations in that regard.

Furthermore, between the 1990s up till the early 2000s, a large number of banks in emerging economies collapsed, owing to high non-performing loans and worsened cost of efficiency (Podpiera & Weill, 2008). This was observed in the balance sheets of banks in both emerging markets and advanced economies, where NPLs were found to be major bottlenecks to their profitability. According to Nwosu, Okedigba and Anih (2020), the asset quality of Nigerian banks was adversely affected as non-performing loan ratio of the banks rose significantly to 37.3 per cent in 2009 from 9.9 in 2007. Banks profit measured by their returns on asset fell from 3.0 per cent in 2007 to 2.5 per cent in 2009. The failure to effectively monitor non-performing loans or reduce high levels of bad debts exceeding set thresholds may lead to insolvency (Abiola & Olausi, 2014; Richard et al., 2008). Zikora (2019) observed that the International Monetary Fund has raised questions over the rising non-performing loans (NPLs) in Nigerian Banks and has further noted the 3% increase in NPLs in 2017 evidenced in the Central Bank of Nigeria (CBN) Financial Stability Report of the first quarter of 2017. This worrisome development in the face of numerous policies by government and its agencies, has raised questions as to the impact of CBN regulatory policies

like monetary policies on banks non-performing loans in Nigeria? This is the main thrust of this paper.

Synopsis of Reviewed Related Literature.

Bank loan is a term that is synonymous with bank credit facility and advances, though they have different meanings. According to Twin (2020), bank loan is the total amount of money a person or business can borrow from a bank or other financial institutions. It is also seen as a source of long-term financing that goes beyond a year. They symbolize investments and typically constitute the lengthened assets of banks. Individuals and organizations request for loans. Households seek loanable funds from banks when their excess of income over expenditure is negative (Mbat, 2015). Individual business firms especially small-scale enterprises request for loans from Deposit Money Banks for working capital needs and re-investment.

Bank loans have been variously classified. One popular classification is secured and unsecured loans. Secured loans are loans that are backed by a form of collateral, either in the form of cash or other tangible assets. Such loans reduce the amount of risk a bank takes in case of default on the part of the borrower. Deposit money banks can seize the collateral, sell it and use the proceeds to pay off part or all of the loan. Given that such loans are backed with collateral, they tend to have lower interest rate and more reasonable terms and conditions (Twin, 2020). On the other hand, unsecured loans are loans not backed by collateral. Such loans are riskier than secured loans because the chance of default is higher. As such, banks generally charge higher interest rates for unsecured loans.

Nevertheless, Nwankwo (2004) opined that loans can best be classified on the grounds of maturity and purpose. In Nigeria, loans classification by maturity structure consists of loans: on call, within 6 months, between 6 – 12 months, between 1-3 years, between 3-5 years and after 5 years. Classification by purpose is otherwise known as sectorial classification of loans, which according to the Central Bank of Nigeria (2020) consists of industrial, agriculture, construction, trade/general commerce, government and services. Nonetheless, according to the Prudential Guidelines for deposit money banks in Nigeria credit facilities, which consists of loans, overdrafts, advances, commercial papers, bankers' acceptances, bill discounted leases, guarantees and other loss contingencies connected with a bank's credit risk; should be classified as either performing or non-performing.

Non-performing loans differ from country to country. A loan may be considered non-performing in one country and might not be considered as such in another country. However, opinions in some cases do match. Accordingly, the International Monetary Fund's (IMF) compliance guide on financial soundness indicators (2015) stated that 'a loan is non-performing when payments of interest and/or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons – such as a debtor filing for bankruptcy – to doubt that payment will be made in full".

According to the Basel Committee on Banking Supervision (2001) as cited in El-Maude, Abdul-Rehman and Ibrahim (2017), loan is considered non-performing when a bank declares that a borrower cannot meet his/her obligation and repay the loan, or similarly to the first definition, the borrower past due date for more than 90 days on any payment of the bank credit. The Nigerian banking regulator, the CBN (2015), averred that non-performing loan and advances are loans whose credit quality has deteriorated and the full collection of principal and/or interest as per the contractual repayment terms of the loan and advances are in question. In 2010, the CBN Prudential Guidelines for deposit money banks in Nigeria stated categorically that 'a credit facility should be deemed as non-performing when any of the following conditions exists.

(i) Interest or principal is due and unpaid for 90 days or more;

(ii) Interest payments equal to 90 days interest or more have been capitalized, rescheduled or rolled over into a new loan.

By and large non-performing loans are loans that are outstanding both in its principal and interest for a long period of time disagreeing to the terms and conditions under the loan contract (Gesu, 2014). Any loan facility that is not current in terms of repayment both on principal and interest, conflicting to the terms of the loan agreement is a non-performing loan. Thus, the amount of non-performing loan measures the quality of bank assets (Tseganesh, 2012).

In Nigeria to be specific, the 2010 CBN Prudential Guidelines for money deposit banks, classified non-performing loan facilities into three distinct categories as sub-standard, doubtful and lost on the basis that sub-standard facilities are those in which unpaid principal and/or interest remain outstanding for more than 90 days but less than 180 days. Doubtful facilities are facilities on which unpaid principal and/or interest remain outstanding for at least 180 days but less than 360 days and are not secured by legal title to leased assets or perfected realizable collateral in the process of collection or realization. Finally, lost credit facilities are facilities on which unpaid principal and/or interest remain outstanding for 360 days or more and are not secured by legal title to leased assets or perfected realizable collateral in the course of collection or realization.

As such, deposit money banks are required to adopt the criteria specified above to classify their credit portfolios in order to reflect the true accounting values of their credit facilities. Licensed banks are asked to note that the Central Bank of Nigeria (CBN) reserves the right to object to the classification of any credit facility and to prescribe the classification it considers appropriate for such credit facility (El-Maude, Abdul-Rahman and Ibrahim, 2017). It must be stated that the above classification of non-performing facilities is based on the objective criteria, specified by the CBN. There is also a subjective criteria and provisions for non-performing facilities other than specialized loans and for specialized loans in the 2010 prudential guidelines for deposit money banks in Nigeria.

Theoretical Framework

Theories of regulations provide the benchmark for evaluating bank regulations. To this end, the theories examined below were considered relevant to the study.

a. The Regulatory/Supervisory Power View: This credited to Stigliz (1981) postulates that strong official regulation of banks can improve their corporate governance. This theory holds that private agents frequently lack the incentive and capabilities to monitor powerful banks. It assumes that government has both the expertise and incentives to ameliorate market imperfections and improve the governance of banks. When information costs, transaction costs and government

policies interfere with the incentives and abilities of private agents to monitor banks, strong official supervision of banks can improve the corporate governance of banks. This underscores the reason(s) why regulations are necessary for the banking sector to provide efficient services for customers. In general, regulations are justified on the basis that the government is interested in overcoming information asymmetries with the operator and in aligning the operator's interest with the government's interest. In the same vein, customers desire protection from market power when competition is non-existent or ineffective and operators desire protection from rivals amongst other reasons.

b. Political/Regulatory Capture View: This theory is an alternate to the power view theory. It argues that politicians and regulators do not maximize social welfare; they instead maximize their own private welfare (Hamilton, et al 1788; Buchanan and Tullock, 1962; Shleifer and Vishny, 1998). Thus, if bank supervisory agents have the power to discipline noncompliant banks, then politicians and regulators may use this power to divert the flow of credit to politically connected firms (Becker and Stigler, 1974, Stigler, 1975; Haber et al, 2003). Under these conditions, banks do not only allocate capital based on risk-return criteria. Political/Regulatory capture view may exert a negative influence on bank performance as they may use their powers to benefit their own private welfare rather than the social welfare (Becker, 1983).

c. The Private Empowerment View: This theory argues that bank regulatory policies should focus on enhancing the ability and incentives of private agents to overcome information and transaction costs, so that private investors can exert effective governance over banks. Consequently, the private empowerments view seeks to provide supervisors with the responsibility and authority to induce banks to disclose accurate information to the public, so that private agents can monitor banks more effectively (Hay and Shleifer, 1998). Thus, the private empowerment view holds that corruption of bank officials will be less of a constraint on corporate finance in countries that foster public information disclosure and have well-functioning legal institutions than in countries that rely on powerful official regulations.

d. Independent Supervision/Regulation View: According to Beck et al (2003), this theory holds that creating an official regulatory agency that is independent of the government with regulators that have the right incentives for social welfare, will indeed overcome the problems of poor allocation of bank credit, while at the same time retaining the benefits of ameliorating information asymmetry, agency issues and monitoring for the private agents.

The anchor theories for this paper are the Regulatory power view and the independent regulation view. These theories were derived from Stigliz (1981), Becker (1968), Becker and Stigler (1974) and Beck et al (2003). The bottom line of views emanating from both theories holds that strong official regulation of banks will improve their corporate governance and establishment of an official regulatory agency that is independent of the government with the right incentives will indeed overcome the problems of poor allocation of bank credit while at the same time addressing the problems of information asymmetry. They (theories) contend that private agents frequently lack the incentive and capabilities to monitor powerful banks. In the same vein, they assume that government through its agencies has both the expertise and incentives to ameliorate market imperfections and improve the governance of banks. When information costs, transaction costs and government policies interfere with the incentives and abilities of private agents to monitor banks, strong regulation of banks can improve the corporate governance of banks. According to Stiglitz (1981), "Information is imperfect and obtaining information can be costly". He further noted that there are information asymmetries, and that the extent of information asymmetry is affected by the

actions of firms and individuals. In every market, the sellers usually have more knowledge about items than the buyer; thus, the buyer takes a risk buying the item. In line with this reasoning, Kemei and Kerongo (2014) attributed high non-performing loans in banks to lack of information.

The theory further demonstrated how difficult, if not impossible, it is for deposit money banks to differentiate between good and bad customers. As typical with developing countries, there is no proper and reliable record and data about Nigerians. This makes it extremely difficult to know the history of Nigerians; which translates to information asymmetry and this has countless number of times led to deposit money banks extending loans to those who they should not and deny those who they should have lent to. The end result is having a constant increase in the value of non-performing loans across the length and breadth of the Nigerian banking system.

The contention in some cases is that Central Banks already have the key responsibility of monetary policy and that adding the extra job of bank regulation/supervision may overstretch their job. There is also the concern that if Central Banks also supervise bank activities, there could develop a conflict of interest between the execution of both jobs, especially during a downturn where the Central Bank may adopt an overly loose monetary policy to contain adverse effects on bank credit quality and profitability. This puts credibility at risk (Goodhart and Schoenmaker, 1995). The converse argument is that there are significant information and operational advantages of leaving the job of regulating and supervising banks within the umbrella of the Central Bank, making it easier for the Central Bank to observe anomalies and react in a timely way to curb possible problems.

Related Empirical Literature Review

Eniafe (2020) investigated the impact of non-performing loans on money deposit banks' performance in Nigeria between the period 2006 to 2017. The study employed secondary data collected in times series across the banking sector which was transformed into panel data. Therefore, data on loan to deposit ratio, non-performing loan, return on equity was collected from annual publication of Nigeria Deposit Insurance Corporation (NDIC) and statistical bulletin of the Central Bank of Nigeria (CBN). Descriptive, correlation, co-integration and ECM techniques were adopted for data analysis. Accordingly, it was revealed that non-performing loans have impacted on deposit money banks' performance in Nigeria within the period of study, whereas, the impact of interest margin and deposit to loan varied.

Atoi (2018) examined the effects of non-performing loan on the stability of Nigerian banks with national and international operational licenses from 2014 : Q2 to 2017 : Q2. A restricted dynamic GMM was employed to estimate the macroeconomic and bank specific drivers of non-performing loan (NPL) for each licensed category. Z-score was constructed to proxy banking stability and its response to shocks was examined in a panel vector autoregressive framework. The results revealed that drivers of NPLs vary across the two categories of banks, but weighted average lending rate is a vital macroeconomic driver of NPLs for both. The results also confirmed the moral hazard hypothesis and risk return tradeoff of efficient market theory. Furthermore, international banks withstand NPLs shocks in the long run, despite temporary flux in the short horizon, while the stability of national banks is susceptible to NPLs shocks in the long run.

Eli-Maude, Abdul-Rahman and Ibrahim (2017) examined the determinants of non-performing loans in Nigeria's deposit money bank with emphasis on bank specific and macroeconomic

determinants of non-performing loans in these banks for a period of 5 years (2010 to 2014). A sample of 10 banks out of 15 quoted by the Nigerian Stock Exchange (NSE) was considered on a cross sectional basis. The study adopted non-survey research design and secondary data were used, which were generated from the bank's annual reports and accounts, the Central Bank of Nigeria (CBN) and Nigerian Stock Exchange fact book. These generated data were analyzed using descriptive statistics, correlation coefficient and multiple regression techniques. Findings revealed positive significant relationship between non-performing loans and loan to deposit and bank size; whereas a positive insignificant relationship exist between capital adequacy ratio and inflation. Also, return on asset has a negative insignificant relationship with rate of non-performing loans.

Aregawi (2015) examined the causes of non-performing loans and its provision in development banks of Ethiopia. The study sampled 60 firms from both performing and non-performing clients' and 14 employees using primary data collected through questionnaire and unstructured interview. These generated data were analyzed using descriptive and correlation analysis. Findings from the study revealed that demographic characteristics of the clients and employees have significant effects on repayment of loans. It was thus concluded that the causes of non-performing loans are diversion to other businesses, marketing problems, inflation condition, lack of experts on the business due to shortage of supplies to their business and asymmetric between the bank and employees.

Ranjan and Chandra (2013) analyzed the determinants of non-performing loans of commercial banks in India for the period 2000 – 2012 by utilizing panel regression model. The Ordinary Least Square (OLS) technique was used for data analysis. It was revealed that lending rate have positive impact on non-performing loans (NPLs), justifying that the expectation of higher interest rate induced the changes in cost conditions to fuel and further increase non-performing loans. Also, loan to deposit ratio had a negative significant effect on NPLs justifying that relatively more customer friendly banks most likely face lower defaults as borrowers will have the expectation of turning to bank for financial requirements.

Badar and Yasmin (2013) empirically examined the impact of macroeconomic forces on non-performing loans with special emphasis on long and short run dynamics between non-performing loans and macroeconomic variables covering the period 2002 – 2011 for 36 commercial banks in Pakistan. In the study, inflation rate, exchange rate, interest rate, gross domestic product and money supply were the macroeconomic variables considered. They adopted Vector Error Correction models (VECM) techniques in data analysis. They discovered as such that there is a strong negative long-run relationship between inflation rate, exchange rate, interest rate, gross domestic product money supply and non-performing loans in Pakistan.

Ali and Iva (2013) carried out a study on the impact of bank specific factors on non-performing loans in Albanian banking system, while considering interest rate on loans, credit growth, inflation rate, exchange rate and GDP growth as determinants. They utilized OLS regression model for panel data from 2002 to 2012. Their findings revealed a positive association between loan growth and real exchange rate, and negative association between GDP growth rate and non-performing loans. However, the association between interest rate and NPLs is negative but weak, while inflation rate also has insignificant effect on non-performing loans (NPLs).

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Skarica (2013) conducted an empirical study in Central and Eastern European countries on the determinants of NPLs (non-performing loans). Thus, Fixed Effect Model (FEM), seven Central and Eastern European countries were used. The study covered the period 2007 – 2012 while using quarterly time series data for the period. Loan growth, real GDP growth rate, market interest rate, unemployment rate and inflation rate were the determinants of NPLs considered in the study. Findings revealed that GDP growth rate and unemployment rate have statistically significant negative association with non-performing loans with justification of rising recession and falling during expansions; while growth has an impact on the levels of NPLs. This shows economic developments have a strong impact on financial stability. The findings also revealed that inflation has positive impact with justification as inflation might affect borrowers' debt servicing capacities.

Tomak (2013) also conducted a study on the determinants of banks' lending behaviour of commercial banks in Turkey. The main objective of the study was to identify the determinants of banks' lending behaviour. The study adopted a simple random sampling technique and a sample of eighteen banks out of twenty-five were used for the study. Data were collected from these banks within the period 2003 – 2012. These data were on size, access to long term funds, interest rates, GDP growth rate and inflation rate. Findings revealed that bank size, access to long term loan and inflation rate have significant positive impact on banks' lending behaviour but interest rates and GDP were statistically insignificant.

Djiogap and Ngomsi (2012) investigated the determinants of bank long-term loan in the Central African Economic and Monetary Community (CEMAC) while using panel data of 35 commercial banks from six African countries over the period 2001 – 2010. They also used fixed effect model to specify the impact of bank size, GDP growth rate and capital adequacy ratio on non-performing loans (NPLs). The study revealed that capital adequacy ratio (CAR) has a negative significant impact on the level of non-performing loans. Also, inflation variable was observed to be statistically insignificant in explaining the total business loans ratios of banks.

In the literature, there is an avalanche of studies on regulatory policies of various central banks in the world. However, what is lacking is the impact or influence of such regulatory policies on the volume of non-performing loans in general and in Nigeria in Particular. As such, this work is amongst the first of its kind, when it comes to CBN regulatory policies and NPLs in Nigeria. Secondly, this work is a deviation from other studies on regulatory policies of the apex bank, as emphasis in this work is on monetary policy segment of regulatory policies.

Methods of Study

In order to achieve the objectives of the study, the quasi experimental research design was adopted. In line with the research design, only secondary data were used in the study. These data were on monetary policy rate, cash reserve ratio, liquidity ratio, maximum lending rate, loan-to-deposit ratio and non-performing loans. These data were collected from the online statistical bulletin of the Central Bank of Nigeria and the World Bank publications. The method of data analysis adopted in this study was the vector error correction mechanism (VECM) and the pairwise granger causality tests.

Model Specification

The model specification of the study in a functional notation is as shown below;
NPL = f (MPR, LDR, LQR)
In econometrics term, the above functional model can be expressed as:
NPL = $b_o + b_{1t}MPR_t + b_{2t}LDR_t + b_{3t}LQR_t + \mu_t$

Where;
NPL = Non-Performing Loans
MPR = Monetary Policy Rate
LGR = Liquidity Ratio
LDR = Loan-to-Deposit Ratio
b_o = Constant term
$b_1 - b_3$ = Regression Coefficient

Data Estimations and Results

Unit Root test output on Liquidity Ratio
ull Hypothesis: D(LQR) has a unit root
xogenous: Constant
ag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
ugmented Dickey-Fuller test statistic		-6.686192	0.0000
est critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

MacKinnon (1996) one-sided p-values.

Unit Root test output on Loan-to-Ratio
ull Hypothesis: D(LDR) has a unit root
xogenous: Constant
ag Length: 3 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
ugmented Dickey-Fuller test statistic		-4.576521	0.0012
est critical values:	1% level	-3.699871	
	5% level	-2.976263	
	10% level	-2.627420	

MacKinnon (1996) one-sided p-values.

Unit Root test output on Non-performing Loans
ull Hypothesis: D(NPL) has a unit root
xogenous: Constant

ag Length: 2 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
ugmented Dickey-Fuller test statistic		-4.356273	0.0020
est critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

MacKinnon (1996) one-sided p-values.

Sources: e-views output, 2022

Unit Root test output on Monetary policy rate

ull Hypothesis: D(MPR) has a unit root
xogenous: Constant
ag Length: 0 (Automatic - based on AIC, maxlag=7)

		t-Statistic	Prob.*
ugmented Dickey-Fuller test statistic		-8.038562	0.0000
est critical values:	1% level	-3.670170	
	5% level	-2.963972	
		-2.621007	

MacKinnon (1996) one-sided p-values.

Sources: e-views output, 2022

Summary of Augmented Dickey Fuller Unit Root Test Results

Variables	**ADF t-statistic**	**ADF critical values**		**Prob.**	**Remark**
LQR		1% level	-3.670170	0.0000	**Stationary @ 1(1)**
		5% level	-2.963972		
	6.686192	10% level	-2.621007		
LDR		1% level	-3.699871	0.0012	**Stationary @ 1(1)**
		5% level	-2.976263		
	4.576521	10% level	- 2.627420		
NPL		1% level	-3.689194	0.0020	**Stationary @ 1(1)**
		5% level	-2.971853		
	4.356273	10% level	-2.625121		
MPR		1% level	-3.670170	0.0000	**Stationary @ 1(1)**
		5% level	-2.963972		
	8.038562	10% level	-2.621007		

Source: e-views output, 2022

The extracts contained in the above table showed that all the parameters of the study were stationary at first differencing 1(1). This makes it more preferable for the use of the error correction mechanism for estimations.

Johansen Co-integration Test

ate: 09/16/22 Time: 01:47
ample (adjusted): 9 32
cluded observations: 24 after adjustments
rend assumption: Linear deterministic trend
eries: LDR LQR MPR NPL
ags interval (in first differences): 1 to 2

nrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.866210	82.47535	47.85613	0.0000
At most 1 *	0.618942	34.19981	29.79707	0.0146
At most 2	0.297731	11.04453	15.49471	0.2088
At most 3	0.101249	2.561991	3.841466	0.1095

race test indicates 2 cointegrating eqn(s) at the 0.05 level
denotes rejection of the hypothesis at the 0.05 level
*MacKinnon-Haug-Michelis (1999) p-values

nrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.866210	48.27555	27.58434	0.0000
At most 1 *	0.618942	23.15528	21.13162	0.0256
At most 2	0.297731	8.482539	14.26460	0.3318
At most 3	0.101249	2.561991	3.841466	0.1095

lax-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
denotes rejection of the hypothesis at the 0.05 level
*MacKinnon-Haug-Michelis (1999) p-values

Source: e-views output 2022.

The Johansen co-integration test showed that at 0.05 level of significance, the trace test and the max-eigenvalue test indicated 2 cointegrating equations each. The result led to the rejection of the null hypothesis (H0) of no long run relationship between CBN regulatory policies and the incidence of non-performing loans in the Nigerian banking industry.

Vector Error Correction Mechanism

ector Error Correction Estimates

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Error Correction:	D(NPL)
CointEq1	-0.464317
	(3.525117)
	[-1.33089]

Source: e-views output 2022.

In order to ascertain the speed of adjustment of short-term disequilibrium in the long-run having established the existence of long run relationship, the vector error correction mechanism was extracted. The result revealed that VECM was signed with negative coefficient of 0.464317 and t-statistic of -1.33089 which was observed to be insignificant. Thus, CBN regulatory policies is capable of adjusting or correcting insignificantly, any short-term disequilibrium in banks' non-performing loans at the speed of 46% per annum in the long run.

Granger Causality Test Results

airwise Granger Causality Tests
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ull Hypothesis:	Obs	-Statistic	Prob.
QR does not Granger Cause LDR	30	0.76769	0.4747
DR does not Granger Cause LQR		1.23997	0.3066
PR does not Granger Cause LDR	30	0.91184	0.4147
DR does not Granger Cause MPR		1.46454	0.2503
PL does not Granger Cause LDR	25	0.06182	0.9402
DR does not Granger Cause NPL		3.56444	0.0474
PR does not Granger Cause LQR	30	2.36730	0.1144
QR does not Granger Cause MPR		0.46541	0.6332
PL does not Granger Cause LQR	25	0.79769	0.4642
QR does not Granger Cause NPL		0.15772	0.8551
PL does not Granger Cause MPR	25	0.55636	0.5819
PR does not Granger Cause NPL		1.16486	0.3323

Source: e-views output 2022.

The pairwise granger causality test was estimated to establish causality between CBN regulatory policies and banks' non-performing loans in Nigeria as shown above. It was observed that loan-to-deposit ratio (LDR) granger causes non-performing loans (npl). In other words, a uni-directional relationship exists between loan-to-deposit ratio and non-performing loans in the Nigerian banking industry, while other parameters of the study indicated non.

Heteroskedasticity Test

eteroskedasticity Test: Breusch-Pagan-Godfrey

·statistic	1.574228	Prob. F(3,23)	0.2227
bs*R-squared	4.599571	Prob. Chi-Square(3)	0.2036
:aled explained SS	3.121688	Prob. Chi-Square(3)	0.3732

Source: e-views output 2022.

The Breusch-Pagan-Godfrey Heteroskedasticity Test was estimated to ascertain whether the variances of the residuals are constant overtime. The result above indicated that the variances of the models are constant and not heteroscedastic as the probability values of the F-statistic, obs R-squared and Scaled explained SS were all above 0.05 level of significance.

Interpretation of Results and Policy Implications

The analysis on this work started with the test for stationarity using the Augmented Dickey Fuller (ADF) unit root test. The essence of which was to ascertain whether times series data used is non-stationary and possesses a unit root so as to avoid estimations with data that is spurious. The ADF unit root test result showed that the parameters or residuals of the study (monetary policy rate (mpr), loan-to-deposit ratio (ldr) liquidity ratio and deposit money banks non-performing loans in Nigeria (npl)), were stationary at first differencing 1(1), thereby justifies the use of the Johansen co-integration test and vector error mechanism (VECM) employed in the study.

The co-integration test outcome as indicated by the trace and max-eigenvalue tests at 0.05 level of significance revealed the existence of long run relationship between Central Bank of Nigeria Regulatory Policies and Non-performing loans in the Nigerian Banking Industry. Both tests (trace and max-eigenvalue) revealed two (2) cointegrating equation each. In other words, regulatory policies by the apex body influences banks non-performing loans in Nigeria. The vector error correction mechanism (VECM) was used to estimate the speed of adjustment of short-term disequilibrium in the long-run and as well establish causality. Analysis from the estimate showed that short run disequilibrium can be corrected at the speed of about 46%. The result of the t-static -1.33089 confirmed the result to be insignificant. Hence, it was inferred that CBN regulatory policies though exerts an influence on banks' non-performing loans in Nigeria but has an insignificant impact on it. This no doubt can be attributed to weak legal and regulatory policies in the system and as well the over reliance of most regulatory tools on market forces to transmit their effect. No wonder the International Monetary Fund has raised questions over the rising non-performing loans (NPLs) in Nigerian Banks and has further noted the 3% increase in NPLs in 2017 evidenced in the Central Bank of Nigeria (CBN) Financial Stability Report of the first quarter of 2017. This they viewed as worrisome development. The findings herein, further buttresses

observations made by Zikora (2019) that Deposit Money Banks (DMB) in Nigeria are emboldened by regulatory inaction and indifferences. This incidence now exposes banks to exploitative practices such as illegal increases in lending rates, little or no adherence to credit administration and management policies, weak or poor corporate governance policies, insider abuses or activities etc., which in turn directly or indirectly leads rising non-performing loans in Nigerian banks. For instance, when a credit facility is granted to a customer, the lender (the bank) fixes and implements the negotiated interest rate based on prevailing market rate approved by the apex regulatory body. It is expected that any change in the interest rate would be brought to the notice of the borrower except otherwise agreed. However, it is on literature that in Nigeria the lending rate is rarely negotiated and, when it is reviewed upwards by the Central Bank of Nigeria (CBN), the average bank automatically applies the new rate to the outstanding loan without notifying the borrower. Ironically, the same bank does not communicate the fact of any downward review of the lending rate from its mostly uninformed customer, thereby illegally subjecting the customer to a higher interest regime. This inevitably leads to a high tendency of default in repayment. This is usually the case where regulatory policies are only meant to 'bark' and not 'bite'. In the same, policies of the apex body tend to favour immovable assets as collaterals against movable assets in the credit administration process. Such policies further aggravate the rising cases of non-performing loans in Nigerian banks.

Interestingly in the study, it was observed among all the parameters of the study, only loan-to-deposit ratio was effective in addressing the challenges of non-performing loans in the Nigerian banking industry as revealed by the pairwise granger causality test. These underscores the need for periodic evaluation of regulatory policies of the Central Bank of Nigeria.

Conclusion and Recommendations

This paper was an examination of the nexus between Central Bank of Nigeria Regulatory Policies and Non-Performing Loans in the Nigerian Banking Industry. The time series data used for analysis covered the periods 1990 to 2021 and was obtained from the CBN statistical bulletin and World Bank publications. Findings from the data estimations using the VECM revealed that CBN regulatory policies although influences non-performing loans by way of long run relationship has an insignificant effect on non-performing loans in Nigerian banks. Notably, data estimations further revealed that only loan-to-deposit ratio granger causes banks' non-performing loans in Nigeria. Hence, it was concluded that Central Bank of Nigeria regulatory policies have an insignificant impact on banks' non-performing loans in Nigeria. The findings herein to an extent was in agreement with the submissions of Eniafe (2020) and Djiogap and Ngomsi (2012) but was at variance with that of Ranjan and Chandra (2013). To this end, the following recommendations were put forth:

-. In order to effectively manage and reduce the incidents of non-performing loans in Nigerian banks, the apex regulatory body (CBN) should work towards improving on the effectiveness of its regulatory policies especially when it comes to the use of monetary policy instruments in addressing the problems of non-performing loans in Nigerian banks. Stakeholders should from time to time carryout period reviews of monetary policy instruments with a view to strengthening monetary policy tools that rely on market forces to transmit their effects.

-. Regulatory policies geared towards the use of loan-to-deposit-ratio in addressing the problems of non-performing loans in the Nigerian banking industry should be sustained and be made more effective with periodic reviews. This tool has proven to be effective in the administration of the incidence of banks' non-performing loans in Nigeria.

-. There is need for CBN to strengthen its on-site supervisory functions so as to ensure strict compliance regulatory policy implementations. This can come by way of continuously examining internal control measures of banks in the area of credit administration and corporate governance.

-. Regulatory policies that encourages the acceptance of movable and liquid assets as collateral in course of bank lending should be evolved so that when the credit facility goes bad, that assets can be easily realized. This will help reduce the rising cases of non-performing loans.

-. Ensuring economic stabilization by way of controlling price volatility will go a long way in reducing incidents of non-performing loans in Nigeria. this is because such a move will make it easier of borrowers of funds to adequate manage their businesses and make plans for repayments as at when due.

-. The government too it not left out as high cost of operating a business concern in Nigeria cannot be completely exonerated from the causes of non-performing loans in a developing country such as Nigeria. As such, there is urgent need for the government to live up to its billing by providing all necessary amenities a business needs to operate effectively.

-. With the humongous loss businesses experienced as a result of covid-19, it imperative to advise that business operators to cultivate the habit of insuring their business against losses in order not to default in loan repayments as a result of such unforeseen events.

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Table 4.1: Data Set on Non-Performing Loans (NPL), Monetary Policy Rate (MPR), Loan-to-Deposit Ratio (LDR), and Liquidity Ratio (LQR) (1990 – 2021).

Year(s)	NPL	MPR	LDR	LQR
	%	%	%	%
1990	0	18.50	66.50	44.3
1991	0	15.50	59.80	38.6
1992	0	17.50	55.20	29.1
1993	0	26.00	42.90	42.2
1994	0	13.50	60.90	48.5
1995	17.72	13.50	73.30	33.1
1996	22.19	13.50	72.90	43.1
1997	22.99	13.50	76.60	40.2
1998	19.4	13.50	74.40	46.8
1999	25.6	18.00	54.60	61.0
2000	22.6	14.00	51.00	64.1
2001	19.7	20.50	65.63	52.9
2002	21.4	16.50	62.78	52.5
2003	20.5	15.00	61.85	50.9
2004	21.6	15.00	68.63	50.5
2005	21.6	13.00	70.80	50.2
2006	9.3	10.00	96.82	81.42
2007	9.5	9.50	83.26	41.56
2008	7.2	9.75	86.91	37.72
2009	37.3	6.00	84.30	26.39
2010	20.14	6.25	52.29	27.39
2011	5.77	12.00	44.77	42.02
2012	3.71	12.00	42.31	49.72
2013	3.39	12.00	37.56	46.23
2014	2.96	13.00	63.61	38.27
2015	4.86	11.00	69.58	42.35
2016	12.82	14.00	79.95	45.95
2017	14.81	14.00	72.84	54.79
2018	11.68	14.00	60.16	65.04
2019	6.06	13.50	58.73	104.20
2020	6.03	11.50	58.35	65.45
2021	4.94	11.50	59.12	54.88

Sources: CBN Statistical Bulletin (2021).
World Bank Publications (2021)