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Liquidity Management and Bank Profitability: A Study of Selected Commercial Banks with National and International Authorizations in Nigeria

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Abstract
With profitability objectives conflicting with liquidity objectives of banks, there is need to reconcile these conflicting positions through effective liquidity management so as to ensure the survival and growth of banks and to prepare them against probable financial challenges. This paper examines the link or nexus between liquidity management and bank profitability in Nigeria. An *ex-post facto* research design was employed as relevant data were collected from the annual report of affected banks and the CBN statistical bulletin for the period 2006 to 2019. A total of 6 variables, split into 3 dependent and 3 independent variables were used in the study. The profitability ratios constitute the dependent variables. They are Return on Equity (ROE), Return on Assets (ROA) and Profit after Tax (PAT) while the Liquidity management ratios that make up the independent variables include Cash Ratio (CAR), Loan to deposit ratio (LTDR) and Loan to Assets ratio (LTAR). A panel data analysis involving the use of Generalized Least Square (GLS) method on a time series data with 14 observations and 10 cross sections were used to ascertain relationships. Outcome of the study indicates that, the coefficient of liquidity management ratios had a mixed bag relationship with profitability ratios of selected commercial banks - While some had a positive impact, others were negative. However, in return to equity (ROE) equation, it maintained a strictly negative relationship with loan to asset ratios (LTAR) of all the selected commercial banks except for Sterling bank. It was also a mixed bag scenario with other profitability ratios and the panel cross section fixed effects. Conclusively, it could be said that the actual sway of each policy is a function of other endogenous variables inherent in each bank. For example, how come it was only Stirling Bank that sustained a positive interface between return to equity and loan to asset ratio as a liquidity management tool? The answer to this question is not farfetched as every level of liquidity has a different effect on the level of profitability. It is thus recommended that Banks should evaluate and redesign their liquidity management strategies so that it will not only optimize returns to shareholders equity but also optimize the use of the assets. In this regard, the current liquidity management policies as put forward by the central bank of Nigeria should be sustained as they are helping to mop up excess liquidity. In a situation where a bank is experiencing excess liquidity crises, the following lines of action should be considered - such excesses should be invested in profitable financial outlets and in the real sectors at home or abroad. Again, such excesses could be used for expansion, where there is a positive synergy for such an expansion but where these are not feasible then, the bank should lodge in such excesses with the Central Bank of Nigeria.
Keywords: Profitability ratio, Liquidity ratio, Return on Equity, Return on Assets, Profit after Tax, Cash Ratio, Loan to deposit ratio, Loan to Assets ratio.
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1.1 Background of the study

Commercial banks are important institutions in the financial system as they function as retail banking units facilitating the transfer of financial assets from fund lenders to fund seekers. They have carved a niche for themselves by virtue of the above roles that they play i.e. deposit mobilization and credit extension. These roles require purposeful attention of bank management as they tend to conflict with one another. These goals appear to be parallel in the sense that an attempt for a bank to achieve higher profitability will certainly erode its liquidity / solvency positions and vice versa.

Practically, profitability and liquidity are effective indicators of the corporate health and performance of not only the commercial banks, but all profit oriented ventures. These performance indicators are very important to the shareholder and depositors who are major publics of a bank. (Akujuobi, 2016).

While shareholders are interested in profitability level, the depositors are concerned with liquidity position which determines a bank's ability to respond to the withdrawal needs which are normally on demand or on a

short notice as the case may be. Generally, profitability ensures the survival of any business.

According to Ibekwe (1985), behind the take off of every business is the profit motive. It is the profit motive that drives shareholders into buying shares and private capital owners into investing their private capital. It is the profit earned that ensures the continued existence and growth of a business. It is important we reiterate here that, the profit a bank will make is greatly determined by the interest rate spread or the difference between the money borrowed at lower interest rate from savers and the money lent to users at higher rate. Ordinarily, one should expect a high profit from a bank with high loans and advances. But experiences have shown that high level of loans and advances easily culminate into bank illiquidity, distress and bankruptcy situations where a bank is not able temporarily or permanently to meet up with the withdrawal needs of the depositors. Such situations erode the confidence of the depositors in the banking sector and consequently lead to deposit flight and loss of profitability.

With profitability objective conflicting with liquidity objective of a bank, and with the interest of the shareholders conflicting with the interest of the depositors, there is the need to reconcile and harmonize these conflicting positions through effective liquidity management so as to ensure the survival and growth of the commercial banks and to prepare them against probable financial challenges..

1.2. Statement of problem

Through the financial inter-mediation role, the commercial banks reactivate the idle funds borrowed from the lenders by investing such funds in different classes of portfolios. Such business activity of banks are not without problems since the deposits from these fund savers which have been invested by the banks for profit maximization, can be recalled or demanded when the later is not in position to meet their financial obligations.

Considering the public loss of confidence as a result of bank distress which has bedevilled the financial sector in the recent past; every commercial bank is aspiring to make profit and at the same time meet the financial demands of its depositors by maintaining adequate liquidity. The problem then becomes how to select or identify the optimum point or the level at which a commercial bank can maintain its assets in order to optimize these two objectives since each level of liquidity has a different effect on the level of profitability.

This problem becomes more pronounced as good numbers of commercial banks are engrossed with profit maximization and as such they tend to neglect the importance of liquidity management. However, the profit maximization becomes a myth as a resulting liquidity crunch can lead to both technical and legal insolvency with the consequence of low patronage, deposit flight and erosion of asset base.

A school of thought has it that liquidity and profitability maintains an inverse relationship. Amongst the proponent of this school of thought are Hevilesly and Boormen (1981) and Adekanye (1986) who classified assets of a bank into earning and non-earning assets

On the other hand, Bassey and Moses (2015), did a study on the liquidity-profitability trade off of deposit money banks in Nigeria.. The empirical results revealed when return on asset was used as proxy for profitability, the relationship became statistically insignificant. It was suggested that the banks should evaluate and redesign their liquidity management strategy so that it will not only optimize returns to shareholders equity but also optimize the use of the assets

Thus commercial banks are faced with the problem of avoiding excess liquidity and at the same time establishing the proportion of the deposits that will be demanded by the depositors at any particular time.

These are the problems that this study intends to consider, find solutions to and make recommendations where necessary.

1.3. Objectives of the study

The broad objective of this study is to ascertain the effect of liquidity management on bank profitability using ten out of the registered commercial banks operating in Nigeria with national and international authorizations as case studies for the period 2006 to 2019.

The specific objectives are to determine the effect of liquidity management on:

1).Return on equity (ROE) of some selected commercial banks in Nigeria
2).Return on assets (ROA) of some selected commercial banks in Nigeria
3) Profit after tax (PAT) of some selected commercial banks in Nigeria

1.4 Research Questions

To what extent has liquidity management impacted on:

i) Return on Equity (ROE) of selected commercial banks operating in Nigeria**?**
ii. Return on Assets (ROA) of selected commercial banks operating in Nigeria**?**
iii. Profit after Tax (PAT) of selected commercial banks operating in Nigeria**?**

1.5. Hypotheses of the Study

Based on the statement of problem and purpose of study the following hypotheses are formulated.

H_{O1}: There is no significant relationship between liquidity management and Return on Asset (ROA) of some selected commercial banks operating in Nigeria..

H_{O2}: There is no significant relationship between liquidity management and Return on Equity (ROE) of some selected commercial banks operating in Nigeria.

H_{O3}: There is no significant relationship between liquidity management and Profit after Tax (PAT) of some selected commercial banks operating in Nigeria

1.6. Significance of the Study

Commercial banks operate on two motives namely liquidity and profitability motives in their bid to satisfy their two major publics namely the depositors and shareholders, it has becomes necessary for banks to harmonize their motives with the aim of satisfying these two publics simultaneously. Consequently, commercial banks are expected to effectively and efficiency harness their liquidity management approaches. This will be of immense benefit to the bank, the depositors and to her shareholders. Results obtained from this study will reveal the level of adherence of the select commercial banks to monetary policy targets (liquidity ratios) as established by the regulatory bodies. It is also expected that results obtained from this study will help commercial banks evaluate how effective their liquidity management and credit policy guidelines affect their overall bottom-line (profitability)

1.7. Scope of the study

Liquidity management and commercial bank's profitability is actually a very broad topic. This study is limited to only ten out of the registered commercial banks operating in Nigeria .The period of investigation is also delineated, from 2006-2019, a period of 14 years. Our choice of banks is hinged on availability of data and their paid up capital base. The selected commercial banks are classified into national and international banks respectively. They are the biggest players in the Nigerian banking industry. Those with the international authorizations include:

1. Access Bank Plc
2. Fidelity Bank Plc
3. First City Monument Bank Limited
4. Guaranty Trust Bank Plc
5. Union Bank of Nigeria Plc
6. United Bank for Africa Plc
7. Zenith Bank Plc

Others with the national Authorizations are:

1. Sterling Bank Plc
2. Unity Bank Plc
3. Wema Bank Plc

Literature Review

2.0 Introduction

The relevant literatures associated with this study will be reviewed below from the standpoint of a Conceptual, Theoretical and Empirical frameworks.

2.1 Conceptual Framework

Generally, the conceptual framework of this study will be based on liquidity management and bank profitability.

2.1.1 The Concept of Liquidity

Liquidity as a concept has been presented in different ways by different scholars of financial management .Braide (1989) defines liquidity as: "The state or condition of a business organization which determines its ability to honour or discharge its maturing obligations". To him these maturing obligations are composed of current liabilities and long-term debts. Woodworth (1975) defined liquidity as: "A measure of the relative amount of asset in cash or which can be quickly converted into cash available to meet short term liabilities".

2.1.2 Elements of Liquidity

Liquidity is a complex concept as the rate of liquidity among different liquid assets differs. For instance, a savings deposit is more liquid than common stock and common stocks in turn are more liquid than real estate

Liquidity involves three elements or characteristics namely marketability, stability and resolvability. Liquid assets should be more marketable or transferable. That means, they are expected to be converted to cash easily and promptly, and are redeemed prior to maturity. All assets that cannot be redeemed at maturity are said to be

illiquid. Another quality of liquid asset is price stability. Based on this characteristic, bank deposit and short term securities are more liquid than equity investment such as common stocks and real estate's due to the fact that the prices of the former are fixed and have lesser variability than the prices and value of the later that experience considerable fluctuation.

Resolvability quality of liquidity refers to the ability of the holders of liquid assets to recover the cost of the asset on the time of resale. On this basis, common stocks are not considered highly liquid asset despite its ready marketability.

2.1.3 The Management of Liquidity in Commercial Banks

Bank liquidity refers to the ability of the bank to ensure the availability of funds to meet financial commitments or maturing obligations at a reasonable price at all times. Put differently, bank liquidity means a bank having money where they need it particularly to satisfy the withdrawal needs of the customers. The survival of commercial banks depends greatly on how liquid they are since illiquidity being a sign of imminent distress can easily erode the confidence of the public in the banking sector and results to deposit flight.

2.1.4. The functions of liquidity in commercial bank management

Liquidity is a term that measures the availability of cash whether direct or indirect. It also involves the rate and time of converting some current assets into cash to meet both ordinary and extra-ordinary demands. Liquidity has been presented by several scholars as a tool for measuring the bank's bargaining power and strength. One of the popular views of these scholars concerning liquidity is that the more effective a commercial bank is in managing its liquidity, the stronger will his position be in the drive for loanable funds.

From the above assertion, we can see liquidity as something that keeps the doors of a bank open in the short run. Adequate liquidity enables a bank to meet three risks namely: funding risk (the ability to replace net out flows of fund either through withdrawals of retail deposits or non-renewal of wholesale funds). Time risk (the ability to compensate for non receipt inflows of funds if the borrow fails to meet their commitment at a specific time). Adequate liquidity helps a commercial bank to meet customers' withdrawal and or demand for loans. This reduces the possibility of providing financing under very unfavourable loan agreement restrictions and at relatively high interests' costs. (Anyanwu) liquidity management helps a commercial bank to maintain stability in operations and earnings by serving as a guide to investment portfolio packaging and management. Effective liquidity management serves as a veritable tool through which commercial banks maintain the statutory requirements of the central bank as it affects the proportion of deposits to liquid assets and deposits to loans and advances. Liquidity management reduces the incidence of bankruptcy and liquidation/failure which can be the later effect of illiquidity or insolvency, and help them to achieve some margin of safety for their customer's deposits. In other words, adequate liquidity helps to generate and sustain public confidence of the depositors and the financial markets.

2.1.5 Liquidity Measurement in Commercial banks

Liquidity can be measured as a stock, or as a flow. From the stock perspective, liquidity management requires an appraisal of holdings of assets that may be turned into cash. The determination of liquidity adequacy within this framework requires a comparison of holding of liquid assets with expected liquidity needs.

The flow concept of liquidity measurement views liquidity not only as the ability to convert liquid to assets into cash but also the ability of the economic units to borrow and generate cash from operators. This approach recognizes the difficulty involved in determining liquidity standards since future demands are not known.

2.1.6. Our choice of variables for the study.

Our choice of the under listed variables is borne out of the fact that, they are adjudged the indicators of liquidity ratios.

2.1.6.1 Cash Ratio:

The ***cash ratio*** is a liquidity measure that shows a company's ability to cover its short-term obligations using only cash and cash equivalents. The cash ratio is derived by adding a company's total reserves of cash and near-cash securities and dividing that sum by its total current liabilities. The cash ratio is more conservative than other liquidity ratios because it only considers a company's most liquid resources.

2.1.6.2. Loan to deposit ratio

This is a ratio between the banks total loans and total deposits. The ratio is generally expressed in percentage terms..It is used to assess a bank's liquidity by comparing a bank's total loans to its total deposits for the same period.

2.1.6.3 Loan to Assets ratio

The loans to assets ratio measure the total loans outstanding as a percentage of total assets. The higher this ratio indicates a bank is loaned up and its liquidity is low. The higher the ratio, the more risky a bank may be to higher defaults.

2.1.6.4 Liquidity Management Policies

Effective liquidity management entails maximizing the revenue accruable to a business firm and minimizing the risks of insolvency or illiquidity. To attain such level of liquidity management there are some policies which the

business firms must follow. These main liquidity management policies include:

2.1.7 Estimation of Liquidity Requirement

For there to be an effective liquidity management, commercial banks should be able to estimate their liquidity needs periodically. The estimate is very important because the deposits and withdrawal are hardly in perfect synchronization, while banks need to hold an optimum balance of cash. There is also variation between the deposits and loan requirements which can be caused by seasonal fluctuation, random deposits movement and unstable deposits accounts. Seasonal fluctuation in the demand for loan and the deposits of bankers customers can be attributed to changes in weather which affect certain business that respond to seasonal variations; and religious events which also affect the people's demand for cash

2.1.8. The Measurement of Profitability

For purpose of this study, we intend to use the following ratios that are used in measuring profitability

Return on Assets

This is an indicator of how profitable a company is relative to its total assets. ROA gives an idea as to how efficient management is at using its assets to generate earnings. It is calculated by dividing a company's annual earnings by its total assets, Sometimes this is referred to as "Return on investment".

Return on Equity

This is a measure of the profitability of a business in relation to the book value of shareholder equity It is a measure of how well a company uses investments to generate earnings growth.

Profit after tax (PAT)

This is a financial term used to describe a company's profit after all taxes have been paid. It is calculated by subtracting all expenses and income taxes from the revenues the business has earned

2.1.9. The Relationship between Liquidity and Profitability.

As discussed above, the two major functions of commercial banks are mobilization of deposits and extension of credits. While discharging these functions, commercial banks generate profits in form of differences between the interest paid to depositors and the interest charged on the borrowers which is usually at higher rates.

Every bank is expected to maintain a proportion of depositors' funds in liquid form to be able to meet depositor's requirements. That means that there is a portion of deposits given out as loans to customers. The more loans a bank gives out, the more it contends with default risk and liquidity pressure. Since part of the profits made by banks arise from difference between the costs of funds deposited by customers and charge on loans to customers. Put differently t the higher the liquidity, the lower the profitability and vice-versa. Liquidity and profitability management calls for a trade off or striking a balance between maintaining adequate liquidity and its diminishing effects on earnings and high profitability with its reduction consequence on liquidity.

2.2 Theoretical Framework

2.2.1 Liquidity management Theories

It is expected of commercial banks to maintain sufficient liquidity that is needed to absorb possible deposit withdrawals and to provide reasonable accommodation for customers loan demand. In an attempt to achieve such liquidity position, certain concepts or theories have been propounded. This includes:

- The Real Bill Doctrine or Commercial Loan Theory:
- The shiftability theory,
- The anticipated income theory, and
- The liability management theory.

The above theories are briefly discussed below:

2.2.2 The Real Bill Doctrine

This theory emerged in the 18th century and was enunciated by Adam Smith. The theory holds that banks should lend only on short term self-liquidating and commercial papers; and that bank's should restrict to bill backed up by real physical and tangible goods. The advocates of this doctrine contend that by holding these short-term assets, the banks would possess the most liquid earning assets and would therefore be able to meet their demand deposit liabilities when called upon to do so. The theory grew to be fundamentally out of touch with historical reality giving by the demand for financing capital formation with long term credit as industrialization grew rapidly.

2.2.3 The shiftability theory

This theory holds that liquidity of a bank depends on its ability to shift its assets to someone else at a predictable price. It postulates that any asset would be shifted to others when the need for money arises. With the shiftability theory which emerged in 1920's when banks started to keep secondary assets, bankers replaced their emphasis from the desirability of self liquidating commercial loans to the concept of liquidity achieved by the shiftability .One of limitations if this theory is that the most shiftable (saleable) reserve assets might fail to yield the desired liquidity during liquidity crises period. This can be linked to the fact that during the period, every bank that holds such securities struggle to sell them for cash thereby reducing their marketability.

2.2.4 The Anticipated Income Theory

The Anticipated income theory is future-oriented and emphasizes on the potential ability of borrowers to repay loans based on their income generating ability instead of relating the repayment prospect of a loan to one-time event.

2.2.5 The Liability management theory

This theory posits that banks can meet their liquidity needs through the issuance of certificate of deposit and short-term notes, purchasing federal forms and borrowing from federal resources, the liquidity needs are handled. So liability management should generate enough liquid resources to a bank and thereby eliminate the constraints of the earlier lending theories.

2.2.6. Liquidity Strategies

Two major sources of liquidity are identified from the study of liquidity management theories. They include stored liquidity and purchased liquidity. Stored liquidity consists of assets in which funds are temporarily invested with an assurance that they will either mature or be paid when liquidity is needed or will be easily sellable without material loss before maturity.

Purchased liquidity involves finds that are acquired in market at a price for profitable employment in lending. That means borrowing money to ensure liquidity.

2.3 Empirical Review

There have been several studies on the relationship between liquidity and bank profitability. These researchers intends to review only but the relatively recent studies. They are presented below:

Okoh,Nkechukwu and Ezu (2016) examined the nexus between liquidity management and the performance of banks in Nigeria .It was ascertained that for the period 2003-2014, interest on loans contributed positively to performance and hence profitability of most of the banks under review.

Bassey and Moses (2015) did a study on the liquidity-profitability trade off of deposit money banks in Nigeria. The study was carried on fifteen deposit money banks in Nigeria and covered a panel data of 2010 to 2012. Two models were specified and estimated using Ordinary Least Squares (OLS) technique. The empirical results revealed that there is a statistically significant relationship between bank liquidity measures-current ratio, liquid ratio, cash ratio, loans to deposit ratio, loans to asset ratio- and return on equity. However, when return on asset was used as proxy for profitability, the relationship became statistically insignificant. It was suggested that the banks should evaluate and redesign their liquidity management strategy so that it will not only optimize returns to shareholders equity but also optimize the use of the assets.

Ibe ((2013), investigated the impact of liquidity management on the profitability of banks in Nigeria. The proxies for liquidity management include cash and short term fund, bank balances and treasury bills and certificates, while profit after tax was the proxy for profitability. Result of the study indicated that liquidity management is indeed a crucial problem in the Nigerian banking industry. The study therefore recommended that banks should engage the services of competent and qualified personnel in order to ensure that right decisions are taken especially as it regards the adoption of optimal level of liquidity and still maximize profit.

Charity (2012) examined the impact of liquidity management on commercial banks in Nigeria using First Bank of Nigeria Plc as case study. Findings of the study indicate that there was a positive relationship between liquidity management and the existence of any bank.

Adebayo (2011) examined liquidity management and commercial banks profitability in Nigeria. Findings of this study indicate that there is significant between liquidity and profitability .That means profitability in commercial banks is significantly influenced by liquidity and vice versa.

This researcher intends to make a contribution to knowledge on the subject under review making use of selected deposit money banks.

3.0 Research Methodology

3.1 Research Design

An *ex-post facto* research design was employed as relevant data were collected from the annual report of affected banks and the CBN statistical bulletin A panel data analysis involving the use of GLS analysis on a time series data. The essence is to ascertain relationship between the variables, whether positive or negative and if significant or not.

3.2 Study Area

This study is set to ascertain the effect of liquidity management on bank profitability in Nigeria for the period 2006-2019, a period of 14 years. The study is on ten commercial banks operating in Nigeria Our choice of banks is hinged on their paid up capital. The selected commercial banks are classified into national and international banks respectively. They are the biggest players in the Nigerian banking industry.

3.3 Model Specification

We intend to adopt the model put up by Bassey and Moses (2015) to run this research and to ascertain the relationship between liquidity management and bank profitability. Going forward, we have data on ten (10) different banks. They are: **Access, FCMB, Fidelity, GTB, Sterling, Unity, UBA, and UBN .**Others are **WEMA and Zenith banks.** We also have 6 different variables, broken down into 3 dependent and 3 independent variables. The profitability ratios constitute the dependent variables. They are: Return on Equity (ROE), Return on Assets (ROA) and Profit after Tax (PAT). While the Liquidity management ratios that make up the independent variables include:

CAR = Cash Ratio, LTDR = Loan to deposit ratio, and LTAR = Loan to Assets ratio

Put in the form of a model, it is presented thus:

ROE = a0 + $\mathbf{a_1}$ CAR + $\mathbf{a_2}$**LTDR+** $\mathbf{a_3}$**LTAR** ..... Equation 1

ROA = $\mathbf{a_0}$ + $\mathbf{a_1}$ CAR + $\mathbf{a_2}$**LTDR+** $\mathbf{a_3}$**LTAR** ..... Equation 2

PAT = a0 + $\mathbf{a_1}$ CAR + $\mathbf{a_2}$**LTDR+** $\mathbf{a_3}$ **LTAR** ..... Equation 3

4.0 DATA RESULTS AND ANALYSIS

Table1: Descriptive statistics

The descriptive statistics for the variables under consideration are presented in table 1 below:

	ROE	ROA	PAT	CAR	LTDR	LTAR
Mean	5.756786	1.211286	15.63936	14.54086	59.73034	69.85521
Median	11.31000	1.480000	16.94500	12.93500	55.64000	68.28500
Maximum	122.8000	9.540000	127.1900	59.10000	138.0000	161.2100
Minimum	-394.3200	-20.23000	-338.9100	0.580000	3.550000	6.200000
Std. Dev.	45.67197	3.062112	41.22971	10.40599	21.15712	18.18186
Skewness	-5.856285	-2.991903	-4.772920	1.576164	0.320698	1.165079
Kurtosis	48.96516	20.80094	41.96695	7.098907	3.464723	10.70164
Jarque-Bera	13124.89	2057.297	9389.018	155.9729	3.659582	377.6788
Probability	0.000000	0.000000	0.000000	0.000000	0.160447	0.000000
Sum	805.9500	169.5800	2189.510	2035.720	8362.247	9779.730
Sum Sq. Dev.	289944.1	1303.337	236284.6	15051.57	62219.72	45950.61
Observations	140	140	140	140	140	140
Cross sections	10	10	10	10	10	10

Source: Authors 'Computation from the E-views 9 output

From table 1 above, the panel descriptive statistics for the variables under consideration indicated that from 2006 to 2019, all the variables under study showed an averaged positive mean values with 140 observations in ten cross sections. The standard deviation indicated that the highest standard deviation of (45.67), is recorded by the variable ROE, while the least standard deviation of (3.06) is recorded by the variable ROE, The Jarque-Bera (JB) test of normality for the variables under consideration revealed that five of the variables are significant at 5% level.

4.1 CORRELATION

The relationships amongst the variables under consideration are tested using correlation matrix and the result presented in table 2 below:

Table 2: Correlation matrix

	ROE	ROA	PAT	CAR	LTDR	LTAR
ROE	1.000000	0.221248	0.125426	0.137796	0.112608	-0.087436
ROA	0.221248	1.000000	0.930579	0.163535	0.164412	-0.204290
PAT	0.125426	0.930579	1.000000	0.107119	0.069767	-0.123252
CAR	0.137796	0.163535	0.107119	1.000000	-0.031935	-0.049585
LTDR	0.112608	0.164412	0.069767	-0.031935	1.000000	-0.418135
LTAR	-0.087436	-0.204290	-0.123252	-0.049585	-0.418135	1.000000

Source: Authors' Computation from the E-views 9 output

The correlation between LTAR and the other 5 variables all maintained a negative relationship

Other variables maintained a positive correlation with one another except for LTAR. This implies that issues of multi collinearity are not likely to be present in the data.

4.2 The Hausman test

Before the estimation of a panel regression, the Hausman test is used to make a choice between the fixed effect model and the random effect model of panel data analysis. The Hausman test can detect which of these two

models is superior to the other. The null hypothesis of the Hausman test is that random effect is the preferred model and the alternative hypothesis is that the fixed effect model is preferred. When the null hypothesis is rejected, it indicates that cross sectional unit random effects are correlated with the regressors; therefore, the fixed effect model is superior to the random effect model. Nonetheless, if we fail to reject the null hypothesis then the random effect is preferable implying there is no correlation between the unique errors and the explanatory variables.

Table 3: The Hausman test results

Redundant Fixed Effects Tests			
Pool: Untitled			
Test cross-section fixed effects			
Dependent Variable: ROE?			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	0.125877	(9,100)	0.9990
Cross-section Chi-square	1.577133	9	0.9965
Dependent Variable: ROA?			
Cross-section F	0.202107	(9,100)	0.9934
Cross-section Chi-square	2.523661	9	0.9802
Dependent Variable: PAT?			
Cross-section F	0.390162	(9,100)	0.9373
Cross-section Chi-square	4.831692	9	0.8487

Source: Authors' Computation from the E-views 9 output

From the Hausman test results from the null hypothesis is therefore rejected since both P-Values of ROE, ROA and PAT are less than the significance values at 5 percent respectively. This implies that the fixed effect model is superior to the random effects model for explaining the performance of banks in Nigeria during the period under study.

Panel unit root /Stationarity test

The results of the panel unit root tests are shown in the table below. The test held that all banks have unit roots with regards to their variables

Common effects Levin, Lin & Chu t*			Cross-section	Individual effects Im, Pesaran and Shin W-stat		
Variable	Statistics	Probability		Statistics	Probability	Observation
	Level difference			Level difference		
ROE	-5.94175	0.0000	10	-4.48437	0.0000	128
ROA	-8.21261	0.0000	10	-7.11762	0.0000	124
PAT	-6.00904	0.0000	10	-6.49160	0.0000	125
CAR	-5.40530	0.0000	10	-3.62765	0.0001	126
	First difference			First difference		
LTDR	-1.77588	0.0379	10	-1.12683	0.1299	125
	-9.14235	0.0000	10	-6.51561	0.0000	118
LTAR	-1.82781	0.0338	10	-1.98420	0.0236	126
	-10.6417	0.0000	10	-8.67042	0.0000	117

Source: Authors 'Computation from the E-views 9 output

The test reveals that four of the variables (ROE, ROA, PAT and CAR) are stationary at level difference at 5 percent significance level, for the common and individual effect tests respectively. The other variables are not stationary at level difference but turned stationary at first difference. Hence, employing our variables in a "level estimation" would yield the most authentic results (Green, 2008).

4.3 Panel Cointegration test

Having established with the panel unit root test that the variables are integrated, it has become essential to perform a co-integration test. The table below presents the Pedroni panel co-integration test results.

The panel cointegration test results

Pedroni Residual Cointegration Test				
Series: ROE? ROA? PAT? CAR? LTDR? LTAR?				
Sample: 2006 2019				
Cross-sections included: 10				
User-specified lag length: 1				
Newey-West automatic bandwidth selection and Bartlett kernel				
Alternative hypothesis: common AR coefs. (within-dimension)				
			Weighted	
	Statistic	Prob.	Statistic	Prob.
Panel v-Statistic	-1.045823	0.8522	-1.209713	0.8868
Panel rho-Statistic	1.274366	0.8987	1.338761	0.9097
Panel PP-Statistic	-6.066370	0.0000	-6.338932	0.0000
Panel ADF-Statistic	1.461586	0.9281	0.094357	0.5376
Alternative hypothesis: individual AR coefs. (between-dimension)				
	Statistic	Prob.		
Group rho-Statistic	2.601000	0.9954		
Group PP-Statistic	-7.531239	0.0000		
Group ADF-Statistic	1.418289	0.9219		

Source: Authors'Computation from the E-views 9 output

The results from the Pedroni's statistics indicate that the null hypothesis that there is no co-integration between the variables is rejected. This implies that there is long run relationship between banks' Performance indicators and the independent variables under consideration.

The Panel regression results analysis

As already indicated, the bank's performances are estimated using the fixed effect technique. This will assist to produce robust standard errors. The inclusion of robust standard errors helps in containing the econometric problems of heteroscedasticity (Green, 2008). The generated specific coefficients from a panel of selected ten banks in Nigeria with both national and international authorization are shown in the tables below: the Return on Equity equation results is presented in the tables below:

The panel result for the variable (CAR**)**

Dependent Variable: ROE?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.705138	19.95425	0.386140	0.7002
_ACCESS--CAR	0.022801	0.107007	0.213078	0.8317
_FIDELITY--CAR	0.137126	0.046148	2.971409	0.0037
_FCM--CAR	0.287653	0.089039	3.230639	0.0017
_GTB--CAR	0.003024	0.092388	0.032730	0.9740
_STERLING--CAR	-0.025148	0.266149	-0.094490	0.9249
_UBN--CAR	0.428165	0.798250	0.536379	0.5929
_UBA--CAR	0.191078	0.157534	1.212929	0.2280
_UNITY--CAR	0.860069	1.205739	0.713313	0.4773
_WEMA--CAR	0.489002	1.968083	0.248466	0.8043
_ZENITH--CAR	-0.036192	0.083815	-0.431815	0.6668

Source: Authors' Computation from the E-views 9 output

From the results table above, the intercept is 7.71. This indicates that if the independent variables are held constant, the value of the banks return on equity growth will be 7.71.The result indicates a positive coefficient for the cash ratio variable CAR for the following banks, ACCESS, FIDELITY, FCM, GTB, UBN, UBA, UNITY and WEMA. Out of the eight positive coefficients, the results indicate statistical significance at 5% level for FIDELITY and FCMB. This show that during the period under study, cash ratio contributed positively to the overall return on equity of the banks. The result indicates that a percentage increase in the Banks' cash ratio increases the banks' return on equity by 0.02, 0.14, 0.29, 0.003, 0.43, 0.19, 0.86, and 0.49 respectively.

However, coefficients of the cash ratio indicate a negative sign for SERLING and ZENITH banks and are insignificant statistically. Thus CAR contributed negatively to the performance of the two banks during the period. Thus percentage increases in the cash ratio of banks result to a decrease of the banks return to equity by -0.03 and -0.04 respectively.

The panel result for the variable (LTDR**)**

Dependent Variable: ROE?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.705138	19.95425	0.386140	0.7002
_ACCESS--LTDR	0.069300	0.153944	0.450164	0.6536
_FIDELITY--LTDR	-0.116220	0.066391	-1.750534	0.0831
_FCM--LTDR	-0.080282	0.128095	-0.626737	0.5323
_GTB--LTDR	0.028598	0.132913	0.215160	0.8301
_STERLING--LTDR	-0.271318	0.382893	-0.708599	0.4802
_UBN--LTDR	0.381050	1.148396	0.331811	0.7407
_UBA--LTDR	0.040995	0.226635	0.180888	0.8568
_UNITY--LTDR	0.641958	1.734626	0.370084	0.7121
_WEMA--LTDR	1.732682	2.831367	0.611959	0.5420
_ZENITH--LTDR	0.004182	0.120579	0.034679	0.9724

Source: Authors' Computation from the E-views 9 output

The loan to deposit ratio variable LTDR (that is the loans and advances made by the banks to their customers) indicate a positive signs for the following banks, ACCESS, GTB, UBN, UBA, UNITY, WEMA and ZENITH. The positive coefficient of the loan to deposit ratio implies that, the banks under study recorded high returns on equity as a result of loan service payment. It also implies that a percentage increase in the loan to deposit ratio will increase the banks' return on equity by 0.07, 0.03, 0.38, 0.04, 0.64, 1.73 and 0.004 respectively For the three other banks, FIDELITY, FCM and STERLING, the Coefficient of the LTDR show a negative sign and is statistically significant at 5% level for only one bank (FIDELITY. It implies that a percentage increase in the loan to deposit ratio of banks result to a decrease of the banks return to equity by -0.12, -0.08 and -0.27 respectively.

The panel result for the variable (LTAR**)**

Dependent Variable: ROE?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.705138	19.95425	0.386140	0.7002
_ACCESS--LTAR	-0.113274	0.079991	-1.416084	0.1599
_FIDELITY--LTAR	-0.108547	0.034497	-3.146525	0.0022
_FCM--LTAR	-0.064578	0.066560	-0.970232	0.3343
_GTB--LTAR	-0.129314	0.069063	-1.872407	0.0641
_STERLING--LTAR	0.068000	0.198955	0.341786	0.7332
_UBN--LTAR	-0.463044	0.596719	-0.775983	0.4396
_UBA--LTAR	-0.098983	0.117762	-0.840531	0.4026
_UNITY--LTAR	-0.556054	0.901330	-0.616926	0.5387
_WEMA--LTAR	-1.560476	1.471208	-1.060676	0.2914
_ZENITH--LTAR	-0.121447	0.062654	-1.938371	0.0554

Source: Authors' Computation from the E-views 9 output

From the result table above, the Loan to Assets ratio variable indicate a positive signs for only one bank (STERLING) and is insignificant statistically at 5% level. Hence, the variable positively impacted on the overall performance of the Sterling bank during the period under study. It equally indicates that a percentage increase in the banks' loan to asset ratio will lead to an increase in the banks return to equity by 0.068000. For the remaining nine banks, the coefficients of LTAR show a negative sign and are statistically significant at 5% level for three banks (FIDELITY, GTB, and ZENITH). Thus in the return to equity equation, the loan to asset ratio contributed negative for the most of the banks during the periods under review. It equally indicates that a percentage increase in the banks' loan to asset ratio will lead to a decrease in the banks return to equity by -0.11, -0.11, -0.06, -0.13, -0.46, -0.098, -0.56, -1.56 and -0.12 respectively.

The panel cross section fixed effect results for ROE equation

Fixed Effects (Cross)			
_ACCESS--C	8.330766		
_FIDELITY--C	11.44774		
_FCM--C	3.540663		
_GTB--C	23.62259		
_STERLING--C	11.48602		
_UBN--C	-0.294228		
_UBA--C	6.733088		
_UNITY--C	-46.16523		
_WEMA--C	-36.21277		
_ZENITH--C	17.51136		
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.625777	Mean dependent var	75.74529
Adjusted R-squared	0.479829	S.D. dependent var	88.44423
S.E. of regression	48.43779	Sum squared resid	234622.0
F-statistic	4.287692	Durbin-Watson stat	2.200732
Prob(F-statistic)	0.000000		
Unweighted Statistics			
R-squared	0.190803	Mean dependent var	5.756786
Sum squared resid	234622.0	Durbin-Watson stat	2.274720

Source: Authors' Computation from the E-views 9 output

The panel cross section fixed effect results for ROE equation show that the constant term of the regression coefficients of the individual banks under consideration indicates positive signs for ACCESS, FIDELITY, FCMB, GTB, STERLING, UBA, and ZENITH. This implies that holding other things constant the banks performances during the period's increases by 8.33, 11.45, 3.54, 23.62, 11.49, 6.74 and 17.5 respectively. Also, the constant term for the three banks, UBN, UNITY, and WEMA. The results indicate that all thing being equal, the bank's performance during the period under study decreased by -0.29, -46.17 and -36.21 respectively during the periods.

Statistically, the coefficient of determination R^2 indicates a value of 0.64, and the adjusted R^2 with a value of 0.48 respectively. This show that 47% of variations in the dependent variable (ROE) is explained by independent variables. The F-statistics results indicate that the overall model is significant with a value of Prob (F-statistic) = 0.000000; while the Durbin-Watson (DW) statistics value of 2.20 indicate absence of serial correlation in the models under consideration.

The panel regression results for the ROA equation

The panel result for the variable (CAR**)**

Dependent Variable: ROA?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.63865	17.62349	1.511542	0.1338
_ACCESS--CAR	0.012253	0.180331	0.067945	0.9460
_FIDELITY--CAR	0.372076	0.150960	2.464730	0.0154
_FCM--CAR	0.544379	0.208827	2.606842	0.0105
_GTB--CAR	-0.062970	0.152316	-0.413416	0.6802
_STERLING--CAR	0.083033	0.211627	0.392353	0.6956
_UBN--CAR	1.534173	1.919338	0.799324	0.4260
_UBA--CAR	0.243112	0.220807	1.101017	0.2735
_UNITY--CAR	0.238254	0.493118	0.483157	0.6300
_WEMA--CAR	-0.725737	0.760476	-0.954320	0.3422
_ZENITH--CAR	-0.074924	0.143296	-0.522865	0.6022

Source: Authors 'Computation from the E-views 9 output

The cross section panel results for the return on asset ROA equation shows that the intercept is 26.64. This implies that holding all the independent variables constant, the value of the banks return on asset growth will increase by 26.64 .From the result table above, the cash ratio variable CAR indicate a positive signs for seven

banks , ACCESS, FIDELITY,FCMB, STERLING, UBN,UBA and UNITY respectively. The results show that cash ratio for two banks, (FIDELITY and FCMB) are significant statistically at 5% level. These positive coefficients indicate that the variable positively impacted of the return on asset of the banks which contributed to their overall performance during the period under study. It indicates that a percentage increase in the cash ration of the banks will lead to an increase in the return on asset of the banks by 0.01, 0.38, 0.54, 0.08, 1.53, 0.24 and 0.24 respectively

For the remaining three banks, GTB, WEMA and ZENITH, the coefficient of CAR show a negative signs and are insignificant statistically at 5% level. This implies that in the return to asset equation, the cash ratio contributed negative for the three banks during the periods under review. It also indicates that a percentage increase in the cash ratio of the banks will lead to a decrease in the return on asset of the banks by -0.063, -0.73 and -0.07 respectively.

The panel result for the variable (LTDR**)**

Dependent Variable: ROA?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.63865	17.62349	1.511542	0.1338
_ACCESS--LTDR	-0.006858	0.259431	-0.026434	0.9790
_FIDELITY--LTDR	-0.536472	0.217177	-2.470204	0.0152
_FCM--LTDR	-0.552788	0.300427	-1.840006	0.0687
_GTB--LTDR	0.006778	0.219128	0.030931	0.9754
_STERLING--LTDR	-0.351900	0.304456	-1.155834	0.2505
_UBN--LTDR	-0.322645	2.761240	-0.116848	0.9072
_UBA--LTDR	0.068184	0.317662	0.214642	0.8305
_UNITY--LTDR	0.514808	0.709420	0.725673	0.4697
_WEMA--LTDR	-0.280104	1.094053	-0.256024	0.7985
_ZENITH--LTDR	-0.222921	0.206152	-1.081346	0.2821

Source: Authors 'Computation from the E-views 9 output

The cross section result for the impact of loan to deposit ratio LTDR on banks return to asset indicates a positive coefficients for three banks, GTB, UBA and UNITY and are insignificant statistically. This show that during the period under study, loan to deposit ratio positively impacted on the banks return on asset. The result shows that a percentage increase in the loan to deposit ratio of the banks will lead to an increase in the return on asset of the banks by0.008, 0.07 and 0.51 respectively

However, the result indicate negative coefficients for ACCESS, FIDELITY, FCMB, STERLING, UBN,WEMA and ZENITH banks respectively; and it is statistically significant at 5% level for FIDELITY and FCMB. Thus LTDR contributed negatively to the performance of the seven banks' return on asset during the period under study. The result also show that a percentage increase in the loan to deposit ratio will decrease the banks return on asset by -0.007, -0.54, -0.55, -0.35, -0.32, -0.28 and -0.22 respectively

The panel result for the variable (LTAR**)**

Dependent Variable: ROA?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	26.63865	17.62349	1.511542	0.1338
_ACCESS--LTAR	-0.020450	0.134803	-0.151703	0.8797
_FIDELITY--LTAR	-0.020818	0.112848	-0.184479	0.8540
_FCM--LTAR	0.002891	0.156105	0.018518	0.9853
_GTB--LTAR	-0.251996	0.113861	-2.213186	0.0292
_STERLING--LTAR	0.112985	0.158198	0.714200	0.4768
_UBN--LTAR	-0.660000	1.434770	-0.460004	0.6465
_UBA--LTAR	-0.133608	0.165060	-0.809450	0.4202
_UNITY--LTAR	-0.115449	0.368622	-0.313189	0.7548
_WEMA--LTAR	0.281446	0.568482	0.495083	0.6216
_ZENITH--LTAR	-0.116352	0.107119	-1.086197	0.2800

Source: Authors' Computation from the E-views 9 output

The loan to asset ratio variable LTAR indicate a positive signs for the following banks, FCMB, STERLING and WEMA and are insignificant statistically. The positive coefficient of the loan to asset ratio implies that, the three banks under study recorded high returns to asset as a result of loan asset payment.. The result indicates that

a percentage increase in the loan to asset ratio of the banks will lead to an increase in the return on asset of the banks by0.002, 0.11 and 0.28 respectively

For the seven other banks, the Coefficient of the LTAR show a negative sign and is statistically significant at 5% level for only one bank (GTB). The result indicates that loan to asset ratio impacted negatively to the banks' return on asset during the period under review. The result also indicates that a percentage increase in the loan to asset ratio will decrease the banks return on asset by -0.02, -0.02, -0.25, -0.66, -0.13, -0.12 and -0.12 respectively.

The panel cross section fixed effect results for ROA equation

Fixed Effects (Cross)			
_ACCESS--C	-2.210258		
_FIDELITY--C	14.81506		
_FCMB--C	10.02993		
_GTB--C	35.62949		
_STERLING--C	-5.050545		
_UBN--C	-5.463543		
_UBA--C	-6.677884		
_UNITY--C	-56.40895		
_WEMA--C	-13.20729		
_ZENITH--C	28.54400		
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.631604	Mean dependent var	68.22662
Adjusted R-squared	0.487930	S.D. dependent var	79.74439
S.E. of regression	42.71526	Sum squared resid	182459.3
F-statistic	4.396080	Durbin-Watson stat	2.487263
Prob(F-statistic)	0.000000		
	Unweighted Statistics		
R-squared	0.227798	Mean dependent var	15.63936
Sum squared resid	182459.3	Durbin-Watson stat	3.212604

Source: Authors'Computation from the E-views 9 output

The panel cross section fixed effect results for ROA equation indicates that the constant term of the regression coefficients of the individual banks under study indicates positive signs for three banks. Thus holding other things constant, the banks' return on asset during the periods increased for FIDELITY by (14.82), FCMB by (10.03), GTB by (35.63), and ZENITH by (28.54) respectively. Also, the constant term for the six other banks, ACCESS, STERLING, UBN, UBA, UNITY, and WEMA indicates that all thing being equal, the return on asset of the banks during the period under study decreased by -2.21, -5.05, -5.46, -6.68, -56.41 and -13.21 respectively during the periods.

The Statistical analysis shows that the coefficient of determination R^2 shows a value of 0.63, and the adjusted R^2 shows a value of 0.49 respectively. This indicates that 48% of variations in the dependent variable (ROA) is explained by regressor variables. The F-statistics results show that the overall model is statistically significant with a value of Prob(F-statistic) = 0.000000; while the Durbin-Watson (DW) statistics value indicate absence of serial correlation in the models under consideration.

The panel regression results for the PAT equation

The panel result for the variable (CAR**)**

Dependent Variable: PAT?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.406467	1.280299	1.098545	0.2746
_ACCESS--CAR	-0.005653	0.011104	-0.509094	0.6118
_FIDELITY--CAR	0.022706	0.008928	2.543228	0.0125
_FCM--CAR	0.026923	0.017971	1.498187	0.1372
_GTB--CAR	-0.026510	0.014799	-1.791362	0.0763
_STERLING--CAR	0.012472	0.031346	0.397878	0.6916
_UBN--CAR	0.094753	0.120195	0.788330	0.4324
_UBA--CAR	0.015176	0.016605	0.913969	0.3629
_UNITY--CAR	0.024554	0.071627	0.342796	0.7325
_WEMA--CAR	-0.054717	0.057015	-0.959696	0.3395
_ZENITH--CAR	-0.002595	0.013359	-0.194264	0.8464

Source: Authors 'Computation from the E-views 9 output

From the cross section panel regression results in table above for the Profit after Tax equation indicates that holding all the other variables constant the value of the banks' profit after tax will increase by 1.406467. The Cash Ratio variable (CAR) indicate a positive sign for six banks which include, FIDELITY, FCM, STERLING, UBN, UBA and UNITY respectively and is significant statistically at 5% level for FIDELITY. The positive coefficient of the cash ratio indicates that a percentage increase in the Banks' cash ratio increases the banks' profit after tax by0.023, 0.03, 0.01, 0.09, 0.015 and 0.02 respectively. However, the coefficient of the cash ratio shows a negative signs for four banks under consideration. These include, ACCESS, GTB, WEMA, and ZENITH respectively and significant statistically for GTB. The result show that cash ratio negatively impacted on the profit after tax of the individual banks during the period under study. The result also show that a percentage increase in the cash ratio will decrease the banks profit after tax by -0.005,-0.03, -0.055 and -0.003 respectively

The panel result for the variable (LTDR**)**

Dependent Variable: PAT?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.406467	1.280299	1.098545	0.2746
_ACCESS--LTDR	0.015363	0.015975	0.961713	0.3385
_FIDELITY--LTDR	-0.027815	0.012844	-2.165588	0.0327
_FCM--LTDR	-0.024672	0.025853	-0.954301	0.3422
_GTB--LTDR	0.003085	0.021290	0.144899	0.8851
_STERLING--LTDR	-0.035677	0.045096	-0.791149	0.4307
_UBN--LTDR	-0.026079	0.172918	-0.150820	0.8804
_UBA--LTDR	0.007581	0.023888	0.317347	0.7516
_UNITY--LTDR	0.040160	0.103046	0.389728	0.6976
_WEMA--LTDR	-0.023429	0.082025	-0.285630	0.7758
_ZENITH--LTDR	0.011130	0.019219	0.579087	0.5638

Source: Authors' Computation from the E-views 9 output

The variable loan to deposit ratio LTDR indicate positive signs for ACCESS, GTB, UBA,UNITY and ZENITH banks respectively and are insignificant statistically. The positive sign of the LOAN variable indicates that during the period under review, the banks recorded high profit after tax loan as a result of their huge earnings from loans. The result indicates that a percentage increase in the Banks' loan to deposit ratio increases the banks' profit after tax by 0.02, 0.003, 0.007, 0.04 and 0.011 respectively.

The coefficient of loan to deposit ratio for the other banks which include, FIDELITY, FCMB, STERLING, UBN, and WEMA are negative. The negative sign could be attributed to huge bad loans recorded by the banks during the period under study. It show also that a percentage increase in the loan to deposit ratio will decrease the banks profit after tax by-0.03,-0.02-0.036, -0.03 and -0.023 respectively.

The panel result for the variable (LTAR**)**

Dependent Variable: PAT?				
Method: Pooled EGLS (Cross-section weights)				
Sample: 2006 2019				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.406467	1.280299	1.098545	0.2746
_ACCESS--LTAR	-0.002621	0.008301	-0.315804	0.7528
_FIDELITY--LTAR	-0.005321	0.006674	-0.797239	0.4272
_FCM--LTAR	-0.001716	0.013434	-0.127772	0.8986
_GTB--LTAR	-0.023968	0.011063	-2.166565	0.0326
_STERLING--LTAR	0.006305	0.023432	0.269094	0.7884
_UBN--LTAR	-0.035306	0.089850	-0.392944	0.6952
_UBA--LTAR	-0.010225	0.012412	-0.823772	0.4120
_UNITY--LTAR	0.005965	0.053544	0.111398	0.9115
_WEMA--LTAR	0.015372	0.042621	0.360680	0.7191
_ZENITH--LTAR	0.040814	0.009986	4.086969	0.0001

Source: Authors 'Computation from the E-views 9 output

From the panel regression results in table above, the loan to asset ratio variable indicate a positive sign for four banks, STERLING, UNITY, WEMA and ZENITH; and is significant statistically at 5% level for only ZENITH. The positive coefficient recorded by the variable LTAR indicates that a percentage increase in the Banks loan to asset ratio increases the banks' profit after tax by 0.006305, 0.005965, 0.015372 and0.040814 respectively .for the other six banks which include, ACCESS, FIDELITY, FCM, GTB, UBN and UBA, the coefficient of the loan to asset ratio show a negative signs and is significant statistically for only one bank (GTB).It show also that a percentage increase in the loan to asset ratio will decrease the banks profit after tax by -0.002,-0.005,-0.002,-0.024,-0.04 and -0.01 respectively.

The panel cross section fixed effect results for PAT equation

Fixed Effects (Cross)			
_ACCESS--C	-0.331648		
_FIDELITY--C	1.418385		
_FCM--C	0.782026		
_GTB--C	4.481984		
_STERLING--C	0.814793		
_UBN--C	0.406340		
_UBA--C	0.030870		
_UNITY--C	-5.565002		
_WEMA--C	0.211756		
_ZENITH--C	-2.249504		
Effects Specification			
Cross-section fixed (dummy variables)			
Weighted Statistics			
R-squared	0.627072	Mean dependent var	4.626167
Adjusted R-squared	0.481630	S.D. dependent var	5.522519
S.E. of regression	3.102260	Sum squared resid	962.4014
F-statistic	4.311499	Durbin-Watson stat	2.599790
Prob(F-statistic)	0.000000		
	Unweighted Statistics		
R-squared	0.261587	Mean dependent var	1.211286
Sum squared resid	962.4014	Durbin-Watson stat	3.152055

Source: Authors' Computation from the E-views 9 output

The panel cross section fixed effect results for PAT equation indicates that the constant term of the regression coefficients of the individual banks under study indicates positive signs for seven banks. Thus holding other things constant, the banks' profit after tax during the periods increased for FIDELITY by (1.42), FCMB by (0.78), GTB by (4.48), STERLING (0.81), UBN (0.41), UBA (0.03) and WEMA by (0.21) respectively. Also, the constant term for the three other banks, ACCESS, UNITY, and ZENITH indicates that all thing being equal, profit after tax of the banks during the period under study decreased by-0.33,-5.56 and -2.25 respectively. The Statistical analysis shows that the coefficient of determination R^2 shows a value of 0.63, and the adjusted

R^2 shows a value of 0.48 respectively. This indicates that 48% of variations in the dependent variable (PAT) is explained by the independent variables. The F-statistics results show that the overall model is statistically significant with a value of Prob (F-statistic) = 0.000000; while the Durbin-Watson (DW) statistics value indicate absence of serial correlation in the models under consideration.

Summary and conclusion

It could be said that the various liquidity management policies as put up by the Central Bank of Nigeria is helping to mop up excess liquidity in the banking system. However the actual impact of each policy on a bank's profitability ratio is a function of other endogenous variables inherent in a bank and how their executive management is stirring the financial rudders of the bank.

In conclusion, the estimated results on the effect of liquidity management on banks with focus on ten selected commercial banks with national and international authorizations in Nigeria shows that Cash ratio (CAR) impacted positively on Return on equity for the following 8 banks: ACCESS, FIDELITY, FCMB, GTB, UBN, UBA, UNITY and WEMA. It was statistically significance at 5% level for FIDELITY and FCMB; but impacted negatively on STERLING and ZENITH banks, though not statistically significant.

Loan to Deposit ratio (LTDR) impacted positively on Return on equity for the following 7 banks: ACCESS, GTB, UBN, UBA, UNITY, WEMA and ZENITH but impacted negatively on the ROE of FIDELITY, FCMB and STERLING but that of FIDELITY was statistically significant at 5% Alpha level.

Loan to Assets ratio (LTAR) impacted positively on only one bank - STERLING but it was not statistically significant. For the remaining 9 banks, the coefficients of LTAR show a negative sign and are statistically significant at 5% level for 3 banks (FIDELITY, GTB, and ZENITH). Thus in the return to equity equation, the loan to asset ratio contributed negatively for most of the banks for the period under review.

The panel cross section fixed effect results for ROE equation show that the constant term of the regression coefficients of the individual banks indicates positive signs for ACCESS, FIDELITY, FCMB, GTB, STERLING, UBA, and ZENITH; but that of UBN, UNITY, and WEMA indicates a negative sign. Thus their performance for the period under review indicates a decrease.

Cash ratio (CAR) impacted positively on return on assets for seven banks namely, ACCESS, FIDELITY, FCMB, STERLING, UBN, UBA and UNITY respectively. It was statistically significant at 5% for (FIDELITY and FCMB); but impacted negatively on GTB, WEMA and ZENITH banks, though not statistically significant.

Loan to deposit ratio (LTDR) impacted positively on return on assets for three banks namely GTB, UBA and UNITY. This was not statistically significant but it impacted negatively on ACCESS, FIDELITY, FCMB, STERLING, UBN, WEMA and ZENITH banks respectively. This is statistically significant at 5% level for FIDELITY and FCMB. Thus LTDR contributed negatively to the performance of the seven banks' return on asset for the period under study.

Loan to asset ratio (LTAR) impacted positively ROA for three banks namely FCMB, STERLING and WEMA respectively but it was not statistically significant. This indicates that the three banks under study recorded high returns to asset as a result of loan asset payment. For the other seven banks, the Coefficient of the LTAR shows a negative sign and is statistically significant at 5% level for only one bank- (GTB).

The panel cross section fixed effect results for ROA equation indicates positive signs for three banks. They are FIDELITY, FCMB, GTB and ZENITH respectively. It also indicated a decrease for the other 6 banks namely ACCESS, STERLING, UBN, UBA, UNITY, and WEMA bank.

Cash Ratio (CAR) impacted positively on Profit after tax (PAT) for 6 out of the 10 banks. This includes: FIDELITY, FCMB, STERLING, UBN, UBA and UNITY respectively and is statistically significant at 5% level for FIDELITY .It recorded negative signs for the other 4 banks namely - ACCESS, GTB, WEMA, and ZENITH. It was negatively and statistically significant for GTB

Loan to Deposit ratio (LTDR) impacted positively on Profit after tax (PAT) for ACCESS, GTB, UBA, UNITY and ZENITH banks respectively and is statistically insignificant. It recorded a negative sign for the other 5 banks namely FIDELITY, FCMB, STERLING, UBN, and WEMA.

Loan to Asset ratio (LTAR) impacted positively on Profit after tax (PAT) of four banks namely STERLING, UNITY, WEMA and ZENITH; and is significant statistically at 5% level for only ZENITH. It recorded a negative sign for the other 6 banks namely ACCESS, FIDELITY, FCM, GTB, UBN and UBA. It was negatively and statistically significant for GTB.

The panel cross section fixed effect results for PAT indicates positive signs for seven banks. Profit after tax for the period under review increased for FIDELITY, FCMB, GTB STERLING UBN UBA and WEMA. The other 3 other banks, ACCESS, UNITY, and ZENITH recorded a decrease for the same period.

RECOMMENDATIONS

Based on the findings of study, we hereby make the following recommendations:

(i) Banks should evaluate and redesign their liquidity management strategy so that it will not only optimize returns to shareholders equity but also optimize the use of the assets.
(ii) The liquidity management of Nigerian banks should be more proactive than what it is now.
(iii) Commercial banks should not concentrate on profit maximization alone but should also adopt measures that will ensure effective liquidity management. Where there is excess liquidity, the following steps should be considered:

- The surplus funds banks should be invested in short-term instruments of the money market.
- The excesses could be invested in the real sector
- It could be invested in profitable financial and real sectors abroad
- It could be used for expansion where there is a positive synergy for such expansion
- Where none of the above is obtainable commercial banks should lodge in such excesses with the CBN.

(iv) Banks should create a customer's forum where their customers will be educated on varieties of deposits that are available to them.
(v) The Central Bank of Nigeria should maintain a flexible minimum monetary policy to enable banks take advantage of the alternative measures of meeting the unexpected withdrawal demands, and reduce the tendency of maintaining excess idle cash at expense of profitability.
(vi) Commercial banks should schedule the maturity of their secondary reserve assets to correspond to the period in which the funds will be needed.
(vii).The CBN should take the interest of commercial banks into consideration while establishing and implementing these monetary policies in general and the liquidity ratio in particular

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