FINANCIAL DEEPENING AND THE LIQUIDITY OF COMMERCIAL BANKS IN NIGERIA

BY

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Abstract

This study examined the effect of financial deepening on the liquidity of commercial banks in Nigeria from 2001 - 2018 using a sample of seven commercial banks. Panel data analysis technique was used in analyzing the secondary data, which were sourced from the Central bank of Nigeria statistical bulletin and the annual reports of the selected banks. Cash to deposit ratio and cash to asset ratio of commercial banks were the proxies of liquidity, while, the ratio of broad money supply to GDP, the ratio of deposit liabilities to GDP and the ratio of credit to the private sector to GDP represents financial deepening. The findings of this study revealed that financial deepening indicators; the ratio of broad money supply to GDP and the ratio of deposit liabilities to GDP had positive but statistically insignificant effect on commercial banks' liquidity in Nigeria, while, the ratio of credit to the private sector to GDP has negative but significant effect on commercial banks' liquidity. The study recommends that, monetary and macroeconomic policies should be geared towards strategically increasing money supply, and credit to the private sector should be channeled to the real sector of the economy to increase economic activities, generate revenue, increase savings and enhance commercial banks liquidity. Furthermore, high quality liquid assets buffer, sufficient to hedge unexpected liquidity outflows should be maintained and there should be regular review of prudential guidelines for efficiency. Measures should be put in place to avoid idle cash by leveraging on savings deposits, fixed account and current account balances to ensure that investment opportunities are utilized and commercial banks liquidity enhanced.

Keywords: *Financial Deepening, Liquidity, Commercial Banks, Broad Money Supply, Credit to the Private Sector, Loanable Funds*

JEL Classification: E2, E4, E50, E51, E52

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Introduction

Liquidity is the availability of cash and near-cash assets to settle short-term and maturing obligations without delay or within the shortest notice, usually one year. It describes a banks' ability to fund asset acquisitions and discharge financial obligations, without incurring damaging losses (Hlatshwayo, Petersen, Mukuddem-Petersen, and Meniago 2013). Banks are therefore, required to maintain higher levels of capital, as well as liquid assets in order to reduce the impact of financial crisis on the financial system and the economy in general.

Commercial banks are financial intermediaries that perform the function of accepting deposits from the general public and giving loans for investment with the aim of earning profit. Commercial banks are therefore profit-making institutions. As commercial banks broaden their scope of financial products and services, there exists a resultant supply and demand of these financial products and services which entails financial deepening. Financial deepening helps in increasing the provision and choices of financial services which would come through financial infrastructure. Nzotta and Okereke (2009) ascertained that financial deepening is the ability of financial institutions in an economy to effectively mobilize savings for investment purposes. Financial deepening vigorously attracts the reservoir of savings and idle funds and allocates same to entrepreneurs, businesses, households and government for investments projects and other purposes with a view of getting returns which forms the basis for economic growth.

According to Anyanwokoro (2008), every successful business and individual is bound to come in contact with a bank; either to deposit money, obtain a credit facility, cash a cheque, transfer money, obtain a draft, seek for business advice, obtain foreign exchange for international trade and remittances, or carry out other banking transactions. In order to effectively perform the above functions and more, banks ought to be liquid. Liquidity is the availability of cash and near-cash assets to settle short-term and maturing obligations without delay or within the shortest notice. These obligations arise when banks have to repay customers deposits (deposit withdrawals), when borrowers want to collect the loans approved for them in cash or near-cash forms (loan drawn downs) and when there is need to settle other obligations that demand cash outflow (Anyanwokoro, 2008). Cash is the most liquid asset. It can be used to settle immediate financial obligations without converting it to something else before spending. Other assets have to be converted to cash or near-cash assets before they can be used to settle financial obligations.

Statement of the Problem
One of the most important tasks the management of any financial institution faces is ensuring the availability of adequate liquidity at all times, no matter what emergencies may appear. Lack of adequate liquidity can be one of the first signs that a financial institution is in trouble. A troubled bank losing deposits will likely be forced to dispose some of its safer, more liquid assets. Other lending institutions may become increasingly reluctant to lend the troubled financial institution any new funds without additional security or the promise of a higher rate of interest, which may reduce the earnings of the troubled financial institution and threaten it with winding up or distress. The cash shortages that some financial service providers experience makes it obvious that liquidity needs cannot be ignored. A financial institution can also be wound up if it cannot raise sufficient liquidity even though, technically, it may still be solvent (Hudgins and Peter, 2013).
Liquidity needs arises when banks have to repay customer's deposits, when borrowers want to collect the loans approved for them in cash or near cash forms (loans drawn down) and when there is need to settle other obligations that demand cash outflow. Liquidity differs from solvency. Solvency has to do with the ability to settle short term

and maturing obligations if given enough time to do so. A bank may be solvent without being liquid, but a bank cannot be liquid without being solvent. A bank may have enough short-term securities. If depositors come for deposit withdrawal, they want immediate repayment of their money. They may not wait for the bank to sell off those securities before they are paid. As such, banks have to ensure that cash and near-cash assets are regularly available to meet such short-term liquidity needs (Anyanwokoro, 2008).

Financial deepening has macroeconomic effect. This effect can be felt both on the economy at large and on the bank's performance in terms of returns. Studies have shown that financial deepening have positive effect on the economy as it accelerates economic development thus fostering the growth of the economy. Likewise, the channels that provide the services that entail financial deepening are affected either positively or negatively. Sometimes, there are cases where customers come to banks for short-term financial services like deposit withdrawals and end up either discouraged or disappointed. Could it be that such banks are unaware that the expansion of financial services implies increased supply of such services? Or could it be that they are ill prepared to meet their liquidity obligations?

Empirical studies involving the impact of financial deepening on the liquidity of commercial banks is scarce. Few researches on this area focused on financial deepening and banks performance (profitability) or economic growth. Igwebuike *et al.,* (2019) analyzed the effects of financial deepening on economic growth of Nigeria (1981 to 2016) through two of the basic arms of the financial industry (Insurance companies and Banking Industry). The study found that insurance industry premium to GDP has positive but insignificant effect, while, credit to private sector by commercial banks to GDP has positive and significant effect on economic growth in Nigeria. Azu-Nwangolo & Ogechi (2018) explored the relationship between financial deepening indicators and customers deposit mobilization in Nigeria commercial banks. Their regression result found that narrow money supply and money market development have negative effect on total customers' deposit of commercial banks, while, private sector credit, broad money supply and money outside the bank have positive effect on customers' deposit with commercial banks in Nigeria. Olawumi *et al,* (2017) investigated the relationship between financial deepening and bank performance. They discovered that financial deepening made positive contributions to the level of profitability of the selected commercial banks in Nigeria. Andele (2013) investigated financial deepening and profitability of commercial banks in Kenya. The study targeted all the commercial banks in Kenya. The findings of the study revealed that financial deepening affects bank profitability positively. Unavailability of studies on financial deepening and liquidity of commercial banks in Nigeria, coupled with the inconsistency of results obtained by those that researched on financial deepening and commercial banks profitability or economic growth prompted this study which is aimed at examining the effect of financial deepening on the liquidity of commercial banks in Nigeria.

Literature Review
Conceptual Framework

Financial deepening is the ratio of money supply to gross domestic product. It seeks to establish how the supply leading side of money contributes to the development in the financial markets of the financial system and ultimately the growth of the economy. Conventionally the higher the money supply, the more accessible to funds by investors for investments. Investments in turn enhance productivity and economic activities, thus leading to increase in gross domestic product. Financial deepening is also regarded as financial depth. Financial deepening shows the level of development of financial system and markets by way of effectiveness and efficiency of financial intermediation (Honohan, 2004). Klein and Olive (2008) noted that the greater the financial deepening, the more significant is the ability of the financial sector to reallocate financial resources in support of economic development. Mirkin, Kuznetsova &Kuznetsov (2013) opined that financial deepening reflects the compatibility between the volume of production and the size and structure of the financial sector in terms of savings, investments and redistributive mechanisms through financial instruments.

The growth of domestic savings provides the real structure for the creation of diversified financial claims. The most classic and practical proxy for financial deepening is the ratio of broad money supply to GDP (M2/GDP).

Financial deepening is thus measured by relating monetary and financial aggregates, M1, M2 and M3 to Gross Domestic Product (GDP). M1, M2, M3 are measures of money supply in circulation at a given time. Conceptually, financial depth is often understood to mean that: i) sectors and agents have access and are able to use a range of financial markets for savings and investment decisions; ii) financial intermediaries and markets are liquid and able to deploy larger volumes of capital and handle larger turnover, without necessitating large corresponding movements in asset prices; and iii) the financial sector can create a broad range of products and assets for risk-sharing purposes (hedging or diversification). In other words, deep financial systems and markets allow savers to invest in a broad range of quality assets, investments and risk-sharing instruments and allow borrowers to likewise leverage on broad range of financing and risk management instruments (King & Levine 1993; and Rajan & Zingales 1998). The most commonly used measures of financial deepening include ratio of broad money supply to GPD, the ratio of deposit liabilities to GDP, the ratio of credit to the private sector to GDP, the size of non-bank institutions to the financial system, degree of monetization and the size of currency outside the bank. Conceptually, this study states that financial deepening has a direct effect on the liquidity of banks. As banks diversify by increasing their financial products and asset base, they attracted more customers to the bank who either deposit money or make use of other financial services and as such the liquidity needs of the bank increases as they are to settle more short-term financial obligations. Increase in loanable funds means more liquid money will be available in the economy. This will increase economic activities and create more opportunities for growth of the economy.

Theoretical Framework

According to McKinnon (1973) and Shaw, (1973) any distortion and limitation on the banking sector, such as interest rate controls, reserve and liquidity requirement, and government rationing of available credit to the priority sectors, inhibit financial development mainly by depressing the interest rate. The deficiency in the amount of savings due to such repressive measures thwarts economic development through the perverse effects on the volume and the quantity of investment. Thus, the main argument of McKinnon and Shaw is that financial repression has a detrimental effect on financial development, hence on banks' liquidity and banks' performance. McKinnon and Shaw believes that financial repression needs to end in emerging countries and advocate for financial liberalization. Financial repression implies a series of constraints: the necessity for banks to have no remunerated reserves in the central banks, too low interest rates for savers etc. that are so strong that financial markets cannot be developed. Economists are of the opinion that financial repression leads to domestic agents to prefer having unproductive assets or no monetary assets rather than depositing assets in the bank. Based on this reason there are not enough funds to be lent in the economy, which create an obstacle for investment and thus for growth. This study therefore relies on the supply leading hypothesis which suggests that financial deepening accelerates growth, and to accelerate growth, the financial institutions should have enough liquidity to respond to their short term obligations and increase economic activities. The existence and development of the financial institutions and markets brings about a higher level of savings and investment and enhance the efficiency of capital accumulation. The contention of this hypothesis is that, well-functioning financial institutions can promote overall economic efficiency, create and expand capital accumulation, transfer resources from traditional sectors to the modern growth inducing sectors and also promote a competent entrepreneur response in these modern sectors of the economy. Early economists have strongly supported the view of finance led caused relationship between finance and economic growth. Liquidity of commercial banks is therefore necessary for effective and efficient financial intermediation.

Review of Related Empirical Literature

Most studies in this area were not on liquidity but centered on financial deepening and its effects on banks performance or economic growth and development. In the course of this study, the empirical literatures of some of the studies were reviewed.

Modupe, *et al.,* (2019) examined money market instruments and financial deepening in the context of an emerging economy like Nigeria. The study used money market instruments like Treasury bills (TBs), Bankers' acceptances (BAs), Certificate of deposits (CDs) and Commercial papers (CPs). The ratio of money supply to gross domestic product was the proxy for financial deepening. Time series data was generated from Central Bank of Nigeria Statistical Bulletins in the period 1981 to 2016 for the study. Preliminary tests including Augmented Dickey Fuller (ADF), unit root test and descriptive statistics were carried out before the main econometric procedures were employed to analyze the data. The econometric procedures carried out include granger causality test, the ordinary least square multivariate regression method; the Johansen co-integration and the error correction mechanism (ECM). The study found

strong effect of money market instruments on financial deepening in Nigeria in the long run. Granger causality test result revealed no directional causality relationship between Treasury bills and financial deepening, while bi-directional causality exists between Certificate of deposits and financial deepening; unidirectional causality exists between Bankers' acceptances, Commercial papers and financial deepening.

Igwebuike, *et al.,* (2019) analyzed the effects of financial deepening on economic growth of Nigeria (1981 to 2016) through two of the basic arms of the financial industry (Insurance companies and Banking Industry). Secondary data from CBN statistical bulletin and Global Financial Development bulletin, 2017 as provided by the World Bank were utilized. The analytical tool used was Ordinary Least Squares (OLS). It was found that insurance industry premium to GDP has positive but no significant effect while credit to private sector by commercial banks to GDP has positive and significant effect on economic growth in Nigeria. Based on the results of the study, it was concluded that credit to private sector by commercial banks to GDP has significant effect while insurance industry premium to GDP has no significant effect on economic growth in Nigeria.

Azu-Nwangolo & Ogechi (2018) explored the relationship between financial deepening indicators and customers deposit mobilization in Nigeria commercial banks. Using time series data sourced from Central Bank of Nigeria Statistical Bulletin, from 1981-2017, Percentage of total customers' deposit to total assets was used as dependent variables while percentage of narrow money supply, broad money supply, money market development, money outside the bank and private sector credit to gross domestic product was used as independent variables. Their regression result found that narrow money supply and money market development have negative effect on total customers' deposit of commercial banks while private sector credit, broad money supply and money outside the bank have positive effect on customers' deposit of commercial banks in Nigeria.

Olawumi, *et al,* (2017) investigated the relationship between financial deepening and bank performance using broad money supply to GDP (M_2/GDP), ratio of credit to private sector to GDP, ratio of deposit liabilities to GDP as variables of financial deepening while performance measure of interest is profitability. Adopting descriptive research design, they explored the relevance of financial deepening on banks performance using secondary data. Their findings revealed that each component of financial deepening indicators has a strong relationship and are statistically significant; this provides empirical evidence that financial deepening made positive contributions to the level of profitability of the selected commercial banks in Nigeria. Their study concluded that the contributions of each component of financial deepening to selected commercial banks performance are strong and statistically significant.

Ezeaku, Okafor & Onwumere (2016) carried out a causality and impact study on financial deepening and economic growth in Nigeria for 33 years period covering 1981 - 2013. They used the Phillips-Peron test for unit root to ascertain whether the variables are stationary or not. The VEC residual normality test and the Histogram- Normality

test were also utilized in other to determine if the data set were normally distributed. Test for a long run relationship was conducted with the aid of the Johansen co-integration test. The Error Correction Model as well as the Granger causality test was also employed. Their findings revealed that there is long run relationship between economic growth, broad money supply and private sector credit, with high speed of adjustment towards long run equilibrium. The results also revealed that while broad money has positive and non-significant impact on economic growth, private sector credit has negative and non-significant impact on growth. The Granger causality test results showed that neither broad money supply nor private sector credit has granger causality link with economic growth and vice versa.

Adekunle, Ganiyu, & Adedipe (2013) examined the impact of financial sector development on economic growth in Nigeria. OLS method of the regression analysis was employed. Financial development was proxied by ratio of money stock to GDP (M_2/GDP), real interest rate (INTR), ratio of credit to private sector to GDP (CP/GDP), while economic growth was measured by RGDP. The study revealed that only the real interest rate is negatively related to growth, while all the explanatory variables were statistically non-significant. Though the overall statistic indicated that the independent variables were able to explain 74 percent variation in the dependent but contrary to theoretical expectation, it is not statistically significant.

Andele (2013) accessed financial deepening and profitability of commercial banks in Kenya. The study targeted all the commercial banks in Kenya. Secondary data was collected from the Kenya National Bureau of Statistics, Central Bank of Kenya and websites of licensed Commercial banks in Kenya. The study used both explanatory research design and inferential statistics to investigate the effect of financial deepening on profitability of commercial banks. The findings of the study revealed that financial deepening affects bank profitability positively. The results further present a strong argument towards increasing financial deepening as an important stimulator of greater banking profitability.

Sindani (2013) examined the impact of financial sector deepening on economic development in Kenya. The study used 44 commercial banks using data from 2007 to 2011. Financial deepening was measured using ATM network and deposit accounts. The results showed a negative effect of ATM network and positive effect of deposit accounts on economic development, measured as the GDP. This reveals that the consequences of financial deepening on economic development are mixed depending on the measure used.

Onwumere, Ibe, Ozoh & Mounanu (2012) studied the impact of financial deepening on economic growth in Nigeria. The study adopted supply leading hypothesis. The proxies used for financial deepening include: broad money velocity, money stock diversification, economic volatility, market capitalization and market liquidity, while the proxy for the dependent variable was rate of gross domestic product. The study reveals that while broad money velocity and market liquidity enhance economic growth, market capitalization, economic volatility and stock diversification were not statistically significant in determining economic growth during the period under study.

Methodology
Model Specification
This study adopted the econometric model used by Onyemachi (2012) in accessing the effect of financial deepening on Nigeria's economic growth. Onyemachi, (2012) stated the studies research model as follows:

PRFT (PBT) = $\beta_0 + \beta_1$ FD (M$_2$ GDP) + β_2RCPGDP + β_3 RDLGDP + μ..................................
(1)

Where: PRFT (PBT) = Profit before tax; FD (M$_2$/GDP) = Ratio of money supply (M$_2$)/GDP; RCPGDP = Ratio of credits to Private Sector to GDP; RDLGDP = Ratio of deposit liability to GDP; GDP = Gross Domestic Products at current basic prices; and μ = Error term.

In order to determine the influence of financial deepening on the liquidity of commercial banks in Nigeria, modifications were made to include the proxies for bank liquidity as the dependent variables. Two models were employed in this research. Hence, the mathematical models for determining the influence of financial deepening on the liquidity of commercial banks in Nigeria are stated as;

CDR = F (M$_2$R, CPS, and RDL)... (2)
CAR = F (M$_2$R, CPS, and RDL)... (3)

Based on the modifications, econometric models for this study are thus stated as;

CDR = $\beta_0 + \beta_1$M$_2$R + β_2CPS + RDL + μ... (4)
CAR = $\beta_0 + \beta_1$M$_2$R + β_2CPS + RDL + μ... (5)

Where: CDR = Cash to Deposit ratio of commercial banks (%); CAR = Cash to asset ratio of commercial banks (%); M$_2$R = Ratio of Broad money supply to GDP (%); CPS = Ratio of Credit to private sector to GDP (%); RDL = Ratio of deposit liabilities to GDP (%); μ = Stochastic variable.

Description of Research Model Variables
1. Cash to Deposit Ratio of Commercial Banks (CDR): This is the ratio of cash maintained in the bank to its total deposit liabilities. The cash-deposit ratio for a bank is equal to (total cash)/ (total deposits). The bank must maintain liquidity to operate and will hold an amount of cash to service net withdrawals from customer activities such as drawing from their deposit (checking and savings) accounts.

2. Cash to Asset Ratio of Commercial Banks (CAR): This is the ratio of cash held in the bank to its total assets. This ratio should be 1:1. If it is higher, the company may keep too much cash on hand or have a poor collection program for accounts receivable. If it is lower, it may indicate that the company relies too heavily on inventory to meet its obligations.

3. Ratio of Broad Money Supply to GDP (M$_2$R): This is the ratio of money in circulation to the nominal output. Broad money measures the amount of money circulating in an economy. Broad money supply is the totality of assets that households and businesses can use to make payments or to hold as short-term investments, such as currency, funds in bank accounts, and anything of value resembling money. Expansionary monetary policy increases the money supply in an economy. The increase in the money supply is mirrored by an equal increase in nominal output, or

Gross Domestic Product (GDP). In addition, the increase in the money supply will lead to an increase in consumer spending.

4. Ratio of Credit to Private Sector to GDP (CPS): This is the value of domestic credit granted to the private sector as a percent of the country's GDP. If the banking credit to the private sector is about 70 percent of GDP and more, then the country has a relatively well developed financial system. The amount of credit can even exceed 200 percent of GDP in some very advanced economies. In some poor countries, the credit could be less than 15 percent of GDP.

5. Ratio of Deposit Liabilities to GDP (RDL): This is the ratio of the banks total deposits to the nominal output of a given country. Deposit liabilities are money that people and companies have put into banks, and that the banks will have to pay back at some time in the future. Banks should ensure that their assets are worth enough to meet their deposit liabilities. Deposit accounts are the most important bank liabilities and checking accounts are high on that list. Because a bank must let its customers withdraw money immediately from their checking accounts, the bank essentially "owes" them that money, which makes these account liabilities.

Data Analysis and Results Presentation
Panel data analytical technique was used to assess the influence of financial deepening on commercial bank liquidity using Cash to deposit ratio (CDR) and Cash to assets ratio (CAR) as proxies for commercial bank liquidity while the ratio of broad money supply to GDP (M_2R), ratio of bank credit to the private sector to GDP (CPS) and ratio of deposit liabilities to GDP (RDL) were used as proxies for financial deepening. The panel data analysis was done using three different approaches; pooled effect model, fixed effect model and random effect model. In order to choose the appropriate model for this study, the Hausman test was carried out. The Hausman Test (also called the Hausman specification test) detects endogenous regressors (predictor variables) in a regression model. Endogenous variables have values that are determined by other variables in the system. With the probability $(1.0000) > 0.05$, the random effect model was chosen as the appropriate model for this study. The analyzed output of the random effect model for the first proxy of commercial bank liquidity - cash to deposit ratio (CDR) is presented in Table 4.1.

Table 4.1 Output of the Random Effect Model – CDR

Dependent Variable: CDR				
Method: Panel EGLS (Cross-Section Random Effects)				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.699999	0.149166	4.692739	0.0000
M2R	0.005232	0.016288	0.321240	0.7486
CPS	-0.033489	0.011573	-2.893703	0.0045
RDL	3.64E-06	4.00E-06	0.909086	0.3651
	Effects Specification			
			S.D.	Rho
Cross-section random			0.000000	0.0000

Idiosyncratic random			0.168034	1.0000
	Weighted Statistics			
R-Squared	0.402618	Mean dependent var		0.333299
Adjusted R-Squared	0.387928	S.D. dependent var		0.209433
S.E. of Regression	0.163850	Sum squared resid		3.275324
F-Statistic	27.40816	Durbin- Watson stat		2.310925
Prob(F-Statistic)	0.000000			
	Unweighted Statistics			
R-Squared	0.402618	Mean dependent var		0.333299
Sum Squared Resid	3.275324	Durbin- Watson stat		2.310925

Source: Author's computations 2020, using E-views 10.0

4.2 Hausman Test

Correlated Random Effects - Hausman Test			
Test Cross-Section Random Effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-Section Random	0.000000	3	1.0000
* Cross-section test variance is invalid. Hausman statistic set to zero.			
** WARNING: estimated cross-section random effects variance is zero.			
Cross-section random effects test comparisons:			
Variable	Fixed	Random	Var(Diff.)	Prob.
M2R	0.005232	0.005232	0.000000	1.0000
CPS	-0.033489	-0.033489	0.000000	1.0000
RDL	0.000004	0.000004	0.000000	1.0000
Cross-section random effects test equation:			
Dependent Variable: CDR			
Method: Panel Least Squares			
Total panel (balanced) Observations: 126			
Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	0.699999	0.149166	4.692739	0.0000
M2R	0.005232	0.016288	0.321240	0.7486
CPS	-0.033489	0.011573	-2.893703	0.0045
RDL	3.64E-06	4.00E-06	0.909086	0.3652
	Effects Specification		
Cross-Section Fixed (Dummy Variables)			
R-squared	0.402618	Mean dependent var		0.333299
Adjusted R-squared	0.356270	S.D. dependent var		0.209433
S.E. of regression	0.168034	Akaike info criterion		-0.653258
Sum squared resid	3.275324	Schwarz criterion		-0.428156
Log likelihood	51.15524	Hannan-Quinn criter.		-0.561806
F-statistic	8.686740	Durbin- Watson stat		2.310925
Prob(F-statistic)	0.000000			

Source: Author's computations 2020, using E-views 10.0

The result above shows the value for the coefficients of M_2R, CPS and RDL as 0.005232, -0.033489 and 3.64E-06 respectively, while the constant intercept C is 0.699999. The value 0.699999 represents commercial banks liquidity given that other variables are kept constant. The value 0.005232 implies that holding all other factors

constant, a unit increase in the ratio of broad money supply to GDP (M_2R) would lead to 0.52% increase in commercial bank liquidity, the value -0.033489 implies that when other factors are held constant, a unit increase in the ratio of bank credit to the private sector to GDP would lead to a decrease in commercial bank liquidity by 3.3%.

R^2 and adjusted R^2 tell the percentage variation in commercial bank liquidity explained by financial deepening indicators. The value 0.387928 means that about 39% of the total variation in commercial bank liquidity is as a result of changes in financial deepening indicators. Durbin-Watson statistic being 2.310925 tells that there is no evidence of first-order autocorrelation. Considering the probability values for the coefficients M_2R, CPS and RDL, this study found that the ratio of broad money supply to GDP and the ratio of deposit liabilities to GDP have positive but insignificant effects on the liquidity of commercial banks in Nigeria, while, the ratio of credit to private sector to GDP has negative but significant effect on commercial banks' liquidity Nigeria.

The analyzed output of the random effect model for the second proxy of commercial bank liquidity - cash to asset ratio (CAR) is presented in Table 4.3 below:

Table 4.3 Output of Random Effect Model – CAR
Random effect model

Dependent Variable: CAR				
Method: Panel EGLS (Cross-section random effects)				
Variable	Coefficient	Std. Error	t- Statistic	Prob.
C	0.536633	0.085000	6.313357	0.0000
M2R	0.015740	0.009282	1.695843	0.0925
CPS	-0.016520	0.006595	-2.504928	0.0248
RDL	2.90E-06	2.28E-06	1.270566	0.2063
	Effects Specification			
			S.D.	Rho
Cross-section random			0.000000	0.0000
Idiosyncratic random			0.095751	1.0000
	Weighted Statistics			
R-squared	0.336589	Mean dependent var		0.195112
Adjusted R-squared	0.320275	S.D. dependent var		0.113247
S.E. of regression	0.093367	Sum squared resid		1.063521
F-statistic	20.63268	Durbin-Watson stat		1.983255
Prob(F-statistic)	0.000000			
	Unweighted Statistics			
R-squared	0.336589	Mean dependent var		0.195112
Sum squared resid	1.063521	Durbin-Watson stat		2.083255

Source: Author's Computations 2020, Using E-views 10.0

4.4 Hausman Test

Correlated Random Effects - Hausman Test			
Test cross-section random effects			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.000000	3	1.0000
* Cross-section test variance is invalid. Hausman statistic set to zero.			
** WARNING: estimated cross-section random effects variance is zero.			
Cross-section random effects test comparisons:			
Variable	Fixed	Random	Var(Diff.)	Prob.
M2R	0.015740	0.015740	0.000000	1.0000
CPS	-0.016520	-0.006520	0.000000	1.0000
RDL	0.000003	0.000003	0.000000	1.0000
Cross-section random effects test equation:			
Dependent Variable: CAR			
Method: Panel Least Squares			
Total panel (balanced) observations: 126			
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.536633	0.085000	6.313357	0.0000
M2R	0.015740	0.009282	1.695843	0.0926
CPS	-0.016520	0.006595	-2.504928	0.0249
RDL	2.90E-06	2.28E-06	1.270566	0.2064
	Effects Specification		
Cross-section fixed (dummy variables)			
R-squared	0.336589	Mean dependent var	0.195112
Adjusted R-squared	0.285117	S.D. dependent var	0.113247
S.E. of regression	0.095751	Akaike info criterion	-1.778089
Sum squared resid	1.063521	Schwarz criterion	-1.552988
Log likelihood	122.0196	Hannan-Quinn criter.	-1.686638
F-statistic	6.539319	Durbin- Watson stat	2.083255
Prob(F-statistic)	0.000000		

Source: Author's Computations 2020, Using E-views 10.0

The result above shows the value for the coefficients of M_2R, CPS and RDL as 0.015740, -0.016520 and 2.90E-06 respectively, while the constant intercept C is 0.536633. The value 0.536633 represents commercial bank liquidity if other variables were kept constant. The value 0.015740 implies that holding all other factors constant, a unit increase in the ratio of broad money supply to GDP (M_2R) would lead to an increase in commercial bank liquidity by 1.6%, the value -0.016520 implies that when other factors are held constant, a unit increase in the ratio of bank credit to the private sector to GDP would lead to a decrease in commercial bank liquidity by 1.65%.

R^2 and adjusted R^2 tell the percentage variation in commercial bank liquidity explained by financial deepening indicators. The adjusted R^2 value 0.320275 means that about 32% of the total variation in commercial bank liquidity is explained by changes in

financial deepening indicators. Durbin-Watson statistic of 2.083255 tells that there is no evidence of first-order autocorrelation. Considering the probability values for the coefficients M_2R, CPS and RDL, this study discovered that the ratio of broad money supply to GDP and the ratio of deposit liabilities to GDP had positive but insignificant effect on commercial banks' liquidity, while, the ratio of commercial banks' credit to private sector to GDP has negative and significant effect on commercial banks' in Nigeria.

Conclusion and Recommendations
This study examined the influence of financial deepening on the liquidity of commercial banks in Nigeria using time series data ranging from 2001 - 2018. It established that proxies of financial deepening; ratio of broad money supply to GDP and ratio of deposit liabilities to GDP had positive but statistically insignificant effect on commercial banks liquidity, while, ratio of private sector credit to GDP had negative but statistically significant impact on commercial banks liquidity in Nigeria. It further indicates that an increase in the supply and demand of financial services to a great extent can affect the liquidity of commercial banks as it increases the need for short-term financial obligations like deposit withdrawals.

This study concludes that high ratio of broad money supply to GDP and deposit liabilities to GDP in Nigeria will lead to more money in circulation and create more loanable funds with the commercial banks. This will accelerate economic activities, generate revenue and increase national savings and hence investment. This is in line with the income theory by Keynes - as income increases, savings would increase too. On the other hand, high ratio of credit to private sector/GDP will reduce bank liquidity, ensure investible funds in the private sector, accelerates economic activities, generate revenue and increase national savings. The study therefore recommends the following:

1.   Monetary and macroeconomic policies should be geared towards strategically increasing money supply. Incidences of poor liquidity should be minimized and private sector credits should be channeled to the real sector of the economy to expand liquidity.

2.   The findings of this study show that an increase in the ratio of deposit liabilities to GDP would automatically translate into an increase in the demand of short-term financial obligations like deposit withdrawals, loans drawn-down, etc. Bank management should identify and monitor key liquidity drivers such as loan and deposit margins to enhance effective and efficient liquidity management policy

3.   Having established that the ratio of private sector credit to GDP had negative and statistically significant impact on commercial banks liquidity in Nigeria, high quality liquid assets buffer, sufficient to hedge sudden liquidity outflows should be maintained and there should be regular review of prudential guidelines for efficiency, to hedge against the negative impact of financial deepening measures on liquidity of Nigeria commercial banks.

4.   Not minding the profits made by commercial banks from issuing private sector credits in form of loans, purchases of non-equity securities, trade credits and other accounts receivable, the management of banks should properly consider the inherent risk and plan adequately before issuing such loans, this is to guide against credit risk

5.   Increase in deposits liability automatically will translate to an increase in loanable funds. Measures should be put in place to leverage on savings deposits, fixed account deposits and current account balances and ensure investment opportunities are utilized and banks liquidity enhanced.

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