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RESEARCH ARTICLE

INTERACTION BETWEEN FINANCIAL STRUCTURE AND BANK PROFITABILITY IN NIGERIA ARDL ANALYSIS

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ABSTRACT

This study examines the dynamic effects of crude oil price on energy consumption in Nigeria over the period 1981-2017 using the autoregressive distributed lag (ARDL) bounds testing approach. The results are mixed. On the first part, there is a short causal impact between financial sector proxy by industry variables and bank performance. However in the second phase, the results suggest that all the variables are unable influence return on assets except Central Bank asset to GDP in the long run. In general, the results highlight the underdevelopment state of the financial sector in resource mobilisation and allocation and in driving profitability in banking sector. This study has some important policy implication: Banks should lower the level of liquidity to increase the income from loan. In other words, a bank can increase lending to the public thereby reducing cash tied up to liquid asset.

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INTRODUCTION

Performance or profitability is an important factor for the smooth running of any business in today's competitive setting and it has a significant impact on the performance of the institutions, as the financial proficiency of banks can also influence the economic development. So profit determinants provide an opportunity to know which variables is influencing banks profit, management can concentrate their attention on it and make the necessary adjustment. Despite financial sector reforms in Nigeria from SAP of 1986 which led to deregulation of interest and exchange rates and more banks from 45 banks in 1985 to 120 in 1991 and subsequent widespread distress in the financial system in 1988 leading to closure of 34 banks, Poor performance of the banks have continued to manifest into high levels of credit risk, poor asset quality, operational inefficiencies, and higher incidences of non-performing loans and higher levels of liquidity risk and high cost in overall financial intermediation which got to its peak in 2009 and led to dismissal of board and management of eight banks and injection of 620 Billion naira by the CBN to ensure liquidity in the banking system. Also in 2016 the board and management of Skye bank was sacked by the CBN for continuously operating at risk weighted asset far below the regulatory threshold and inability of the bank to recapitalize by June 2016. Poor performance of banks is also blamed on low levels of economic growth as reflected in the high interest rate

spreads, high inflation rates, lower deposit rates to capital investment, high volatility in exchange rate, and low growth in GDP. The growth in profit witnessed by some banks is as a result of the underdeveloped nature of the sector which is unlike what is obtainable in developed financial systems where bank profits and margins are indeed not statistically different across bank-based systems and market-based systems (Demirguc-Kunt & Huizinga 1999, P-380) Therefore, this growth may not continue when the finance sector become highly developed and competition become tough. The introduction of treasury single account, establishment of Federal Government savings bond, and increase in Treasury bill rate as high as 18%, While the Government defended its stand to encourage forex flows, this has led to huge loss of deposit by the commercial Banks, downward price of oil in the international market, high inflation rate, increase in non-performing loans, negative GDP growth rate have affected profitability of banks in Nigeria. Level of profitability attained would depend on the variation of its determinants over time. Empirical literature on the determinants of Bank profitability is extensive, however, little is known about the structure of financial sector. This study will provide policy implications which would assist bank regulatory authorities in Nigeria determine future policies and regulations to be formulated and implemented toward improving financial system. Previous studies in this area looked at it mainly from bank specific determinants of profitability and did not include most important variables like Private credit by deposit money banks to GDP, Deposit money banks as a share of GDP, Central Bank as a share of GDP. Therefore, this study will seek to fill the gap by providing full information about the interaction

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between financial structure and bank profitability in Nigeria. Ardl analysis by examining the untouched ones, and replicating the existing ones in the Nigerian context during the post consolidation period of 2005 to 2016. The remainder of this study is structured as follows: section 2 provides a review of existing empirical literature. Section 3 presents the data and methodology of the study. Section 4 presents and discusses the empirical results. Finally, section 5 offers some concluding remarks on the findings.

Literature Review

Literature Review Early studies on bank profitability were provided by Bourke (1989). Then, in order to identify the determinants of bank performance, numerous empirical studies were held. In recent literature, the determinant of bank profitability is defined as a function of internal and external determinants. Internal determinants are related to bank management and termed micro or bank specific determinants of profitability Akgeyik, Gungör, & Usen, (2007). The external determinants are reflecting economic and legal environment that affects the operation and performance of banks. According to the nature and purpose of each study, different variables could be used. Among the internal determinants, there are bank specific financial ratios representing capital adequacy, cost efficiency, liquidity, asset quality, and size. Economic growth, inflation, market interest rates and ownership are external determinants that affect bank profitability. In literature, some empirical studies on the bank profitability have focused on a specific country, while others have concentrated on a panel of countries. Also a strand of literature focused on bank specific variables or macroeconomic determinants of bank performance. For example, the studies aimed at explaining bank profitability include Almazari (2012), Alkhatib and Harsheh (2012), Makkar and Singh (2013), Poposka and Trpkoski (2013), Dawood (2014), Gharaibeh (2015), Lelissa (2014), Merin (2016), Shuremo (2016), Owoputi, Kayode, and Adeyefa (2014), Almazari (2012) attempted to measure the financial performance of the Jordanian Arab commercial bank for the period 2000-2009. The results indicated that the financial performance of Arab Bank was relatively steady and reflected minimal volatility in the return on equity. Net profit margin and total asset turnover exhibited relative stability for the period from 2001 to 2009. The equity multiplier also revealed stability for the period from 2001-2005 and the ratios declined from 2006-2009 which indicated that the Arab bank had less financial leverage in the recent years, which means the bank relied less on debt to finance its assets.

Alkhatib and Harsheh (2012) empirically examined the financial performance of five Palestinian commercial banks listed on Palestine securities exchange. Financial performance was measured by using three indicators; Internal-based performance measured by Return on Assets, Market-based performance measured by Tobin's Q model (Price/ Book value of Equity) and Economic-based performance measured by Economic Value added. The study used the correlation and multiple regression analysis of annual time series data from 2005-2010 to capture the impact of bank size, credit risk, operational efficiency and asset management on financial performance measured by the three indicators, and to create a good-fit regression model to predict the future financial performance of these banks. The study rejected the hypothesis claiming the existence of

statistically insignificant impact of bank size, credit risk, operational efficiency and asset management on financial performance of Palestinian commercial banks. Makkar and Singh (2013) carried out a comparative analysis of the financial performance of Indian commercial banks considering a sample of 37 banks (22 public sector banks and 15 private sector banks) for the period from 2006 to 2011. Using t-test, the results revealed significant difference in the capital adequacy, asset quality and earning capacity of public and private sector banks in India. On the other hand they found no significant difference in the management, liquidity position and sensitivity to market risk of the two different banking groups. Thus it was concluded that on an average, there was no statistically significant difference in the financial performance of the public and private sector banks in India. Dawood (2014) studied factors impacting on profitability of banks in Pakistan using the ordinary least square (OLS) method to look into the impact of cost efficiency, liquidity, capital adequacy, deposits and size of the bank on the profitability (ROA) of the commercial banks. The empirical findings of the study is that cost efficiency, liquidity and capital adequacy are those variables in the check of management that decide the profitability of commercial banks operating in Pakistan. Other variables like deposits and size of the bank did not demonstrate any impact on profitability. Poposka and Trpkoski (2013) in their study on Secondary Model for Bank Profitability Management - Test on the Case of Macedonian Banking Sector found capital adequacy ratio, capital and reserves total assets, highly liquid assets/total assets, non-performing loans/total loans, net-interest income gross income and personnel costs/non-interest expenses as statistically significant parameters for ROA and ROE. On the other hand, the independent variable GDP growth rate, loans to population gross loans and business loans gross loans were statistically insignificant for ROA and ROE.

Menicucci and Paolucci (2016) examined factors affecting bank profitability in Europe. A regression analysis was done on an unbalanced panel dataset related to 28 European banks over the period of 2006-2015. Regression results show that capital ratio and size have positive impacts on bank profitability in Europe; while higher asset quality results in lower profitability levels. Findings also suggest that banks with higher deposit ratio tend to be more profitable. Also a study by Nahang and Araghi (2013), examined the internal factors affecting the profitability of city banks during the years 2002-2009. Internal factors affecting the profitability of banks, including; deposit amount, the payment facilities, credit risk management, cost management and the amount of liquidity. The results showed that there is a direct relationship between the profitability of the banks with the credit risk management and cost management, and the amount of deposits, loan payments, and the amount of liquidity. Gharaibeh (2015) on Empirical Evidence of the Determinants of Commercial Banks Profitability in Bahrain, his findings reveal that capital adequacy ratio, the global financial crisis of 2008, capital strength, interest rate, debt ratio, and type of the bank are the main determinants of commercial banks profitability measured by ROE. The study found that ROA as a proxy of profitability is inferior to ROE. Lelissa (2014) on the Determinants of Ethiopian Commercial Banks Performance, finds that bank's capital and liquidity status are not significant to affect the performance of banks, bank size and macro-economic variables such as real GDP growth rates

have no significant impact on banks' profitability. However, the inflation rate is determined to be significant driver to the performance of the Ethiopian commercial banks. Merin (2016) on Determinants of Bank Profitability in Ethiopia: A Case Study of Private Commercial Banks from 2006 to 2011. The major findings of the study shows that bank specific determinants were very important in explaining profitability than external variables. The Asset size, capitalization, labor productivity, liquidity and non-interest income were positively and significantly related to bank's profitability, while credit risk and overhead efficiency have a negative impact on profitability of bank specific drivers. Shuremo (2016) investigates the Determinants of Banks' Profitability in Ethiopia from 2002 to 2012, findings of the study show that all bank specific determinants except credit risk and expense management have statistically significant and positive relationship with banks' profitability.

In Nigeria, It was observed that not much works have been done on determinants of Bank profitability some of the findings in previous works are detailed here. Olaoye and Olarewaju (2015) in their Study on Determinants of Deposit Money Banks' Profitability In Nigeria, adopting the following variables Capital Adequacy , Asset Quality, Deposit Structure , loan to total asset, Bank size , Gross Domestic Product, inflation rate finds out that macro-economic variables do not have a major effect on bank profitability. Aremu, Ekpo and Mustapha ,(2013) studied the Determinants of Banks' Profitability using only First Bank, Results from the study revealed that Bank Size and Cost Efficiency did not significantly, determine bank profitability.

However, Credit Risk and Capital Adequacy were found to be significant drivers which affected bank profitability. Broad Money Supply growth rate was found to be a significant driver both in the long run and in the short run. Owoputi, Kayode, and Adeyefa (2014) in their study on bank profitability in Nigeria over the time period from 1998 to 2012. Findings suggest the existence of positive and significant effect of capital adequacy, bank size, productivity growth and deposits on profitability. Credit risk and liquidity ratio have a negative and significant effect on bank profits. However, no evidence is found in support of the effect of industry-specific variables. Finally, as expected, inflation rate and interest rate are negatively and significantly related to bank profitability. Ani, Ugwunta, Ezeudu, and Ugwuanyi, (2012) observed that increase in, size (higher total assets) may not necessarily lead to higher profits due to diseconomies of scale; higher capital-assets ratio and loans and advances contribute strongly to bank profitability. Overall, the paper suggests bank size, capital and asset composition as the major endogenous determinants of bank profitability.

Soyemi, Akinpelu and Ogunleye (2013) studied the Determinants of Profitability among Deposit Money Banks (DMBS) in Nigeria using Five internal determinants, three of these variables were found to contribute to variation of bank profitability: bank size which is measured by log of total assets, is negative and significantly related to profitability of bank; capital adequacy ratio is also negatively related to and statistically significant to variation in bank profitability. The external determinants of financial structure and macroeconomic variables adopted depict no significant influence on profitability. The results of study by Obamuyi

(2013) on the determinants of Banks' Profitability indicate that improved bank capital and interest income, as well as efficient expenses management and favourable economic condition, contribute to higher banks' performance and growth in Nigeria. Ibi and Collins (2014) found that market structure variables represented by total asset, total deposit and number of bank branches to be the major determinant of profitability.

Data and Methodology

Data Description: This study uses annual data covering the period from 1981 to 2017 (37 observations) to examine the causal relationship between the industry specific variables and bank profitability in Nigeria. The choice of the sample period is based on data availability. We exploit three proxies, total assets of deposit money bank to GDP, total assets of the Central Bank to GDP and credit to private sector. Two widely used measures of bank profitability are used: ROA: Return on Assets is calculated by dividing the net income before extraordinary items and taxes by the average value of total assets (financial and nonfinancial) over the same period and it measures the profitability of the banking sector. ROE:

Return on Equity measures the profitability of the banking sector, by revealing how much profit was obtained with the money shareholders have invested. It is calculated by dividing the net income before extraordinary items and taxes by the average value of the capital over the same period. The market concentration ratio is defined as the ratio of the total asset, deposits or loan of the largest banks to the total assets, deposits or loans in a given banking industry. We employed, total assets of deposit money bank to GDP, total assets of the Central Bank to GDP and credit to private sector as proxy. The volume of domestic credit to the private sector by deposit money banks relative to the size of the Nigerian economy measures the contribution of financial intermediaries to private sector activities through intermediation.

Table 1. List of Variables

Variable	Definition
ROA	Average Return on Assets (Net Income/Total Assets)
ROE	Average Return on Assets (Net Income/Total Equity)
PCRDBGDP	Private credit by deposit money banks to GDP
DBAGDP	Deposit money banks as a share of GDP
CBNGDP	Central Bank as a share of GDP.
<i>Source:</i> IMF's International Financial Statistics, 2007	
Variables are calculated as % of total GDP (constant 1990 local currency)	

Results of Unit Root Test

The order of integration of the variables are investigated first. Following the standard rules, the stationarity tests is performed first in levels and then in first difference to establish the presence of unit roots and the order of integration in all the variables. The results of the ADF and PP stationarity tests show that the variables are integrated of order one I(1). This informed the use of statistical tools.

Empirical Methodology

To examine the causal relationship between the industry specific variables and bank profitability in Nigeria, this study implements a linear empirical model (see eq.1) similar to the one implemented by relevant scholar.

Table 2. ADF and PP Unit root tests

UNIT ROOT TEST TABLE										
	Without Constant & Trend				At First Difference					
	At Level	ADF	PP		t-Statistic	Prob.	t-Statistic	Prob.	t-Statistic	Prob.
CBAGDP	-0.8136	0.3565	-0.8481	0.3416	-5.1442***	0.000	-5.1392***	0.0000		
DBAGDP	-1.1157	0.2353	-1.0988	0.2414	-5.0729***	0.000	-5.0109***	0.0000		
PCRDGDP	-0.8570	0.3387	-0.5769	0.4604	-5.4942***	0.000	-8.2652***	0.0000		
ROA	-1.9058	0.055	-1.8253	0.0652	-6.3462***	0.000	-6.9709***	0.0000		
ROE	-1.8053	0.0679	-1.5701	0.1082	-7.8046***	0.000	-8.2293***	0.0000		

* Significance at 10%. ** Significance at 5%. *** Significance at 1%. The asterisks indicate the rejection of the null hypothesis of unit root. All the variables are in the natural log form.

$$bankprofit = \alpha_0 + \alpha_1PCRDgdp + \alpha_2DBAGdp + \alpha_3CBAGdp + e_t \quad (1)$$

Where bank profit stands for return on asset and return equity, claims on domestic real nonfinancial sector by deposit money banks as a share of GDP Pcrdgd represents the ratio of private credit by deposit money banks to GDP, represents Claims on domestic real nonfinancial sector by the Central Bank as a share of GDP, and e_t is the error term. This study employs the autoregressive distributed lag testing approach to cointegration (ARDL-bounds) of Pesaran et al. (2001) to investigate the linear empirical model specified in equation 1. The ARDL approach is considered to offer several desirable statistical features that overcome the limitations of both Engle and Granger (1987) and Johansen (1991) cointegration techniques (Pesaran et al., 2001).

While both Engle and Granger (1987) and Johansen (1991) cointegration techniques require all the variables to be integrated of the same order [I(1)], ARDL approach provides valid results as long as none of the variables is I(2) [whether the variables are I(0) or I(1) or mutually co-integrated], allows for simultaneous testing of the long-run and short-run relationships between variables in a time series model and provides unbiased coefficients of variables along with valid t-statistics even when the explanatory variables are endogenous and in small and finite sample sizes (Pesaran et al., 2001). The ARDL models are specified for the estimation of the linear empirical relationship established in Eq. (1):

$$\Delta bankprofit_t = \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta bankprofit_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta PCRDgdp_{1t-i} + \sum_{i=0}^n \beta_{3i} \Delta DBAGdp_{2t-i} + \sum_{i=0}^n \beta_{4i} \Delta CBAGdp_{t-i} + \beta_5 bankprofit_{t-1} + \beta_6 PCRDgdp_{t-1} + \beta_7 DBAGdp_{t-1} + \beta_8 CBAGdp_{t-1} + \varepsilon_{1t} \quad (2)$$

Where Δ is the difference operator while ε_t is white noise error term. The test involves conducting F-test for joint significance of the coefficients of lagged variables for the purpose of examining the existence of a long-run relationship among the variables. The following hypotheses are tested to investigate the existence of co-integration among the variables. The null hypothesis of no cointegration among the variables in Eq. (1) is ($H_0: \beta_5 = \beta_6 = \beta_7 = \beta_8 = 0$) against the alternative hypothesis ($H_1: \beta_5 \neq \beta_6 \neq \beta_7 \neq \beta_8 \neq 0$). The decision to reject or accept H_0 (no co-integration among the variables) is based on the following conditions: if the calculated F-statistics is greater than the upper critical bound, then H_0 is rejected and the variables are co-integrated, if the calculated F-statistics is less than the lower bound, then H_0 is accepted and the variables are not co-integrated, but if the calculated F-statistics remains

between the lower and upper critical bounds then the decision is inconclusive (Pesaran et al., 2001). The critical values for the evaluation of the null hypothesis are taken from Pesaran et al. (2001). With 37 observations and 3 regressors in the specified model, the calculated F-statistics is compared to critical values taken from both Pesaran et al. (2001).

After testing for cointegration among the variables, the long-run coefficients of the variables are then estimated. This study uses Schwarz criterion (SIC) for selecting the optimal lag length. The existence of cointegration between the variables implies that causality exist in at least one direction. The error correction model for the estimation of the short run relationships is specified as:

$$\Delta bankprofit_t = \beta_0 + \sum_{i=1}^n \beta_{1i} \Delta bankprofit_{t-i} + \sum_{i=0}^n \beta_{2i} \Delta PCRDgdp_{1t-i} + \sum_{i=0}^n \beta_{3i} \Delta DBAGdp_{2t-i} + \sum_{i=0}^n \beta_{4i} \Delta CBAGdp_{t-i} + \lambda_1 ECM_{t-1} + u_{1t} \quad (3)$$

A negative and significant ECM_{t-1} coefficient (λ_1) implies that any short term disequilibrium between the dependent and explanatory variables will converge back to the long-run equilibrium relationship. The following diagnostic tests are conducted to ensure the acceptability of the empirical models: Breusch–Godfrey serial correlation LM test, ARCH test for heteroscedasticity. The stability of the long-run coefficients together with the short-run dynamics are tested using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests of Brown, Durbin, and Evans (1975). If the plot of CUSUM and CUSUMSQ statistics stays within the 5% range of the significance level, then all the coefficients in the error correction model are assumed to be stable, but if the plot of CUSUM and CUSUMSQ statistics crossed the 5% range of the significance level, the coefficients in the error correction model are considered unstable (Bekhet and Matar, 2013).

EMPIRICAL RESULTS

Results of Co-integration Test: Since ARDL bounds test is known to be sensitive to lag length, this study examines the VAR Lag Order Selection. The specification of a maximum lag length of one (Max lag = 1) in the ARDL bound test using Schwarz information criterion (SIC). Given the sample size of 37 observations (1981-2017) used in this study, the critical values for the evaluation of the null hypothesis are taken from Pesaran et al. (2001). This study tested for co-integration on two specifications employing measures of bank performance.

Table 3. Results of Cointegration test

Model		F-Statistics	Result
1	F(ROE PCRDgdp,DBAgdp,CBAgdp)	4.9736***	Cointegration
2	F(ROA PCRDgdp,DBAgdp,CBAgdp)	1.1215	No Cointegration
Critical Value Bounds Pesaran et al. (2001)(k=3)		1%	5%
I0		3.42	2.45
I1		4.84	3.63

ARDL Models selected on Schwarz criterion (SIC)), Restricted intercept and no trend

Notes: *, **, and *** indicate significance at 10%, 5% and 1%, respectively

Table 4. Long-run Coefficients

Dependent Variable				
ROA	ROE		ROE	
Variable	Coefficient	Prob.	Coefficient	Prob.
	Model 1		Model 2	
PCRDGDP	-0.0823	0.6811	0.97644	0.4747
DBAGDP	0.12280	0.4065	-0.5001	0.6331
CBAGDP	0.2112***	0.0008	0.17207	0.7534

Note: *, **, and *** indicate significance at 10 %, 5 % and 1%, respectively-statistics in []

Table 5. Short-run Error Correction Estimates

Dependent Variable				
ROA	ROE		ROE	
Variable	Coefficient	Prob.	Coefficient	Prob.
	Model 1		Model 2	
D(PCRDGDP)	0.3183**	0.0183	0.253797	0.5063
D(DBAGDP)	-0.3457***	0.0025	-0.130011	0.6356
D(CBAGDP)	0.4517***	0.0001	0.044724	0.7435
ECT(-1)	-0.5112***	0.0004	-0.259919	0.0588
<i>Diagnostic test</i>				
Adj.R-squ		0.7002		
Arch		0.5448		
Ser.Corr.		0.3682		
Normality JB		0.9818		

Note: Adj R2means Adjusted R-squared; SCmeans Breusch–Godfrey serial correlation LM test;

Het is theARCH test for heteroscedasticity; JB is the Jarque-Bera Normality test; *, **, and *** indicate significance at 10%, 5% and 1%, respectively.

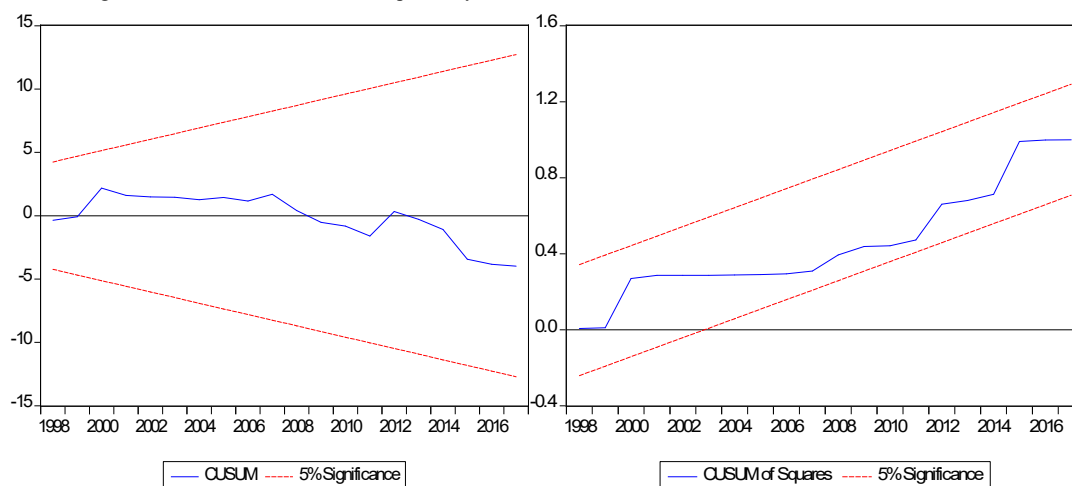


Figure 1. Plot of CUSUM and CUSUMSQ for coefficient stability for ECM Specification 1

The results of the co-integration test based on the ARDL-bounds testing method are presented in Table 3. The results indicate that in one the specifications (model 1), the F-statistic is greater than the upper critical bound from both Pesaran et al. (2001) at 1% significance level using restricted intercept and no trend. This study therefore rejects the null hypothesis of no cointegration among the variables. This shows that there is a long-run causal relationship among the variables in the specifications (model 1). In specification 2, there is no cointegration relationship, therefore, we ignore this specification.

Long run and short run estimates: The estimated long-run coefficients of all the ARDL specifications are presented in Table 4. Specifications 1 and 2 in Table 4 show the long-term causal effect of industry specific variables on bank performance. Industry specific is captured using total assets of deposit money bank to GDP, total assets of the Central Bank to GDP and credit to private sector. All the variables in model 1 are found to be statistically insignificant indicating underdevelopment in financial sector. However, Central Bank to GDP is positive and statistically significant indicating that a 1% increase in CBN asset would cause return on to increase

by about 0.22% in the long-run. The coefficients of indicators of financial structure are found to statistically significant in exerting influence in model 1. Surprisingly, none of the variables exerts influence on return equity. However, only financial sector development is significant in both specifications in the long-run and short-run especially in equation one.

Diagnostic and stability tests: The diagnostic test results in Table 6 show that there are no evidence of serial correlation, heteroscedasticity and functional form misspecification in the two ARDL models estimated. Figure 1 shows the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares (CUSUMSQ) stability test results. The figures suggest that the coefficients of the estimated ARDL model are stable.

Conclusion

Inspired by the growing interest among researchers and policy makers in understanding the causal effects of financial structure on bank performance and the limited attention that has been given to the special case of industry specific variables, this study empirically examines the causal relationship between the industry specific variables and bank profitability in Nigeria. Using the auto-regressive distributed lag (ARDL) approach to co-integration analysis. The results are mixed. On the first part, there is a short causal impact between financial sector proxy by industry variables and bank performance. However in the second phase, the results suggest that all the variables are unable to influence return on assets except Central Bank asset to GDP in the long run. In general, the results highlight the underdevelopment state of the financial sector in resource mobilisation and allocation and in driving profitability in banking sector. Given that the poor performance of the financial structure and possibly in order to maximize profitability of bank. Banks should lower the level of liquidity to increase the income from loan. In other words, a bank can increase lending to the public thereby reducing cash tied up to liquid asset. Therefore, the bank could increase its profitability from the fees and charges arising from the increased lending. Therefore, the bank could increase its profitability. Liquidity is a prime concern for banks and the shortage of liquidity can trigger bank failure. Banking regulators also view liquidity as a major concern. This is because banks without sufficient liquidity to meet demands of their depositors risk experiencing bank run.

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