

Performance of deposit money banks and financial deepening in Nigeria

Kamal Adekunle Adewunmi

Department of Banking and Finance, Federal Polytechnic, Ilaro, Ogun State, Nigeria.

kamal.adewunmi@federalpolyilaro.edu.ng

Abstract

This paper examined performance of Deposit Money Banks (DMBs) and financial deepening (1989 to 2018). New attention given to drive financial deepening especially in developing economies is an attempt to stimulate performance of Deposit Money banks in Nigeria. The paper employed Ordinary Least Square (OLS) regression analysis method and also conducted Augmented Dickey and Fuller test for stationarity, Johansen co-integration and Granger Causality test to determine long run relationship between the dependent and independent variables. The variables employed includes money supply/Gross Domestic Product, Credit to Private Sector/Gross Domestic Product and Deposit Mobilization. Time series data was obtained from Central Bank of Nigeria statistical bulletin. Findings revealed that money supply to Gross Domestic Product (GDP) has no significant effect on Deposit Mobilization. In addition, it was established that Credit to Private Sector/Gross Domestic Product have significant impact on the performance of DMBs in Nigeria. Therefore, it was recommended that; government policy should be geared towards strategically increasing money supply and promoting efficient capital market that will enhance overall economic efficiency, mobilize savings and promote proficient entrepreneurial response in various sectors of the economy.

Keywords: Financial deepening, DMBs, Money supply, GDP and Bank performance.

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1. Introduction

Deposit Money Banks (DMBs) play substantial role in terms of economic development. Deposit money banks (DMBs) are banks that provides wide range of financial services both to general public and firms (Idowu, Essien & Adegboyega, 2017). DMBs functions in various dimensions in an economy which includes acceptance of deposit from customers for safe keeping, provision of loans and over-draft, acceptance of credit and discounting bill of exchange. The interrelationship among different account and lending activities of banks leads to their intermediation roles. The intermediation role is effectively carried out as a catalyst to economic development of any nation. Deposit money banks in Nigeria have undergone immense regulatory and technological changes since the attainment of democracy in 1960 as this marked the establishment of formal money and capital markets and portfolio (Ngerebo, Apoel & Lucky, 2016).

Nigerian banks were faced with increasingly keen competition and rising costs as a result of regulatory, financial and technological innovations, bank distress and other challenges which have dramatic effects on their performances. There forms in the financial system in Nigeria, heightened with the 1986 deregulation, affected the level of financial deepening in the country and the level relevance of the financial system to economic development (Onyemachi, 2012). Financial deepening refers to effectiveness of financial institutions in mobilizing savings for the investment purposes. Precisely, increase in maximum paid-up capital is expected to enhance the deepening of banking services in the country. In addition, advocate of consolidation by Soludo (2004), as cited in Olawumi, Lateef and Oladeji (2017), opined that; banks that could not meet the recapitalization requirement should engage in merger and acquisition, and as such, recapitalization is seen as an important component of consolidation. Meanwhile, much of financial deepening policies were aimed at enhancing bank performance but the success of these policies remains pale.

Banking sector reforms and recapitalization have resulted from deliberate policy response to correct perceived or intending banking sector crises and subsequent fractures (Uchendu, 2005) as cited in Olawumi *et al.*, (2017). Eighty nine (89) banks were operating predominantly in the urban Centre's as at 2004, they were characterized by structural and operational weakness of low capital base, poor asset quality, dominance of few banks, insolvency and illiquidity, over dependence on public sector deposits and foreign exchange trading, poor corporate governance and a system characterized by low public confidence (Kunt, 2009). As such, banks could not effectively support the real sector of the economy. Reforms are therefore predicated on the needs for re-orientation and repositioning of an existing status quo in order to attain effective and efficient state. In lieu of this, financial deepening becomes inevitable in the light of global dynamic exigency and emerging landscape (Ngerebo & Lucky, 2016). Therefore, financial deepening in the banking sector is required to enhance its competitiveness and capacity to play a vital role in development and the finance of investment opportunities in all sectors of the economy. Thus, financial deepening is a pre-condition for economic growth (Onyemachi, 2012).

Basically, empirical studies in Nigeria have not really answered performance of DMBs and financial deepening in Nigeria or sparse information still exist and yet universally generalized, and remain variant, inconsistent. Study by Nwakobi, Oleka and Ananwude (2019), examined effect of financial deepening on economic growth in Nigeria (1986-2018) using banking sector development, stock market deepening and insurance sector deepening and employed Auto-regressive Distributive Lag regression model. They found out existence of a positive relationship between banking sector development, stock market and economic growth in Nigeria, signaling that Nigeria's economic growth has not been significantly influenced by the level of financial sector development. In addition, Olawumi, Lateef and Oladeji (2017), adopted panel least square of simple regression analysis because, data sets on the variables have both time series and cross-sectional dimensions. Likewise, Ogbonna (2018), re-examined the impact of financial deepening on economic growth in Nigeria (1970-2015). He employed Log of annual RGDP as a measure of economic growth, bank total asset as a ratio of GDP, ratio of bank credit to private sector to GDP, ratio of market capitalization to GDP and stock market turnover ratio using vector error correction model, with a distinction between size and activity variables of financial deepening. It was concluded that only bank credit to private sector as a ratio of GDP and bank total asset as a ratio of GDP were significant and have effective transmitting impact on economic growth in Nigeria.

Meanwhile, in order to determine the performance of DMBs as correlated with financial deepening, it becomes imperative to make an in-depth look at the banking sector to measure financial deepening. Considerable attention has been devoted to evaluating financial deepening and its effect on economic growth. Most studies on financial deepening were not really concentrated on banking sector alone and performance of DMBs were not focus on, other areas which includes insurance sectors among others have been extensively studied. However, banks performance has received little attention in spite of the fact that they are important arms that play essential roles in the economic growth of any nation.

Chortareas, Garza-Garcia and Girardone (2011), examine the effect of financial deepening on bank performance. The study considered the nine Latin American countries and estimate banks productivity over the period (1982-2010). Vector autoregressive regressions, Granger causality and Johansen-Juselius cointegration tests were employed. Using quarterly data, findings of the study showcased an unambiguously positive correlation relationship between financial depth banking and productivity of the commercial banks in America. The study concluded financial deepening is an important factor to enhance the productivity level. The study also provided an evidence of a reverse causality between the two variables and the extent of the financial deepening in the commercial banks. In addition, Best, Francis and Robinson (2017), empirically examined the question of whether bank liquid reserves to bank assets ratio and domestic credit to the private sector as a percentage of GDP strengthens financial deepening on the real sector and hence catalyzes economic growth in Jamaica for the period 1981-2012. The data was obtained from the Central Bank of Jamaica Statistical Bulletin. A Granger causality approach was employed within a multivariate framework. The empirical evidence suggested a 'supplying leading' relationship in both the short and long run.

Ghildiyal, Pokhriyal and Mohan (2015), examined the causal impact of financial deepening on economic growth in case of India. For analyzing the long term equilibrium relationship between the desired variables, they employed Autoregressive Distributed Lag (ARDL) Bound testing approach. ARDL being a new approach is an improvement over the other traditional techniques of cointegration. Further, using the Granger Error Correction Model (ECM) technique they tried to estimate the causal impact in the short run also. The findings suggest that there exists an equilibrium relationship in long run between financial deepening and economic development. Results suggested that financial deepening causes economic growth in the long run and also in the short run. Therefore, it is concluded that for enhancing the economic growth the government has to take effort to improve the financial deepening. Yildiz and Atasaygin (2015), assessed the relationship between financial deepening and economic growth of Turkish economy (1984-2014). The industrial production index was used as a representative of economic growth. The variables of the stock index of Istanbul, bonds and stocks were used as financial development indicators. They concluded that there is a co-integration relation among variables. According to the results, the demand pulling hypothesis was valid for the Turkish economy and there is evidence that economic growth is as a result of financial development.

Olawumi, Lateef and Oladeji (2017), examined the extent to which financial deepening has affected the performance of selected Nigerian commercial banks in terms of profitability. The researchers empirically investigated the relationship between financial deepening and bank performance using financial deepening ($M2/GDP$), ratio of credit to private sector GDP, and ratio of deposit liabilities GDP as variables of financial deepening while performance measure of interest is profitability. They adopted descriptive research design to explore the relevance of financial deepening on banks performance. Methods of descriptive and empirical analysis were used to analyze the data. Findings revealed that each component of financial deepening indicators has a strong relationship and are significant; this provides evidence that financial deepening made positive contributions to the level of profitability of the selected commercial banks in Nigeria.

Torbira and Ogbulu (2014), studied the relationship between fund mobilization by insurance companies and gross fixed capital formation (GFCF) in Nigeria and specifically how the latter responds to stimuli emanating from the insurance companies. A five variable-predictor multivariate regression model was estimated and analyzed. The short run results reveal that four explanatory variables namely: premium from fire, accidents, motor vehicles and employee liabilities insurance policies positively and insignificantly correlate with Gross Fixed Capital Formation while the relationship between premiums from marine insurance policies and GFCF is both negative and insignificant. In the long run, the fund mobilization variables by insurance company's positively and significantly impact on the growth of gross fixed capital formation. In addition, the Granger causality test provides no evidence of causality among the variables.

This study, therefore, empirically investigated the relationship between financial deepening and DMBs performance using ratio of money supply-GDP (broad money), ratio of credit to private sector-GDP as variables of financial deepening while deposit mobilization was used to measure the performance of Deposit Money Banks (DMBs) under the study period.

2. METHODOLOGY

The study employed descriptive research design to examine performance of Deposit Money Banks and financial deepening in Nigeria because it permitted the researcher to test specific hypotheses about the direction and magnitude of influences of variables such as financial deepening ($M2/GDP$) ratio, bank credits to private sector ($BCPS/GDP$) ratio have on deposit mobilization. Time series data was employed; hence data for this study were obtained from secondary sources mainly from Central Bank of Nigeria (CBN) statistical bulletin. The choice of secondary data was due to; it is faster, reduces time wastages in data gathering, frequently available for re-analysis, it is non-reactive, it also offers a comprehensive background and readily improves one's learning curve. However, Onyemachi (2012), employed Person's product movement correlation and multiple regressions analytical analysis in his study to investigate financial deepening and economic growth in Nigeria.

Also, due to the assumed linearity nature of the model specified, Ordinary Least Square (OLS) regression analysis method was employed based on its BLUE (best, linear, unbiased, estimator) properties and to obtain the intercept and coefficients of the model. The essence of this technique is its unique feature compared with other techniques of estimation of models. However, Augmented Dickey and Fuller test for stationarity, Johansen co-integration and Granger Causality test was also carried out to determine long run relationship between the dependent and independent variables. The measure of Deposit Money Banks (DMBs) performance for this study is Deposit Mobilization with financial deepening variables which include ratio of money supply to Gross Domestic Product (GDP) and ratio of credit to private sector to Gross Domestic Product (GDP). Econometrics views (E-Views) software version 9.0 was adopted for the econometric and statistical analysis of the data. Furthermore, in order to test the stated hypothesis, model for this study was adapted from the study of Olawumi *et al.*, (2017), with slight modification. The model was based on the theoretical proposition that reforms have to reposition the bank for better performance. Therefore, the model for this study was written as;

$$DM = f(M_2/GDP, BCPS/GDP) \dots\dots\dots (i)$$

Hence, the econometrics form of the model is;

$$DM = \beta_0 + \beta_1 M_2/GDP + \beta_2 BCPS/GDP + \mu \dots\dots\dots (ii)$$

Where, DM = Deposit Mobilization; M_2/GDP = Money Supply/Gross Domestic Product; $BCPS/GDP$ = Bank credit to private Sector/Gross domestic product; β_0 = Constant term, $\beta_1 - \beta_2$ = Coefficient of explanatory variables; μ = error term. Based on a priori expectation, money supply to Gross Domestic Product (M_2/GDP) is expected to have positive effect on deposit mobilization, increase in money supply, is expected to increase deposit mobilization. Meanwhile, ability of banks to mobilize deposit depends on the availability of money held by banks for transactions. Thus: $\beta_0 > 0, \beta_1 > 0$ and $\beta_2 > 0$.

3. RESULTS AND DISCUSSION

Table 1: Summary Statistics of variables used for the regression analysis

| | M2/GDP | BCPS/GDP | DM |
|--------------|----------|----------|----------|
| Mean | 15.01633 | 12.04733 | 3722.553 |
| Median | 13.27000 | 8.250000 | 726.6300 |
| Maximum | 21.31000 | 20.77000 | 14822.20 |
| Minimum | 9.150000 | 6.220000 | 17.81000 |
| Std. Dev. | 4.041461 | 5.644590 | 4799.575 |
| Skewness | 0.224238 | 0.518434 | 1.028358 |
| Kurtosis | 1.543581 | 1.443301 | 2.582222 |
| Jarque-Bera | 2.902859 | 4.373009 | 5.505769 |
| Probability | 0.234235 | 0.112309 | 0.063744 |
| Sum | 450.4900 | 361.4200 | 111676.6 |
| Sum Sq. Dev. | 473.6689 | 923.9806 | 6.68E+08 |
| Observations | 30 | 30 | 30 |

The summary of the statistics of the variables used in this study as presented in Table 1 above depicted that, credit to private sector/gross domestic product (CPS/GDP) has the lowest mean value of 15.01633 and the mean value of deposit mobilization (DM) has the highest mean value of 3722.553 while the mean values of money supply to GDP has the mean value of 15.01633. Analysis was also fortified by the values of the skewness and kurtosis of all the variables involved in the models. The skewness is a measure of the symmetry of the histogram while the kurtosis is a measure of the tail shape of the histogram. The bench mark for symmetrical distribution i.e. for the skewness is how close the variable is to zero while in the case of kurtosis, when it is three is called mesokurtic but values lower than that is called platykurtic and above is referred to as leptokurtic. Jarque–Bera test is a goodness-of-fit test of whether sample data have the skewness and kurtosis matching a normal distribution. Jarque-Bera test statistic is always non-negative, it is the measure of skewness and kurtosis value within 0 and 3 respectively with a normal distribution. The result of the Jarque-Bera confirmed the normality distribution assumption of the model, hence the variables exhibited the normal distribution is an indication that it is feasible to be forecasted with higher accuracy. Also, money supply to GDP has the least standard deviation of 4.041461 implying that M_2/GDP is the most stable variable among all the variables considered in this study. Whereas, deposit mobilization is the most volatile variable because it as the highest standard deviation of 4799.575.

Table 2: ADF Unit Root test for Stationarity (with constant, no trend)

| Variables | Order of Stationarity | Augmented Dickey Fuller test statistic | 1% Level Critical Value | 5% Level Critical Value | 10% Level Critical Value | Order of Integrati on | Decision |
|---------------------|----------------------------|--|-------------------------|-------------------------|--------------------------|-----------------------|----------------|
| M ₂ /GDP | At level | -1.101774 | -3.679322 | -2.967767 | -2.625121 | I(0) | Not stationary |
| | 1 st difference | -5.069226 | -3.689194 | -2.971853 | -2.625121 | I(1) | Stationary |
| CPS/GDP | At level | -0.862166 | -3.679322 | -2.967767 | -2.622989 | I(0) | Not Stationary |
| | 1 st difference | -4.321569 | -3.699871 | -2.976263 | -2.627420 | I(1) | Stationary |
| DM | At level | 2.839144 | -3.679322 | -2.967767 | -2.622989 | I(1) | Stationary |
| | 1 st differene | -0.008201 | -3.737853 | -2.991878 | -2.635542 | I(0) | Not Stationary |

However, from the results of the normality test presented in the table above, the null hypothesis of a normal distribution is accepted for M_2/GDP and CPS/GDP because their Jarque-Bera statistic has a probability greater than 0.05. Likewise, the hypothesis of a normal distribution is rejected for deposit mobilization because it Jarque-Bera statistic has a probability that falls under 0.05. However, the Augmented Dickey-Fuller test or unit root test was shown in table 2 above. Unit root analysis is a test conducted to ascertain if the variables under consideration are stationary. We take the following decision rule: if the absolute value of the Augment Dickey Fuller (ADF) test is greater than the critical value either at 1%, 5% or 10% level of significance at the order of zero, one, or two, it shows that variables under consideration are stationary, otherwise they are not. The results of the unit root test showed that money supply over GDP (M_2/GDP) and credit to private sector (CPS/GDP) critical values of the variables are greater

than the ADF statistical values at level and they were stationary at first difference [I(1)]. While deposit mobilization was stationary at first difference.

Table 3: Regression analysis

| Dependent Variable: LOG(DM) | | | | |
|-----------------------------|-------------|-----------------------|-------------|----------|
| Method: Least Squares | | | | |
| Date: 05/04/20 Time: 01:09 | | | | |
| Sample: 1989 2018 | | | | |
| Included observations: 30 | | | | |
| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
| C | -6.611884 | 2.960367 | -2.233468 | 0.0340 |
| LOG(M2/GDP) | 2.256329 | 2.098808 | 1.075052 | 0.2919 |
| LOG(CPS/GDP) | 3.039969 | 1.256040 | 2.420281 | 0.0225 |
| R-squared | 0.801348 | Mean dependent var | | 6.674403 |
| Adjusted R-squared | 0.786634 | S.D. dependent var | | 2.204596 |
| S.E. of regression | 1.018338 | Akaike info criterion | | 2.968861 |
| Sum squared resid | 27.99934 | Schwarz criterion | | 3.108980 |
| Log likelihood | -41.53291 | Hannan-Quinn criter. | | 3.013686 |
| F-statistic | 54.45820 | Durbin-Watson stat | | 0.500220 |
| Prob(F-statistic) | 0.000000 | | | |

Furthermore, regression results presented in Table 3 above showed that the two independent variables have a positive effect on the deposit mobilization. The table revealed that log of bank credit to private sector to GDP (BCPS/GDP) has a positive and significant effect of the deposit mobilization. While, statistical significance was not observed between money supply to GDP with deposit mobilization. R-squared revealed that the model is fit as 80% of the changes in the dependent variable are explained by the independent variables in the model. Probability of F-statistic shows that the overall regression is statistically significant at 1% level. Durbin-Watson statistic which is lesser than one which depicted that there is no serial correlation. Likewise, the adjusted coefficient of determination (Adj R²) showed that about 78% of change in the financial deepening have an effect on performance of deposit money banks in Nigeria. This implies that financial deepening variables could be a means to ensure and stimulate better performance of deposit money banks in Nigeria. More so, the F-statistics (54.45820) has probability less than 5%, which indicate that change in financial deepening have effect performance of deposit money banks. This supports the result of the. Adj R² and further confirms that independent variables have an effect on better performance of DMBs. This findings was in tandem with the previous assertion that, a well-developed financial sector have prominent role on sustainable growth of an economy (Olawunmi *et al.*, 2017).

Table 4: Cointegration Test Results

| |
|--|
| Date: 05/04/20 Time: 01:11 |
| Sample (adjusted): 1991 2018 |
| Included observations: 28 after adjustments |
| Trend assumption: Linear deterministic trend |
| Series: DM M ₂ /GDP CPS/GDP |
| Lags interval (in first differences): 1 to 1 |

| Unrestricted Cointegration Rank Test (Trace) | | | | |
|--|------------|-----------------|---------------------|---------|
| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
| None * | 0.497266 | 29.89922 | 29.79707 | 0.0487 |
| At most 1 | 0.272558 | 10.64376 | 15.49471 | 0.2344 |
| At most 2 | 0.060035 | 1.733564 | 3.841466 | 0.1880 |

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

| Unrestricted Cointegration Rank Test (Maximum Eigenvalue) | | | | |
|---|------------|---------------------|---------------------|---------|
| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
| None | 0.497266 | 19.25546 | 21.13162 | 0.0897 |
| At most 1 | 0.272558 | 8.910194 | 14.26460 | 0.2937 |
| At most 2 | 0.060035 | 1.733564 | 3.841466 | 0.1880 |

Max-eigenvalue test indicates no cointegration at the 0.05 level
 * denotes rejection of the hypothesis at the 0.05 level
 **MacKinnon-Haug-Michelis (1999) p-values

In addition, Johansen approach of co-integration was employed to test for the long-run relationship among the variables. The Johansen’s framework provides a number of co-integrating equations and estimates of all co-integrating vectors in the multivariate case. The Johansen co-integration test result as presented in tables 4. The likelihood ratios were conducted to establish the number of co-integrating relations in each of the equations. Test results indicated the existence of two cointegrating equations in the equations at the 1% and 5% significance level. It can be concluded that there is long-run relationship between financial deepening and performance of deposit money banks in Nigeria.

Meanwhile, from the results of the cointegration test displayed in the first panel of table 4, the trace statistic is greater than the critical value; with a probability of 0.0487 which is less than 5%. Therefore, the null hypothesis of no cointegrating vectors is rejected, implying that the variables are cointegrated. The signal exists for a long-run relationship between the dependent and independent variables in the study. This signaling that financial deepening has significantly impact on the performance of the deposit money banks, thus allowing banks to play their intermediation roles and this act as a catalyst to nation’s economic development at the long run. Findings of this was in agreement with the study by Olawumi *et al.*, (2017), who also found out that financial deepening has significantly impacted on the profitability of the selected banks, which invariably leads to economic growth.

Table 5: Granger Causality Test Results

| |
|--|
| Pairwise Granger Causality Tests Date: 05/04/20 Time: 01:12 Sample: 1989 2018 Lags: 2 |
|--|

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---------------------------------------|-----|-------------|--------|
| M2/GDP does not Granger Cause DM | 28 | 1.10794 | 0.3472 |
| DM does not Granger Cause M2/GDP | | 1.71689 | 0.2019 |
| CPS/GDP does not Granger Cause DM | 28 | 1.05583 | 0.3642 |
| DM does not Granger Cause CPS/GDP | | 0.86324 | 0.4350 |
| CPS/GDP does not Granger Cause M2/GDP | 28 | 0.91557 | 0.4144 |
| M2/GDP does not Granger Cause CPS/GDP | | 0.42722 | 0.6574 |

Source: Authors' computation using Eviews9.0

Lastly, the results of the Granger causality test presented in the first panel of Table 5 indicated that, no causal relationship runs between ratio of money supply to GDP (M_2/GDP) and deposit mobilization. Nonetheless, the second panel indicated that no causal relationship runs between BCPS/GDP and deposit mobilization.

Therefore, from the hypotheses tested in this study, significant relationship was not observed between ratio of money supply to Gross Domestic Product (M_2/GDP) and performance of Deposit Money Banks (DMBs) in Nigeria. Meanwhile, significant relationship was obtained between credit to private sector to GDP and performance of DMBs in Nigeria.

4. CONCLUSION AND RECOMMENDATIONS

This study established that financial deepening play substantial role in performance of DMBs in Nigeria. Results of the analysis and finding give insights that will enhance clearer understanding of financial deepening and performance of Deposit Money Banks in Nigeria. From the analysis of this study, it was concluded that ratio of money supply to Gross Domestic Product has no significant effect on the performance of Deposit Money Banks (DMBs) in Nigeria within the study period. Conclusively, findings of this study revealed that ratio of bank credits to private sector to Gross Domestic Product have significant impact on the performance of Deposit Money Banks in Nigeria. Based on the analysis and findings in this study, it is recommended that the ratio of credit to private sector exerts significant impact on banks profitability as empirically tested in this paper, therefore, due consideration should be given to this sector rather than the government. A call for sustainable level of financial deepening in Nigeria is also required as well as government policy that are geared towards strategically increasing money supply and promoting efficient capital market that will enhance overall economic efficiency, create and expand liquidity, mobilize saving, enhance capital accumulation and also promote proficient entrepreneurial response in various sectors of the economy.

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