BANK SPECIFIC, FINANCIAL AND MACROECONOMIC DETERMINANTS OF BANK PROFITABILITY IN NIGERIA

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Abstract

Since the global financial crisis of 2007/08, many financial institutions have sought for ways to influence non-bank factors that affects their profitability to their advantage. The inability of most banks to meet the credit requirement of the Central Banks of 2004 has been attributed by some authors to internal managerial incompetency. The study investigates the extent bank specific, financial and macroeconomic variables determines bank profitability in a panel of eleven banks for the period 2007-2018. Results from the dynamic OLS methodology based on the CAMELS hypothesis estimation found that the major determinants of bank profitability in Nigeria are bank specific variables and the level of financial depth measured in terms of credit extension/intermediation. Furthermore, the results found that the system reverts back to their long run steady state indicating the possibility of collusion and inefficiency in the industry. All bank specific determinants affects profitability, however, Liquidity and Capital adequacy impacts negatively on returns

indicating that high liquidity may reduce returns on assets whereas high capital adequacy detracts from equity share. No evidence is found as to the effect of assets quality on profitability. The study recommends capital diversification and financial liberalization.

Keywords: Bank-profitability; Financial-depth; Liquidity; Capital-adequacy

INTRODUCTION

Evidences have shown that global banking activities are susceptible to both internal and external factors that affect its profitability. Many commercial banks' managements have woken up to the realization of the fact that internal activities no matter how efficient and effective it may be are not sufficient to promote its operations especially in the face of a volatile financial and macroeconomic environment. Although, a sound and profitable banking sector is better able to withstand negative shocks and contribute to the stability of the financial system; the more efficient and profitable the management of a bank becomes, the more likely they are able to control for unwanted interferences from the industry in which they operates, the decisions of the financial authorities and the macroeconomic environments in which they operates generally. But internal efficiency is only a necessary precondition for a viable profitability and not a sufficient condition; other factors which are sometimes outside the control of the particular institution are more germane in determining the bank's profitability and sustainability given that they are not internally determined. Therefore, this paper will both identify these external factors and further assess their respective impact on the profitability of banks in Nigeria.

Most of the studies on the determinants of bank profitability, such as the works of Demirguc-Kunt and Huizinga (2000), Goddard et al. (2004), Dietrich, A. & Wanzenrie, G. (2010), Javaid. S. et al (2011), considered basically the impact of banks internal factors and financial crises on the profitability of banks. However, in the recent times, evidence has shown that macroeconomic policies and the healthiness of the financial sector in which banks operate have a far reaching implication to their profitability and long run sustainability. For instance, banking reforms of 2004 by the then governor of Central Bank of Nigeria (CBN) on bank recapitalization policy and that of 2010 made most banks to either wind-up, merge or acquired by already existing stronger banks. These banks may have been individually very profitable but lacks the capacity to meet the then demand of twenty-five billion capital base (the recapitalization policy) and other regulatory reforms.

This study, in attempting to assess the non-bank specific variables that impacts on the internal operations of the banks will also investigate the contributions of internal managerial

factors, vis-à-vis financial development and macroeconomic stability on the profitability of commercial banks in Nigeria by adopting a dynamic ordinary least square (DOLS) model as proposed by Stock and Watson (1993). This method tries to remove the two problems that render the conventional OLS obsolete which are: endogeneity and serial correlation problems. In DOLS estimation, extra terms are added to the original co-integration equation, so that the bias is corrected. These terms consist of lags and terms of the first order differences of the explanatory variables. The explanatory variables include a set of three variables that relates profitability to the bank factors (both bank specific and industrial); such as capital adequacy, assets quality, management efficiency, earning, and liquidity. The second set of variables are the financial development indicators which are partly internally (bank-specific) and externally (industry structurally) controlled, they include economic velocity, financial depth and market capitalization. The third group of determinants relates profitability to the macroeconomic environment within which the banking system operates. These set of variables are basically externally controlled which banks are highly sensitive to, it is captured with four measures which includes macroeconomic stability, output growth rate, real interest rate and real exchange rate.

LITERATURE REVIEW

A number of works have actually tried to look at the different determinants of bank profitability in Nigeria with emphasis on basically internally controlled variables. Other works equally considered the impact of external variables though with a limited assessment. It is pertinent to note here that despite all these empirical evidences there still remained the gap of the combined impact of financial development and macroeconomic stability on bank profitability.

In the work of Ani, W. U et al (2012), they looked at internally determinants of bank profitability in Nigeria among fifteen banks for a sample period of ten years and found that the major determinants of bank profitability are higher capital-assets ratio, bank size and loans and advances contribute strongly to bank profitability in Nigeria. This is in consonance with the work of Javaid et al. (2011) who also focused on internal factors only in analyzing the determinants of top 10 banks' profitability in Pakistan over the period 2004 to 2008. They used return on assets (ROA) as a measure of profitability whereas assets, loans, equity, and deposits are the explanatory variables. The empirical results from the pooled ordinary least square (POLS) method they adopted found strong evidence that equity and deposits have significant impact on profitability, higher loans contribute towards profitability but their impact is not significant and though higher total assets contributes to profitability significantly, it may not necessarily lead to higher profits due to diseconomies of scales.

From the foregoing, it could be deduced that past empirical researches placed a very strong emphasis on capital assets ratio (CAR) as a major determinant of profitability, however, care should be taken to avoid huge capital being tied down by banks in order to cover for assets loss and indirectly hindering potential investments and profit avenues. As Ani, W. U et al (2012) pointed out that 'an excessively high CAR could signify that a bank is operating over-cautiously and ignoring potentially profitable investment opportunities', therefore one could infer that although as an endogenous variable it promotes internal management propensity to make profit but can limit external potential to make profit because of capital tied down which would have yielded potential avenue for more profit. This assertion is further strengthened by the view of Goddard et al., (2004) on high liquid assets: 'a bank holding a relatively high proportion of liquid assets is unlikely to earn high profits, but is also less exposed to risk; therefore shareholders should be willing to accept a lower return on equity'. In the light of this, this paper will consider other risk components of the determinants of profitability such as liquidity risks and assess their correlation with capital-assets ratio. If they are correlated, it means that it is less profitable to have a high capital-assets ratio (CAR) and vise-versa.

Empirical evidence by Bourke (1989), Demirguc-Kunt and Huizinga (1999), Abreu and Mendes (2002), Goddard et al. (2004), Naceur and Goaied (2001), and Pasiouras and Kosmidou (2006) as observed in EzeOsuagwu (2014) indicate that banks that hold a high level of equity relative to their assets perform better in terms of profitability. These studies suggest that as bank's capital ratios increase, the cost of funding tend to fall due to lower prospective bankruptcy costs. Furthermore, overhead costs are also an important determinant of profitability: the higher the overhead costs in relation to the assets, the lower the profitability of a bank (Athanasoglou et al., 2008). However, overhead costs as a measure of bank profitability is often a good measure when profitability is measured in terms of Net Interest Margin (NIM); as Naceur and Goaied (2001) observed that high net interest margin and profitability tend to be associated with banks that hold a relatively high amount of capital, and with large overheads. But with profitability measured in terms of return on assets (ROA), the risk associated with high financial leverage and hence overhead cost does not necessarily affect profitability.

Many other studies considered non-bank external factors that impacts on the profitability of banks. In their work, Gull et al. (2011) examined the impact of bank-specific and macro-economic variables on the bank profitability by using data of top fifteen Pakistani commercial banks for a period of five years. The empirical results from the pooled ordinary least square (POLS) method adopted revealed that there is strong evidence that both internal (assets, loans, equity, deposits) and external (economic growth, inflation and market capitalization) factors have a strong influence on the profitability. The econometric model of Scott and Arias (2011)

developed to examine the impact of internal and external on the profitability of the top five bank holding companies in the United States show a consistent result. Imad et al (2011) and Naceur and Goaied (2001) in studying the impact of internal and external factors on the profitability of banks in Jordanian banks and Tunisian banks respectively found that size (measures in terms of total assets) has negative impact on profitability and the later further affirms that individual bank characteristics explain a substantial part of the variations in profitability than external factors.

Furthermore, Abreu and Mendes (2002) also considered both internal and external determinants of the profitability of banks for some European countries. Their findings reveal that a bank with a good capital base is highly solvent and this advantage translates into better profitability. Moreover, unemployment rate and inflation as the macroeconomic variables employed in the study show a negative but significant relationship and positive and significant impacts respectively that explains bank profitability.

Empirical evidences reveal that return on assets stands as a better measure of profitability. This is because other measures like return on equity (ROE) disregards the risks associated with high leverage and financial leverage is often determined by regulation, ROA emerges as the key ratio for the evaluation of bank profitability (Panayiotis P. A., et al 2006). On the other hand, return on assets though a better measure because it puts into consideration risks associated with high leverage but it can be biased due to off- balance-sheet activities since it is the ability of banks to generate profit from its assets. Banks with high equity share is likely going to have a low financial leverage than the one with low equity. Therefore, this work will adopt both measures of profitability to account for the risk associated with high financial leverage (returns on assets) as well as account for the off-balance sheet activities that generated profits and shareholders' influence since they are most interested on returns on their equity.

Theoretical framework

A number of frameworks have been developed by different scholars in assessing and capturing the real profitability measures of banks. Some of these theories are bank specific while some others are industrial or market based tailored, depending on the perspectives of the theory builders on what constitutes the determinants of bank profitability. However, economic theory on profit maximization has been extensively used to explain the rationale behind bank profitability measure; where a profit maximizing firm (bank) adopts the output and input combinations where the marginal revenue equates the marginal cost but this model actually lacks relevance in the real world model application of a banking sector. The problem here is the difficulties in

ascertaining the various component measures of prices and costs as well as outputs and inputs given that banking institution is basically a service institution, though with some exceptions. According to Berger and Mester (1997) and Vander Vennet (1997), output prices are subject to severe measurement problems and therefore are not included in the empirical analysis.

The market power model in assessing the profitability of banks was developed by Iwata (1974). In the model, he explains that a firm/bank has a market power when it is possible to increase their prices without losing profit or possibly being rewarded by higher profits. They can do so especially when their product demand is inelastic, therefore the fall in demand that would normally result from such an increase is not entirely offset by the extra marginal revenue gained by the price increase. A generic problem with this type of model is the fact that some of the profitability determinants are interrelated and/or cannot be observed in practice (Jacob A. and J. B. Bos 2008). Iwata's model was criticized by Bresnahan (1982) theory of bank profitability by inferring that banks maximize profits by equating marginal costs and perceived marginal revenue. On the other hand the Panzar and Rosse (1987) theory asserts that bank's profitability is not determined in isolation of other market participants but is influenced by the actions of other market participants within the industry. Hence, they estimate competitive behavior of banks on the basis of the comparative static properties of reduced-form revenue equations based on cross-section data (Jacob A. and J. B. Bos 2008).

The structure conduct performance (SCP) model on bank profitability affirms that the main determinant of bank's profit is the level of collusion within the industry. If the firms in the industry collude, profit will increase and vise-versa. Therefore, even with an increase in market concentration, profit will still be increasing. Here, the choice of a measure for conduct as the market concentration is a major weakness of this model.

In this paper, the theoretical framework to be employed hinges on the "CAMELS" model developed by bank regulators in the US as a means of measurement of the financial condition of a financial institution. Here, the acronym 'CAMELS' stands for, Capital Adequacy (C), Asset Quality (A), Management (M), Earnings (E), Liquidity (L) and Sensitivity to Market Risk (losses arising from changes in market prices) (S). This model is preferred to the others due to their pronounced weaknesses as was highlighted above. This measure is used by banks to assess their internal efficiency and by regulatory authorities ascertain the viability of banks in promoting financial stability. Banks with a good standing of this rating will not only be able to generate good returns on assets but will also be able to meet any financial unexpected condition due to Financial risk, credit risk, market risk, interest rate risk and be able to protect the interest of depositors/customers of the bank.

Variables

As stated earlier, the variables include a set of three variables which are banks specific, financial structure and macroeconomic indicators.

(A)   Bank Specific: The researcher chooses to categories this into two which are with respect to individual bank and banking industry based. Under the industry; assets quality is used whereas under individual banks; capital adequacy, management efficiency, earnings and liquidity risk are considered.

(i) Capital Adequacy: Capital adequacy is measured by the ratio of equity capital to assets (EQTA). A sound capital adequacy base strengthens confidence of depositors. This measure enables a bank to meet any unexpected financial demand arising from market risk, credit risk, interest rate risk, etc.

(ii) Assets Quality: This indicator is measured by the ratio of non-performing loans to total loans (NLTL). It helps to exposure the risk associated with debtors and makes the bank to understand their ability to withstand shocks arising from doubtful loan loss or bad investments.

(iii) Management Efficiency: Management Efficiency reflects the management soundness of a bank. The ability of the management to justify the use of assets and/or owners' equity by lowering cost and raises their profit. This will be measured by profitability in the previous period.

(iv) Earnings: Earning mainly measures the profitability of the bank. In this work, it will be measured by the ratio of net profit after tax to assets ratio and net profit after tax to equity ratio. Return on assets seems to be a better measure of profitability because it puts into consideration risks associated with low financial leverage which return on equity disregards. However, returns to equity consider the impact of regulations and influences arising from the shareholders that impacts banks performance. Hence, the need for both measures as the dependent variables in this work is necessary.

(v) Liquidity: Liquidity ratio in a bank measures the ability to pay its current obligations (Hazzi & Kilani, 2013). Banks with a larger volume of liquid assets are perceived safe because they will be able to meet unexpected withdrawals. This will be measured by Net Loans to Deposit and Borrowing (LDBR). It indicates the percentage of the total deposit locked into non- liquid asset. The higher the LDBR, the higher is the liquidity risk.

(B)   Sensitivity: This is the measure of the responsiveness of bank to external factors outside their control. Here, we have two measures to which bank is sensitive to. They are the financial development within the industry and macroeconomic environment.

(i)   Financial Development: The interest here is to ascertain measures of financial development indicators that impacts on the profitability of banks. This is very realistic as financial intermediation is a major tool through which banks creates money and earn higher

profitability. They include economic velocity, the ratio of broad money to gross domestic product (M_2/GDP); financial depth, the credit to private sector to GDP (CPS/GDP) and market capitalization, the ratio of market capitalization to GDP (MC/GDP). However, in this work, only financial depth as a measure of the intermediation will be used for the sake of simplicity and, because it is the major parameter within the banking industry that impacts on the industry's profitability

(ii)   Macroeconomic Indicators: This are externally determined factors that banks are sensitive to and impacts on their performance level since every bank operates within a particular macroeconomic environment. They are level of economic performance within the economy which is measured by the economy's real gross domestic product. Increases in economic activities within an economy will most likely impact on the profitability of commercial banks positively. The reason being that many people will be financially included by opening bank accounts, writing and cashing cheques, increased investment, etc which must pass through the banking sector and invariably improve their profitability. Other macroeconomic variables include real interest rate (RIR), real exchange rate (RER), inflation rates. However, the management of the bank can to a great extent have some control over these other macroeconomic variables depending on how efficient they are. Therefore, only the real gross domestic product (RGDP) will be considered in this work as a macroeconomic indicator.

METHODOLOGY

The methodology is based on the theoretical framework of CAMELS as proposed by developed by bank regulators in the US as a means of measuring the financial condition of a financial institution. The focus of the work is to ascertain and verify the impact of bank specific, financial and macroeconomic variables on the profitability of commercial banks in Nigeria since they are the major operators in the financial institution using a panel data of eleven banks spanning for a period of ten years from 2007 to 2018. The data are obtained from the various issues of annual reports and statement of accounts of the commercial banks under study and World Bank data for Nigeria. This period is necessary as it covers the when major financial reforms are taken in Nigeria as well as the periods of global financial crisis.

        The model is estimated by Dynamic Ordinary Least Square (DOLS) method in E-Views. The profitability ratio return on asset (ROA) is used as the dependent variable while capital adequacy ratio (CAR); Assets Quality (Non-performing loan ratio (NPL)); Management (ROA_{t-1}); Liquidity (NLDB) and Sensitivity measured in terms of financial depth (FDETH), and economic activity (RGDP) are the explanatory variables.

Data Source and Justification

The data used in running this analysis are panel of eleven banks in Nigeria computed from their various annual balance sheets and cash flows statements for the period 2007 to 2018. Also the non-bank specific data like the financial depth and real gross domestic product are collected from the World Bank statistical bulletin for Nigeria. The time interval chosen in this work is germane as it covers the period of most financial changes both in Nigeria and in the globe. For instance, the global financial recession of 2007/08 as well as the financial inclusion programme of the Central Bank of Nigeria of 2012.

Model Specification

The general form of the dynamic model to be estimated is of the following linear form:

$$\pi_{it} = \alpha_0 + \varphi\pi_{it-1} + \sum_{b=1}^{b} \beta_{bt} X_{it}^{b} + \beta_{2t} X_{it}^{f} + \beta_{3t} X_{it}^{m} + \varepsilon_i + \mu_{it},$$

……………….…………(1)

Where π_{it} is the return on assets (a measure of profitability) of bank i at time t, α_{it} is the intercept term, whereas π_{it-1} is the management indictor of, a bank specific variable, the X_{it}'s are the disaggregation of the independent variables into their bank specific, financial sensitivity and macroeconomic variables, β's are their respective coefficients, ε_i is the fixed effect/unobserved bank-specific effect and μ_{it} is the independent and identically distributed error term.

The coefficient φ of the one period lag of profitability is the speed of adjustment to equilibrium (Panayiotis P. Athanasoglou 2006). This is necessary since management decisions of bank are a strong determining factor of their long run sustainability. When the value of φ is close to zero, it means that the firms in the industry are highly competitive and there is no collusion therefore the profit gap tends to close, however, with a value close to one, it implies that there is either collusion within the industry or there is absence of efficiency. Nerlove, (2002) added that the coefficient of the lagged profitability variable takes implausible values (e.g. negative or very small), for small T (such as T=5) and is highly dependent on the estimation method.

Panel Stationary Test

This work will adopt the approach suggested by Im et al. (2003) to test for the unit root in panel analysis. This is because it allows for heterogeneity between units in a dynamic panel framework based on individual Augmented Dickey–Fuller (ADF) regressions thus:

$$X_{it} = \tau_i X_{i,t-1} + \sum_{j=1}^{\tau} \varphi_{ij}\Delta X_{i,t-j} + z_{i,t}\chi + e_{it}$$

………………………… (2)

Where X_{it} represents each variable in our model, т is the number of lag operators, $z_{i,t}$ is a vector of the determinist variables in the model which includes any fixed effects or individual heterogeneity while χ is the corresponding vector of coefficients.

Panel Cointegration Analysis

Adopting the Kao (Engel-Granger based) test (2003) for the null hypothesis of no cointegration because it takes into consideration possible heterogeneity among the variables of the form:

$$y_{it} = \alpha_i + \beta_{1i}x_{1i,t} + \beta_{2i}x_{2i,t} + ... + \beta_{mi}x_{mi,t} + \varepsilon_{it}$$ ………………...… (3)

for t =1,..., T; i =1,..., N; m =1,..., M

Where *T* refers to the number of observations over time, *N* refers to the number of individual members in the panel; *M* refers to the number of regression variables: β_{1i}, β_{1i}…….β_{mi} are the slope coefficients which are permitted to vary across individual members of the panel. The member specific intercept is α_i which is allowed to vary across individual members of the panel. The null hypothesis of no cointegration is tested against the alternative hypothesis using the probability value.

Panel Dynamic Ordinary Least Square Estimation

Although the basic condition for the estimation of this model is that the variables must be cointegrated, however, since the variables are in panel form, exceptions to cointegration are given when it is a short panel like in this work (e.g. when T<20), here our T = 10 and so we can assume that variables are cointegrated. The dynamic OLS (DOLS) approach proposed by Kao and Chiang investigated the finite sample properties of the OLS, FMOLS and DOLS estimates and found that the DOLS is more efficient than OLS and FMOLS estimators in estimating the cointegrated panel regression (Baltagi Econometric Analysis of Panel Data). Panel DOLS takes care of the biasness of OLS of endogeniety and serial correlation problems by adding extra terms to the model. These terms consist of lags and terms of the first order differences of the explanatory variables thus:

$$\pi_{it} = \alpha_0 + \varphi\pi_{it-1} + \sum_{b=1}^{b}\beta_{bt}X_{it}^{b} + \beta_{2t}X_{it}^{f} + \beta_{3t}X_{it}^{m} + \sum_{n=1}^{n}\rho_j\Delta X_{it-1} + \varepsilon_i + \mu_{it}$$ ……………… (4)

Where ρ_j is the coefficient of a lead or lag of first difference of the independent variables while ΔX_{it-1} is the lags of the first difference of the explanatory variables.

EMPIRICAL RESULT AND DISCUSSIONS

The first result presented is the Panel Stationary Test. The test used two approaches of Im, Pesaran and Shin W-stat and ADF-Fisher Chi-square because they assumed individual unit root process. The argument behind this is that due to the peculiar nature of banks in Nigeria, there cross sectional identity varies among banks and over time.

The result of the unit root test as presented on table 1 reveals that the test was conducted using the Im, Pesaran Shin Test and ADF test because of their use of individual heterogeneity which the variables used depicted. The test was reported with trend and intercept and it shows that all the variables were stationary after first difference. The series were all characterized as an I(1) stationary process. This means that both the bank specific variables, financial deepening indicators and the macroeconomic variables were not stationary at level but became stationary after the first difference for the period under consideration. From this result, therefore, we can reject the null hypothesis of unit root and accept the alternative hypothesis of no unit root after the first difference. Hence, we can proceed to run the panel cointegration test to ascertain whether the variables have a long run relationship or not.

Table 1: A Unit Root Table

Series	Im, Pesaran Shin Test			ADF Test		
	Level	First Diff.		Level	First Diff.	
	Prob.	T-Statistics	Prob.	Prob.	T-Statistics	Prob.
ROA	0.1560	-4.02871	0.0000	0.0203	80.4013	0.0000
ROE	0.0000	-4.75687	0.0000	0.0560	76.5481	0.0000
MGT	0.2410	-1.62631	0.0000	0.0624	50.4928	0.0005
CAR(EQTA)	0.0534	-2.84105	0.0022	0.0014	49.3573	0.0000
Liq (NLDB)	0.4494	-7.67013	0.0000	0.4011	38.5211	0.0160
FDETH	0.7056	-4.24214	0.0000	0.9545	98.8782	0.0000
RGDP	0.8452	-1.82701	00338	0.9848	45.4020	0.0024

Since the probability value of the Kao residual cointegration test conducted is less than 5 percent, that is 0.0261 as shown in the appendix, we can conclude that there is cointegration among the variables, that is, they move together in the long run, therefore bank profitability measured in terms of bank profits to assets ratio have a long run relationship with its explanatory variables which are categorized into three of bank specific, financial development indicators and macroeconomic indicators. Hence, a long run policy measure can be inferred/adopted to promote the performance of banks in Nigeria from the results of the findings.

These satisfy the two basic conditions upon which a dynamic OLS can be conducted. Given that this is fulfilled, therefore we can proceed to run the DOLS model. A dynamic OLS can be adopted for a single equation model of a panel data as well as the Fully Modified OLS developed by Pedroni (1999), Generalized Method of Moments developed by Arellano and Bond (1991). Arellano and Bond (1991) suggest that consistency and efficiency can be achieved by using the lagged values of the dependent variable (such as in our model used to proxy for management factor in determining the profitability of the banks) as well as the lagged values of the exogenous regressors as instruments. Thou the second option does not apply in our model but its application is still plausible. However, Arellano and Bover, (1995) asserts that GMM model estimator can be biased when applied to panels with T greater than N, the argument being that under such conditions this estimator is inefficient if the instruments used are weak. Given that our T-value is twelve years and N is less than T, the application of GMM model could have been a better estimate and give a consistent and an unbiased result, however, the problem with this model is that it does not consider cross sectional dependency and structural break which is inherent in this work. On the other hand, FMOLS has been judged by many Authors to perform less efficiently when compared to DOLS. According to Kao and Chiang (2000) DOLS outperforms FMOLS approach. DOLS seeks to address asymptotic bias contained in the OLS estimate by including leads and lags of the differenced series. It is computationally simpler and reduces bias better than FMOLS. The t-statistic from DOLS approximates the standard normal density much better than the statistic from OLS or FMOLS. Therefore, we will proceed with the estimation of our model using the DOLS estimator as in the Stock and Watson (1993). The result of the cointegration result is presented in the table below. The test adopted the Kao residual cointegration test thus:

Table 2: A Cointegration Table

HYPOTHESIS	ADF RESULT			ADF RESULT	
	t- Statistic	Prob.	VARIABLE	t- Statistic	Prob.
H_0: No cointegration among the Series	-3.068888	0.0011	Resid(-1)	-0.924212	0.0000
Residual Variance	0.003409		D(Resid(-1))	0.003487	0.9711

The probability value of Kao test of cointegration reveals that the series are cointegrated because the probability value is less than 5 percent. Therefore, having established that bank profitability is cointegrated with all its explanatory variables, we can proceed to the DOLS estimate.

The model estimates used two main measures of bank profitability to measure their performance which are operating profit after tax to assets ratio and operating profit after tax to equity level. Whereas the former looks at the ability of the bank to generate profit from its total available assets, the latter is concerned with how much returns the bank management is generating to the shareholders equity; that is, the profit they are accruing to shareholders to their contributed capital in the business. These two measures have being justified by literature.

The dynamic OLS result is presented in table 3 below. It shows that all the explanatory variables are highly impactful on the performance level of commercial banks in Nigeria apart from real gross domestic product which could not explain the changes in the profits of banks generated through the bank's assets though it was under profit as a ratio of shareholders' equity but highly negligible. This implies that macroeconomic indicator could not account to the profitability of banks arising from its own assets but does for profit generated from shareholders' equity suggesting that causality could be running between RGDP and ROE but not with ROA. Further evidence from the result shows that although these variables are significant, their impacts are not all favourable as there are negative significant indicators. This means that if not well managed can reduce the profitability of commercial banks. A significant negative financial depth indicates that credit extension to public by banks in Nigeria is capable of reducing its profitability; hence, probably the returns from this credit extensions have not been adequately harnessed to the advantages of banks or/and they are been totally withdrawn from the banks.

Table 3: The DOLS Result Estimate

Independent Variables	Category	Dependent Variables	
		ROA	ROE
Capital Adequacy (EQTA)	Bank Specific	122.4420(0.0330)**	-9.79327(0.0000)*
Liquidity (NLDB)	Bank Specific	-0.14135(0.0570)***	2.04746(0.0000)*
Mgt (Roa(-1))	Bank Specific	-1.84450(0.0000)*	
Mgt (Roe(-1))	Bank Specific		-9.2569(0.0002)*
Fdeth	Financial Indicator	-0.44374(0.0000)*	-12.7126(0.0000)*
Rgdp	Macroeconomic indicator	9.20E-12(0.6913)	5.10E-10(0.0000)*

Coefficients and the probability value. The P-value is in parentheses.

* denotes significant at 1 percent, ** significant at 5 and *** significant at 10 percent.

Other variables which are bank specific variables such as capital adequacy, liquidity measures impacts on ROA positively and negatively respectively whereas the reverse is the case on ROE. It means that capital adequacy is strong enough to strengthen the confidence of depositors on

the banks' profitability, however a negative but significant capital adequacy on banks' profit through equity ratio could be traced to the vulnerability of banks to meet unexpected financial demand arising from market and credit risks through its equity contributions. Therefore a high unexpected financial demand reduces the profits banks are able to generate from its equity capital but raises profit to be generated from its assets. On the other hand, a negative relationship between banks ROA and liquidity could be as a result of lots of liquid assets tied down to meet unforeseen current obligations which is capable of reducing their profit potentials; whereas the positive correlation that existed between ROE and liquidity explains the contribution of liquid assets in adding value to the shareholders' equity.

Finally, the coefficient φ of the one period lag of the dependent variable as a measure of management impact to banks' profitability is expected to be negative and significant as it is the speed of adjustment to the long run equilibrium (Panayiotis P. Athanasoglou 2006). Its negativity dose not connote inefficiency of management but it implies that the management accounts for every other unexplained variable that impacts on the operation of banks by trying to revert them back to their long run equilibrium steady state. Moreover, with an absolute value greater than one which is not desirable, it therefore means that there is either collusion within the industry or there is absence of efficiency or both. The presence of collusion and lack of efficiency makes firms unable to close the wide profit gap and tap the potential opportunities within the industry and hence need regulation from the Central Bank.

CONCLUSIONS AND POLICY RECOMMENDATIONS

This study investigates the contributions of bank specific, financial and macroeconomic variables to the profitability of commercial banks in Nigeria using a sample of eleven banks comprising a mix of both new generational banks and traditional banks during the period 2007-2018. Adopting the CAMELS theoretical framework and a dynamic OLS estimator to address endogeneity and serial correlation issues, the result shows that all the explanatory variables have a reasonable contribution to the profitability of banks in Nigeria measured in terms of returns to assets and returns to equity.

In addition, management decisions, measured by one period lag of the banks' profitability reveals that even though there could be individual efficiency in harnessing all the explained and the unexplained variables that can impact on banks profitability, however, there is absence and efficiency in the entire industry and the possibility of collusion is very high. This is because the coefficient is both negative and significant therefore system adjusts to their long run steady state at the speed rate of 1.84 annually. The financial indicator is found negative and significant in the dynamic regression. This suggests that credit extension by banks to the public

impede on their growth and profit potentials. Moreover, that capital adequacy and liquidity showed reversed effects on their contributions to banks' profitability when measured in terms of assets and equity respectively suggests a negative correlation between ROA and ROE; as banks generates more profits from its assets, less returns will be raised from its equity capital and vice versa.

The findings of this paper underline the importance of management in determining the profit margin of each individual banks and their inability to close the profit gap within the industry. The government through the Central banks should make policies that will break the seemingly monopoly within the banking industry in Nigeria and create a more favourable condition for new entrants as well as strengthen the new generational banks to compete with the old traditional banks. Moreover, the identification of other macroeconomic and financial variables that is capable of impacting on the profit level of banks is an area of further research on this work.

Again, the fact that real gross domestic product does not impact on the banks' profit could be an indication that economic performance in Nigeria are done in isolation of the banking sector, thereby suggesting that there could be a high level of financial exclusion in the country. Therefore macroeconomic and financial policies that will gear towards an all-inclusive financial inclusion is recommended so as to channel the excess liquidities that are outside banks control back into the system. This further explains why collusion and lack of efficiency is inherent in the banking sector since with collusion, firms can exploit their customers, the cost of their services is very high, access to information is limited, employees welfare are denied and lots more. All this has the potential of detracting from the economic values to be contributed from the various factors of production at the disposal of these banks to the total economic growth.

On the basis of the findings and conclusions made in this study, we recommend that further studies should explore how economic performance can impact on banks profitability using financial inclusion strategy as a transmission channel. In lieu of this, further studies should also identify whether there is a trade-off between bank profitability and financial inclusion, and if there is, what are the deterrent to it and how can it be improved.

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