

Regulation, Financial Development, Financial Soundness and Banks Performance in Nigeria

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Abstract This study empirically examines the impact of regulation, financial Development and financial soundness on bank performance in Nigeria for the period 1985-2015. The study uses two regulatory indicators (cash reserve ratio and monetary policy rate) as measures of regulation; the ratio of broad money supply to Gross Domestic Product (M2/GDP) for financial development; bank non-performing loans to total gross loans for financial soundness while bank performance was proxy by earnings of bank after tax. It adopted a multivariate OLS analysis for the estimation process, co-integration analysis for long-run equilibrium relationship and the associated error correction model to determine the short-run impact of the variables. The findings of the study are that cash reserve ratio, monetary policy rate, financial developments and financial soundness largely impact on bank performance both in the short run and long-run. It is recommends that regulation and supervision of banks should be strengthened in other to improve the performance of banks in Nigeria. Also, we recommend that the ongoing reforms in the banking system should be intensified so as to ensure safe, sound and stable banking system that is a sine qua non for long run financial performance of banks in Nigeria.

Keywords: regulation, financial development, financial soundness, performance

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1. Introduction

Banking regulation is defined as a body of specific rules or agreed behaviour, either imposed by the government or external agency, or self-imposed by explicit or implied agreement within the industry that constrains the ability of the industry to achieve a defined goal and/or act prudently [1]. The regulation of banks is in the form of laying down certain operating rules that banks must follow. These rules encompass virtually every aspect of banking, such as whether a new bank may be opened in a particular locality, the types of investment a bank can venture into with depositors' money and the types of business a bank may engage in. Banking regulation has developed over the years in response to the desire for a sound banking system [2]. Worldwide, the banking business is highly regulated; this is because of the pivotal position the financial industry occupies in most economies. Thus, for the industry to be efficient, it must be regulated and supervised in view of the failure of the market system to recognize social rationality and the tendency for market participants to take undue risks which could impair the stability and solvency of their institutions. Regulation and supervision of banks remain an integral part of the mechanism for ensuring safe and sound banking practice [3,4].

As banks operate in one of the most heavily regulated environments, research in banking regulation and their effect on bank performance has attracted both theoretical and empirical interest [4,5]. Most of these earlier studies did not focus on Nigeria. Those on Nigeria [3,6] only concentrated on the effect of regulation on bank performance, neglecting the role of financial development.

A critical analysis of financial soundness indicators enables policy makers and regulators to easily identify the strengths and vulnerability of a financial system so that they can take preventive actions to avert crisis. The financial soundness indicators consist of two sets which include core and encouraged indicators. The core indicators are used to determine the potential vulnerability of deposit-taking institutions. They include capital adequacy, asset quality, earnings and profitability, liquidity and sensitivity to market risks. The encouraged indicators as stated by Asian Development Bank [7] are collected on a country by country basis to examine the soundness of other financial sectors. Furthermore, the capital adequacy is used to examine sufficiency of capital to support possible asset losses, measured by risk weighted assets or non-performing loans. Asset quality ratios give a picture of the depositors' asset composition and quality. Earnings and profitability ratios assess the efficiency of deposit talkers in using their assets (return on assets) and capital (return on equity) and ability to generate interest income (interest margin to gross income) and minimize administrative

costs (non-interest expenses to gross income). Liquidity indicators describes the deposit taker's ability to meet sudden demand for cash while sensitivity to market risk measures the ability of capital to cushion exchange rate volatility. Empirical studies as regard the impact of financial soundness on banks' profitability in the Nigeria Banking sector has not gained ascendancy in Nigeria, hence this study.

Thus, the objective of this paper therefore is to examine the influence of regulation, financial development and financial soundness on performance of Nigerian banks.

2. Literature Review

2.1. Theoretical Framework

This study employs the economic theory of regulation as the theoretical base. The economic theory of regulation postulates that regulation results from the desire of government to eliminate or correct market failures and offers two complementary rationales for regulating financial institutions viz; Altruistic public theories and Agency-cost theory. Altruistic public theories treat rules as governmental instruments for increasing fairness and efficiency across the society as a whole. Agency cost theory recognizes that incentive conflicts and coordination problems arise in multi-party relationships and that regulation introduces opportunities to impose rules that enhance the welfare of one sector of society at the expense of another [8]. Each rationale sets different goals and assigns responsibility for choosing and adjusting rules differently. Altruistic assign regulation to governmental entities that search for market failures and correct them. It is taken for granted that we may rely on a well-intentioned government to use its discretion and choose actions for the common good [9]. Agency-cost theories portray regulation as a way to raise the quality of financial services by improving incentives to perform contractual obligations in stressful situations. These private benefits theories count on self-interested parties to spot market failures and correct them by opening more markets. In financial services, markets for regulatory service create outside discipline that controls and coordinates industry behavior. Institutions benefit from regulation that enhances customer confidence, increases the convenience of customer transactions or creates cartel profit and improve performance. Agency-cost theories emphasize the need to reconcile conflicts between the interests of institutions, customers, regulators and taxpayers [10].

2.2. Empirical Review

Different studies on bank regulation provided the outcomes that relate bank regulation to performance. Empirical studies have showed different outcomes of the relationship between bank regulation and performance. For instance, Berger [4] found that US banks with relatively high capital adequacy were more profitable than other banks with lower capital ratio.

Barth, Caprio and Levine [5] tested bank regulation in a cross-country evaluation of banks by looking at the

various regulatory indicators and variables that can possibly affect bank performance in different countries.

Iyade [3] examine the impact of regulation and supervision on the activities of Nigerian banks with emphasis on the role of the Central Bank of Nigeria and The Nigerian Deposit Insurance Corporation. He evaluated the roles and contributions of CBN and NDIC to the Nigerian banking sector. Extensive field survey and library research was carried out and data collected were subjected to thorough analysis. The analysis showed that the supervisory and regulatory framework of the Central Bank of Nigeria and the Nigerian Deposit Insurance Corporation are not sufficient to guarantee effective banking practices in Nigeria.

Kremmling [11] sought to find out if regulating financial institutions during financial crisis will influence bank performance by taking into account, deposit insurance schemes, capital regulation and activity restrictions. The results showed that capital requirements negatively influenced the level and change in loan loss provisions during financial crisis and as such, banks with high or low capital ratios still succumbed to bank runs during financial crisis. Activity restrictions raised the risk profile of banks severely during financial crisis; this is inevitable as banks with numerous activities from non-financial firms will try to gain returns from loan provisions which will be difficult to receive during financial crisis. Thus, Kremmling [11] asserted that banks complexity can have adverse effect on regulation, which directly affects performance and stability.

Babihuga [12] examined the relationship between selected macroeconomic variables and financial indicators for 96 countries covering the period 1998 – 2005. The study covers key macroeconomic indicators and capital adequacy, asset quality and profitability. The study revealed a negative relationship with capital adequacy and non-performing loans and a positive relationship with profitability.

Cihak and Schaeck (2007) examined how financial soundness indicators can provide an accurate signal for the profitability of observing systemic banking vulnerabilities. They used a sample of 100 countries, the study reveals that an high capital of risk weighted assets and a high return on equity lowers the probability of a systemic banking crisis occurring. It was revealed that an increase in non-performing loans to total loans is indicative of an impending banking turmoil. A low capital adequacy ratio and a high ratio of non-performing loans to total loans decrease the survival time of the banking system but the effect is not statistically significant [13].

Berger and Deyoung [14] investigated the relationship between loan quality, cost efficiency and bank capital. They reported a negative relationship between cost efficiency and non-performing loans.

3. Methodology

The study uses data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin and Nigerian Deposits Insurance Corporation (NDIC) 2015 official reports. The population of the study is the entire banking sector while

the sample period is 1985 - 2015. The multivariate regression analysis was used to analyze the data. However, the multivariate analysis is extended to incorporate error correction mechanism. Other tests like Johansen multivariate co-integration test and Augmented Dickey-Fuller (ADF) unit root test are utilized in the study. The error correction mechanism (ECM) is employed to assess the short run effects while Johansen co-integrating estimation technique is employed to ascertain the existence of long run relationship between regulatory and financial development indicators (cash reserve ratio, monetary policy rate and M2/GDP) and return on equity (our proxy for banking sector performance). The Augmented Dickey-Fuller (ADF) unit root test is used to examine the properties of the time series variables and to determine the order of integration. These tests were needed to ensure that reliable and valid measures of the influences of regulatory and financial development indicators on performance of banks in Nigeria are accomplished.

3.1. Model Specification

Specifically, the model employed in this study is a modification of the models of Osayande and Imafidon [6]. The variables of our model are bank performance; cash reserve ratio; monetary policy rate and financial development (proxy by M2/GDP which is the ratio of broad money supply to Gross Domestic Product). The model proxy bank performance with return on equity (ROE) as a function of cash reserve ratio, monetary policy rate and financial development representing the exogenous variables. The model is specified as follows:

$$BPR = f(CRR, MPR, FD, FS). \quad (1)$$

The econometric form of equation 1 is represented as:

$$BPR = \beta_0 + \beta_1 CRR + \beta_2 MPR + \beta_3 FD + \beta_4 FS + \mu \quad (2)$$

Where;

BPR = Bank performance (proxy with aggregate banking sector return on equity)

CRR= Cash reserve ratio

MPR = Monetary policy rate

FD= Financial development (Proxy by M2/GDP).where M2 is broad money supply.

FS = Financial soundness (Proxy by Bank non-performing loans to total gross loans)

μ =Stochastic Disturbance (Error Term)

β_0 = Intercept of relationship in the model/constant

$\beta_1 - \beta_4$ = coefficients of each of the independent variables.

A priori expectations of the coefficient of the model:
 $\beta_1 - \beta_4 > 0$.

4. Analysis of Results

4.1. Unit Root Test

We begin the econometric analysis by investigating non-stationarity (the presence of unit roots) in all variables. Generally, unit root test involves the test of stationarity for variables used in regression analysis. As Gordon, [15] puts it, the importance of stationarity of time series used in regression bothers on the fact that, it is not possible to generalize a non-stationary time series to other time periods apart from the present. This makes forecasting based on such time series to be of little practical value. Moreover, regression of a non-stationary time series on another non-stationary time series may produce spurious result.

The integration orders of variables for this study are examined by Augmented Dickey-Fuller (ADF) unit root test. From the ADF unit root test shown in Table A below, it can be seen that all the variables are not stationary at 5% level (except ROE and CRR) but at first difference. For consistency sake all the series were considered as integrated of order one and taken at their first difference in the analysis.

The stationarity test results above showed that at first difference, the dependent variable and explanatory variables were stationary at 5% significant level. This is so given that ADF test statistic is greater than test critical value at 5% level. It simply indicates there is no likelihood of obtaining spurious regression result.

Table A. Unit root test results

Variables	ADF statistic value	Test critical value at 5%	Meaning
ROE	-9.768303	-3.632896	Stationary at first difference
FD	-6.521042	-3.574244	Stationary at first difference
CRR	-6.846031	-3.574244	Stationary at first difference
MPR	-7.709322	-3.632896	Stationary at first difference
FS	-5.439121	-3.580623	Stationary at first difference

Source: Computed from E-view 8.0 (2017).

4.2. Co-integration Test

According to the unit root test result all the series have same integrating level, that is, the first difference, making co-integration applicable on this analysis. Thus, the Johansen co-integration technique is employed in ascertaining the number of long run equilibrium relationships or co-integrating vectors among the variables and how regulation, financial development and financial soundness have affected performance of banks in Nigeria. In

econometric analysis, when series are found to be integrated of the same order as in this study, it implies that an equilibrium relationship exists among the variables. Table B below shows the result of the trace and maximum eigen-value statistics, which indicates that 1 co-integrating equation exists among the variables at 5% significance level, which suggests the existence of long run stable relationships among the variable employed and gives justification for the application of the Error Correction Mechanism (ECM) in this empirical analysis.

Table B. Unrestricted Co-integration rank test (Trace)

Null hypothesis	Trace statistics	Critical value at 5%	Maximum Eigenvalue	Critical values at 5%
R = 0	69.813	69.898	31.876	33.876
R ≤ 1	38.280	47.856	20.457	27.584
R ≤ 2	17.823	29.797	13.664	21.131
R ≤ 3	4.159	15.494	4.156	14.264
R ≤ 4	0.002	3.841	0.002	3.841

Source: Computed from E-view 8.0 (2017).

The trace statistic values compared against the critical values indicates that there are at least 1 co-integrating vector. The maximum Eigen value statistics points out that there is one co-integrating equations. Usually, the maximum Eigen value is used as a basis of establishing the long-run cointegration between variables. Therefore, from the result, it can be arrived at that there is a long-run relationship between financial regulation, financial development, financial soundness and banking sector performance in Nigeria.

The error correction estimates in the above table reveals that the error correction term or speed of adjustment coefficient for the equation is properly signed with the expected negative sign. It suggests that there is a tendency by the model to correct and quickly move towards the equilibrium path following any occurrence of disequilibrium in each period. This portends that meaningful error correction is taking place. Meanwhile, the ECM equation accounts for the correction of about 39.5% of the error generated in the past period. Similarly, from the value of the t-statistic compared with the p-value, the error term's coefficient is statistically significant. This clearly underscores the fact that short – run dynamic relationship exists between financial regulation, financial development, financial soundness and banking sector performance in Nigeria.

Table C. The parsimonious error correction model (Dependent variable: ROE)

Variables	Coefficient	Standard error	t-statistic	Prob
D ROE(-4)	0.619	0.275	2.247	0.040
C	65561.26	43687.73	1.5006	0.154
DFD(-3)	-20338.45	8932.706	-2.276	0.037
DFD(-3)	18315.62	8366.986	2.189	0.044
DCRR	-21584.70	30422.58	-0.709	0.488
DCRR(-2)	-23457.11	30113.32	-0.778961	0.448
DMPR	-8282.565	13529.37	-0.612192	0.549
DMPR(-1)	14292.11	13244.36	1.079109	0.297
DFS	795.83	4817.811	0.165185	0.871
DFS(-1)	4723.737	5093.27	0.927445	0.368
ECM(-1)	-0.395874	0.13535	-2.924732	0.010
	R-squared = 0.643 Adjusted R-squared = 0.535 F-statistic = 2.704		Prob (f-statistic) = 0.040 Durbin Watson statistic = 1.57	

Source: Computed from E-view 8.0 (2017).

After adjusting for the degree of freedom, the R² bar points out that all the explanatory variables were able to explain short – run systematic variation in banking sector performance with about 50.5%; leaving the other percentage unexplained because of the stochastic error term acting as a surrogate in the model. The f-statistic as

can be observed from the regression table above is statistically significant at 5% level. This indeed reveals the goodness of fit of the model. The individual coefficient of the explanatory variables shows that four period lag of return on equity, DROE (-4) positively itself and is statistically significant at 5% level. The current value of financial sector development (DFD) negatively influences banking sector performance and is statistically significant at 5% level while the three period lag of financial sector development DFD (-3) positively influences banking sector performance and is statistically significant at 5% level. Both the current value of cash reserve ratio and its two period lag reduce the performance of the banking sector and were not statistically significant at 5% levels. While the current value of MPR negatively affects banking sector performance, its one period lag positively influences banking sector performance and were not statistically significant at 5% levels. The current value of financial soundness (DFS) and the one period lag (DFS (-1)) were observed to increase the banking sector performance (ROE) in the short – run, though were not statistically significant at the 5% levels. The Durbin Watson statistic value of 1.57 is approximately 2, and it shows the absence of serial autocorrelation in the result. In a nutshell, the study finding is that financial regulation, financial sector development and financial soundness have short – run relationship with banking sector performance in Nigeria. The results show that financial regulation has negative impact on banking sector financial performance in the short- run.

4.3. Long Run Analysis

In order to capture the long run relationship between financial regulation, financial development and financial soundness indicators (the explanatory variables), we present and analyze the estimates from the ordinary least square multivariate regression Model.

Table D. The Ordinary Least Square Multivariate Model Regression Results (Dependent Variable: ROE)

Variables	Coefficient	Std-Error	t-ratio	Prob.
C	8175396	37280928	0.219292	0.8284
FD	-10498.13	15745.06	-0.666757	0.5119
CRR	-107913.20	50895.45	-2.120293	0.0455
MPR	5638.765	27133.90	0.207813	0.8373
FS	5494.878	9805.887	0.560365	0.5809
R-squared	0.726776			
Adjusted R-squared	0.664680			
F-statistic	11.70400			
Prob (F- statistic)	0.000013			

Source: Computed from E-view 8.0 (2017).

The results as presented in the table above, show a robust adjusted R-square of about 72 percent, indicating that about 72 percent change in dependent variable (ROE) is explained by changes in the explanatory variables (CRR, MPR, FD and FS). The f-statistic value of 137.12 is highly significant at the 1 percent level, suggesting that the significant linear relationship between the independent variables and bank performance (return on equity) is

validated. On the basis of the individual statistical significant of the model, as shown by the probability value, the result reveals that in the long run, a unit change in cash reserve ratio and financial sector development decrease banking sector performance (return on equity) and however fail the significant test except CRR. Monetary policy rate and financial soundness enhanced the performance of banking sector in Nigeria and were not statistically significant at 5% levels. The implication of this finding is that cash reserve ratio does not play a key role in the performance of banks in the long run. In terms of the *a priori* sign, cash reserve ratio and financial sector development were negatively signed while monetary policy rate and financial soundness indicators were negatively related. Thus, on the overall, it can be concluded that regulation, financial development and financial soundness have significant impact on bank performance in the long run.

Our empirical result does support the view that regulation and financial development play a key role in bank performance in Nigeria. The significant relationship of cash reserve ratio, monetary policy rate, financial development and financial soundness to bank performance suggests that these variables are critical bank performance propelling factors in Nigeria in both the short run and long run. However, regulation has a negative impact on bank performance in the short run while the impact on performance in the long run can be either negative or positive (i.e variable).

5. Conclusion and Recommendations

This study set out to examine the impact of regulation, financial development and financial soundness on bank performance in Nigeria over the period 1985-2015. The regulatory indicators considered in this study include cash reserve ratio and monetary policy rate, ratio of non-performing loan to total gross loans was used as financial soundness indicators while M2/GDP was used to proxy financial development. The specified model was estimated using multivariate OLS, co-integration analysis and the associated Error correction mechanism (ECM). The result reveals that cash reserve ratio, monetary policy rate and financial development do not have any significant influence on bank performance in both the short run and long-run respectively. In the long run, cash reserve ratio and financial development were positively related to bank performance while monetary policy rate was negatively related. These were however not significant. Based on the empirical findings from our results, the following policy recommendations are advanced:

- Regulatory agencies (Central Bank of Nigeria, NDIC etc) should be given more power to strengthen bank regulation and supervision in Nigeria. They should firm up prudential guidelines and encourage market discipline. They should also put up tighter limits on excessive concentration of

risk. Tightening provisioning requirements on non-performing loans is essential to ensuring that banks remain liquid during economic downturns.

- Constant review of the minimum amount of capital requirement will reduce moral hazards by putting bank owners' money at risk. It can also help banks weather economic slow-downs and make problem banks easier to sell.
- Well trained on-site inspectors are important to ensure that banks comply with regulations. Thus, strong supervision should be put in place to ensure that banks conduct careful credit analyses before administering loans to borrowers in order to avoid bad loans/ non-performing loan.
- Stringent credit policies should be put in place by the regulators of banks in Nigeria in order to reduce toxic assets and enhance the financial soundness of the banks in Nigeria so as to enable them compete meaningfully with their international counterparts.

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