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Influence of Bank Liquidity on Economic Growth of Nigeria

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Abstract

This study investigates the influence of Deposit Money Banks' (DMBs) liquidity on economic growth of Nigeria measured by Gross Domestic Product (GDP from 1981 to 2014. The population of the study is 64 DMBs that include 45 defunct and 19 existing DMBs operating in the Nigeria banking industry as at December 2015. The regression results indicate that DMBs' reserves have a positive and significant influence on economic growth. Also, DMBs' loan to deposit ratios has a negative and significant influence on economic growth. However, DMBs' liquidity ratios have a negative and insignificant influence on the economic growth of Nigeria. Therefore, this study recommends that the management of DMBs should increase their deposits with CBN as reserves. This is because an increase in the bank's reserve will increase the economic growth of Nigeria immensely. Also, the management of DMBs should increase the percentage of loan to deposit liabilities ratio. This is because a decrease in the ratio will gradually destroy the economy of Nigeria as fewer funds will be a channel to the productive sector of the economy.

Keywords: Bank liquidity, DMBs, GDP, Economic Growth, Nigeria
JEL classification: G33

1. Introduction

The banking industry is an important financial sector in an economy that accepts deposits, make payments and issue credits to its customers. As the banks implement these key roles and responsibilities, they contribute toward economic growth of a nation. Economic growth has a linkage with a nation's resource endowment, capital

formation, and utilization. The resource endowment is natural resources that include minerals and oil resources; fertile land; water resources and so on. Another link is capital accumulation which is an investment in human capital development (formal and informal education); investment in new factories and industries; social and economic infrastructures like constant electricity supply, pipe borne water, banking institutions, communication network, et cetera. Also, technology progress which is an advancement in the production methods comes in the form of computerized banking operations, mechanized farming implements and advanced use of machines in industrialization (Adewuyi & Olowookere, 2011).

Economic growth is the total market value of domestically produced goods and services in a nation usually in a year. It is measured by the total value of domestically produced goods and services in a nation, per capita income of all citizens living in a nation and the standard of living of citizens in an area or nation. Economic growth of a nation measured by the total value of domestically produced goods and services known as Gross Domestic Product (GDP). In Nigeria, GDP per annum at current market prices was ₦71714 Billion in the year2012 as against ₦80093 Billion and ₦89043.6 Billion in the year 2013 and 2014 respectively (STABULL 2014).

Bank liquidity may influence the economic growth. Liquidity is the ability of banks to provide cash and to meet urgent cash requirements such as payment of maturing short-term debt obligations. The reasons banks maintain adequate liquidity level is to meet debt obligations and to meet customer demand for cash at any time (Timsina, 2017). Banks liquidity may be measured by reserves requirement, liquidity ratio and loan to deposit ratio (Mattana & Panetti, 2010; Onyeiwu, 2012; Udude, 2014; Berger & Sedunov, 2017). These variables may influence economic growth as the arguments on the key drivers of economic growth had been ongoing. This is because the results of some of the previous studies relating to liquidity factors affecting economic growth were inconclusive due to mixed findings. Major among the previous studies include the research works of Onaolapo (2015); Marlyse and Ngo (2015) and Anowor and Chisom (2016). The gaps identified in the previous studies reviewed are scope and conceptual gap. Scope gap is the period, place and variables used for the study. The conceptual gap is the way the variables were defined by some previous research scholars as observed in the literature.

The present study aims to fill the identified gaps by investigating problems in bank liquidity and economic growth of Nigeria from 1981 to 2014.This is because it was during this period that banks contribute immensely to the growth of Nigerian economy through the issuance of credits to the economy as a result of an increase in

the asset base, capital base, and some banks as well as branch network (Somoye, 2008). Therefore, this study conducted by adapting the work of Marlyse and Ngo (2015) in the field of social sciences after slight modifications in their model and scope of the study that make it different from some of the earlier studies such as Onaolapo (2015) and Anowor and Chisom (2016). This makes this study to contribute to knowledge, and it will be beneficial to policymakers like CBN as well as reference material to potential academic researchers. The broad objective of the study is to investigate the influence of banks liquidity on economic growth of Nigeria. Specifically, the study aims to achieve the following objectives.

2. Literature Review and Theoretical Framework

2.1 Conceptualization of the Study Variable

The concept of economic growth has been discussed by many academic scholars such as Adewuyi and Olowookere (2011); Growthokwo, Mbajiaku and Ugwunta (2012); Yakubu and Affoi (2014); Khan, Babar, Omair, Ameen and Sameen (2014); and Ismaila and Imoughele (2015). Adewuyi and Olowookere (2011) define economic growth as the process by which domestic income or output increased. Growthokwo *et al.* (2012) view economic growth as the process by which national income or output increased. Therefore, an economy is said to be growing if there is a sustainable improvement per head for the output of goods and services. Kira (2013) defines economic growth as total market value of all final goods and services produced within the country in a given period (normally one year).

Yakubu and Affoi (2014) view economic growth as a sustained increase in the actual output of goods and services per head. Khan *et al.* (2014) define economic growth in a country per annum for the commodity produced. Ismaila and Imoughele (2015) opine that economic growth is the quantity of goods and services produced in a nation and real GDP mostly measures it. Hence, this study operationally defines economic growth as total market value of domestically produced goods and services in a nation usually in a year. This is because a nation's commodities consist of both domestic and foreign-produced goods and services known as Gross National Product (GNP).

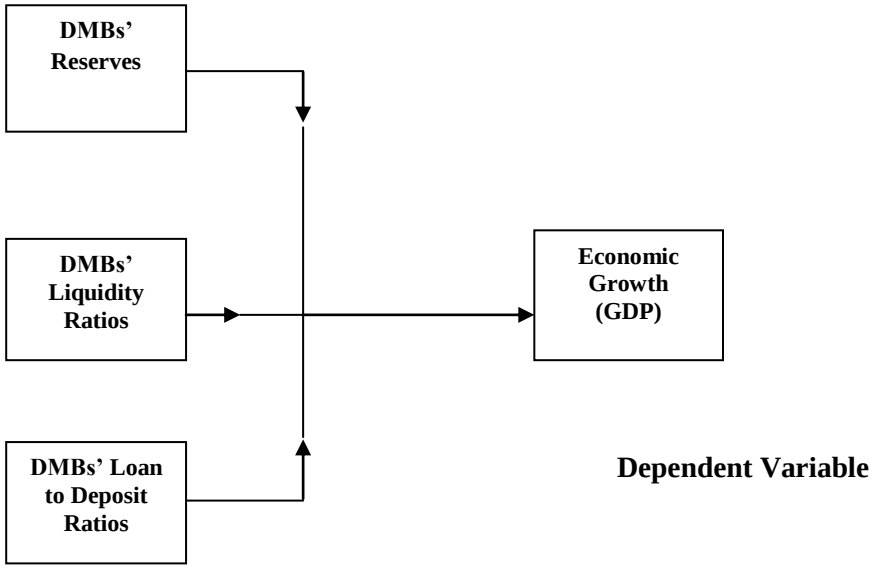
Bank liquidity classified as reserves, liquidity ratio and loan to deposit ratio among others depending on usage. Reserve is special money saved by organizations to meet urgent cash needs. It is also saving money for future use. Business Dictionary (2015) defines reserve as funds set aside or saved for future use. It further states that in accounting, the reserve is part of retained earnings set aside for a specified purpose. In banking, the reserve is funds set aside for day to day operation known as primary

reserve or funds set aside to meet emergency liquidity requirement known as a secondary reserve. Oh (2011) sees bank reserve ratio as cash reserve requirements of apex bank and percentage of total bank deposit liabilities. Nana and Samson (2014) opine that banks are holding large amounts of liquid assets as are serve for precautional strategy. Omer, Haan, and Scholtens (2014) define bank reserve as cash reserve requirement and statutory liquidity requirements over a period. Amuda (2014) views reserve requirement of commercial banks as an instrument used to maintain liquidity and influence credit operations. Gitau (2015) sees bank reserve as the funds that commercial banks are legally required hold in the central bank. Economics Times (2017) defines bank reserves as a specified minimum fraction of the customers total deposits liabilities which banks hold as reserves with the central bank. This study operationally defines reserve as money set aside or saved for regulatory and precautionary reasons.

Besides, bank liquidity is liquid assets of an organization such as cash and near cash instrument (money, treasury bills, and commercial paper). Ojiegbe, Oladele and Makwe, (2016) defines liquidity as a situation in which an individual or organization has cash or close to cash instruments that can be changed to meet debt obligations. Economic Times (2017) views liquidity as how quickly a person or an institute can get cash when the need arises. This study operationally defines bank liquidity as the ratio of total specified liquidity assets to total current liabilities known as cash ratio.

Bank liquidity has the ability of banks to meet customers' demand for loans out of deposit liabilities. Boadi, Li and Lartey (2015) define bank deposits as the sum of current, savings and time deposits accounts of customers. Conversely, Timsina (2017) sees bank credit as the aggregate amount of funds provided by commercial banks to individuals, business organizations and government. This study operationally defines loan to deposit ratio as a percentage of total deposit liabilities given out to customers as loan or credit. The variables of study conceptualized in figure 1.1 below.

Figure 1.1: Conceptualization of the Variables



Source: (Researcher's Illustration, 2016)

2.2 Review of Related Empirical Studies

2.2.1 Bank Reserves and Economic Growth

Oh (2011) that studied reserve requirements and economic growth of South Korea from 1970 to 2009. The regression result shows that banks reserve requirement ratio and bank lending have a significant effect on economic growth of South Korea. However, the study conducted in South Korea, and the result may not be applicable in a wider perspective. Omer*et al.* (2014) empirically analyzed excess interbank liquidity and output gap in Pakistan from using weekly data from December 2005 to July 2011. The findings show that excess liquidity reserve (bank deposits as reserves with the central bank) and required reserves (statutory reserve requirements) have a relationship with output gap (index of industrial production). However, the study used the index of industrial production as against GDP. Onyeiwu (2012) investigated monetary policy instruments and economic growth of Nigeria from 1981 to 2008. The regression result shows banking sector liquidity ratio and cash reserve ratio have an insignificant impact on economic growth while money supply has a significant impact

on economic growth in Nigeria. The recommendations are that monetary policy should facilitate a favorable investment climate through appropriate interest rates, exchange rate, and liquidity management mechanism among others. However, the work utilized 28 years' time series data that ended in 2008. Gitau (2015) examined the effect of financial repression on economic growth of Kenya using quarterly data from1996 to 2014. The findings indicate that reserve requirement has a significant effect on economic growth. But the study was conducted utilized in Kenya using 19 years quarterly time series data that ended in 2014. Anowor and Chisom (2016) assessed the impacts of monetary policy instruments on economic growth of Nigeria from 1982 to 2013.The result indicates that banking sector' cash reserve ratio has a positive and significant effect on economic growth. Therefore, the study recommends that monetary authorities should give priority attention tocash reserve ratio (monetary policy tool) as it will produce a more desired resultregarding economic stabilization. However, the study failed to consider bank liquidity ratios among its model specification.

2.2.2 Bank Liquidity Ratios and Economic Growth

Udude (2014) examined monetary policy and economic growth of Nigeria from 1981 to 2012. The result shows that money supply is not significant impact on economic growth but banking sector liquidity ratio has a significant impact on economic growth. But the study failed to consider bank reserves. Marlyse and Ngo (2015) investigated the effects of financial deepening on economic growth of Kenya using quarterly data from 2000 to 2013. The empirical results reveal that commercial banks' liquidity ratio, commercial banks' deposits liabilities, commercial banks' total assets and central bank credit to the private sector have significant positive effect on economic growth. The study recommends reinforcement of existing policies that will encourage the public to save money with commercial banks. But the study failed to consider bank reserves. Fidrmuc, Fungáčová and Weill (2015) studied bank liquidity creation and economic growth of Russia from 2004 to 2012. The result shows that bank liquidity creation strengthens economic growth. However, the study made use of 9 years' time series data that ended 2012. Berger and Sedunov (2017) examined banks liquidity creation and real economic output of United States of America from 1984 to 2010. The result shows that bank liquidity has statistical and economic significant positive relation with real economic output measured by GDP. But the research work was conducted in a developed economy, and the findings may not apply to developing economy like Nigeria.

2.2.3 Bank Loan to Deposit Ratios and Economic Growth

Akingunola, Adekunle, Oluwaseyi and Olusoji (2014) investigated the effect of the financial liberalization on economic growth of Nigeria 1976 to 2006. The findings indicate that banking sector liquidity and total deposit of DMBs are insignificantly

affected economic growth, though the study used banking sector liquidity as against DMBs liquidity. Onaolapo (2015) empirically assessed the effect of financial inclusion on the economic growth of Nigeria from 1982 to 2012. The results indicate that banking system liquidity ratio and loan to deposit ratio have an insignificant positive effect on economic growth. However, the study does not examine the influence of bank reserves on economic growth. Adigwe, Echekoba and Onyeagba (2015) empirically assessed monetary policy and economic growth of Nigeria from 1980 to 2010. The findings indicate that banking sector liquidity ratios and cash reserve ratios have an insignificant positive impact on economic growth. But the study made use of 31years' time series data that ended 2010. Ojiegbe *et al.* (2016) studied banking sector liquidity and economic growth of Nigeria from 1980 to 2013.The regression result shows that deposit credit ratio has significant positive effect on economic growth. On the contrary, total bank deposits have an insignificant negative effect on economic growth. The study recommends that government should motivate banks to grant more loans and advances to the economy of Nigeria. But the study utilized 33 years' time series data that ended in 2013.

From the review of the previous studies, the gaps identified are scope, conceptual and modeling gap. Therefore, this research work is different from past studies and intends to contribute to knowledge by investigating the influence of bank liquidity on economic growth of Nigeria.

2.3. Theory Underpinning the Study

The theories underpinning this study are endogenous growth theory. Endogenous growth theory or new growth theory was developed 1980's by Romer, Lucas and Rebelo among other economists as a response to criticism of Solow-Swan neoclassical growth model (Jhingan, 2010). Endogenous growth theory states that policy measures by financial institutions and government can have an impact on the long-run growth rate of an economy. For instance, financial development by the government can affect growth in three ways which include raising the efficiency of financial intermediation, increasing the marginal social productivity of capital and influencing the private savings rate. Physical capital and human capital development can contribute to the growth of the economy. The theory critized as it is traceable to the work of classical economists like Adam Smith, so nothing is new in endogenous theory. Again, the difference between physical capital and human capital is not clear in the model among others (Jhingan, 2010; Adenuga & Donatus 2013; and Yakubu & Affoi, 2014). Despite the criticism, the theory is applicable in current situation due to incessant changes of policy measure by banks and government. Therefore, this study underpinned endogenous theory because policy issues by the government on developments may affect economic growth of a country.

3. Methodology

This study adopts causality and ex-post facto research design. This is because the study attempts to explain the extent at which one variable influences the other using secondary longitudinal data. The secondary data of Deposit Money Banks (DMBs) were extracted from Central Bank Statistical Bulletins from 1981 to 2014. This is because it was during this period that banks contribute immensely to the performance of Nigerian economy through the issuance of credits to the economy as a result of an increase in the asset base, capital base and some banks as well as branch network (Somoye, 2008). Also, it was during this period that 45 banks closed their businesses and licenses revoked by CBN (NDIC, 2016).

The population of the study is 64 Deposit Money Banks (DMBs) in Nigeria banking industry from 1981 to 2014. This population includes 45 defunct and 19 existing DMBs operating in the Nigeria banking industry as at December 2015(NigeriaGalleria,2015; CBN, 2015). Since census population is studied, sampling technique and sample size frame are not required.

Multiple regression models used. The dependent variable in the model is GDP while the independent variables are DMBs' reserves, liquidity ratios, and loan to deposit ratios. These predictors were chosen because they are variables of interest. Secondly, empirical literature relating to similar studies indicated how these explanatory variables influence the economic growth in which some results are not significant. Therefore, this study adapts analytical framework and model of Marlyse and Ngo (2015) to test causality relationships that exist between bank liquidity factors of DMBs and the economic growth (GDP) of Nigeria. But the study by Marlyse and Ngo (2015) was carried out in Kenya and used variables such as ratios of liquid liabilities to nominal GDP; credit to the private sector to nominal GDP; and commercial bank deposits to nominal GDP as independent variables. The real GDP was utilized as the dependent variable to measure economic growth.

$$GDP = \alpha + \beta_1 DMBs'reserves + \beta_2 DMBs'liqudity + \beta_3 DMBs'loandepo + e_i \quad \ldots\ldots\ldots\ldots 1$$

Based on the unit root test of stationarity, the model is estimated as follows:

$$GDP = \alpha + \beta_1 DMBs'reserves + \beta_2 \Delta DMBs'liqudity + \beta_3 \Delta DMBs'loandepo + e_i \quad \ldots\ldots\ldots 2$$

βs are betas coefficients to be estimated and the prefix Δ on the variable indicates the use of the first difference or a change of the respective variable in the unit root test. The unit root test of stationarity is line with the research works of Aurangzeb (2012), Awoyemi and Dada (2015) and Korkmaz (2015). The explanation of the study variables is as follow:

GDP = Gross Domestic Product per annum at current market prices regarding Naira value of all domestically produced goods and services in Nigeria known as nominal GDP. The GDP is a measure of economic growth. This is because the data of nominal GDP of Nigeria was stationary when Dickey- Fuller (ADF) statistical test conducted. Also, nominal GDP at current market prices was used by many research scholars such as Kira (2013); Marlyse and Ngo (2015); Adigwe *et al.* (2015); Onaolapo (2015); Ojiegbe *et al.* (2016) and. But Akingunola *et al.* (2014); Khan *et al.* (2014); Yakubu and Affoimeasured economic growth as GDP regarding the real market value of all domestically produced goods and services in a country over a period of one year. Also, Ismaila and Imoughele (2015) and Anowor and Chisom (2016) used real GDP growth rate to measure economic growth.Dhungana(2014); Bongini, Iwanicz-Drozdowska, Smaga and Witkowski (2017); and Srithilat and Sun (2017) measure economic growth using GDP per capita income.

DMBs'reserves = DMBs' reserves as deposit with CBN per annumregarding Naira value. This is in line with the research works of Omer*et al.* (2014) and Gitau (2015) that weighed bank reserve using commercial banks deposits as areserve with thecentral bank.

DMBs'liqudity = DMBs'liqudity ratios that measured by theratio of total specified liquidity assets to total current liabilities known as cash ratio. This is line with studies of Onyeiwu (2012) and Udude (2014) that gauged bank liquidity using cash ratio.

DMBs'loandep = DMBs'loan to deposit ratios. The ratio measures how liquidity is banked to disburse credits facilities to customers. This is line with the research works of Onaolapo (2015) and Ojiegbe *et al.* (2016) that used abank loan to deposit liability ratio to identify liquidity position of banks to disburse loans and advances to customers.

$\propto$ = Constant or interceptor

$\beta_{1...}\beta_2$ = Regression Coefficients

e_i = Error term.

Data collected on the variables of the study were inputted and processed in STATA version 13. The output data which is the regression results are used to test the hypotheses and draw conclusions. The hypothesis of this study tested at 1% and 5% significance level. Therefore, the study rejects the null hypotheses if the results are 1% (0.000 – 0.005) and 5% (0.006 – 0.050) significant. Otherwise, the study fails to reject the null hypotheses because of no sufficient reasons for rejection.

4. Results and Discussions

This section discusses diagnostic tests relating to the variables of study as well as hypotheses tests to conclude.

4.1 Stationarity Test

Table 4.1 presents summary unit root test to ascertain whether the data of study variables are stationary or not.

Table 4.1: Summary of Unit Root Test

Variables	ADF Test Statistics	Order of integration
GDP	-2.943 (-2.775)**	I(0)
DMBsreserves	-2.963 (-2.866)*	I(0)
DMBsliqudity	-4.834(-3.770)***	I(1)
DMBsdepoloan	-3.623(-3.195)**	I(1)

Source: Author Computation, 2016 (STATA-3.0)

Table 4.1 shows that GDP and DMBs' reserves are stationary at levels or zero order of integration. But DMBs' liquidity ratios and DMBs' deposit to loan ratios are stationary at first difference, or first order of integration with their ADF test statistics is less than the critical values. Therefore, the shocks have been removed from the model as the time series data is confirmed stationary to run the regression output.

4.2. Results of the Null Hypotheses Testing

Table 4.2 presents summary information concerning the influence of bank liquidity on economic growth of Nigeria.

Table 4.2: Summary of Regression Results

Model 1	Coefficients β	Standard Error	T	Significance Level
Constant (α)	90264.318	25629.024	3.522	0. 001
DMBs'reserves	2.258**	0.564	4.006	0.000
DMBs'liqudity	-468.905	345.872	-1.356	0.185
DMBs'loandepo	-834.755**	251.644	-3.317	0.002
R	0.720			
R^2	0.518			
F Statistics	10.758**			
Significance of F (P-alpha value = 0.000)	…….. 0.380	……..	……	0.000
Durbin Watson				

Note: Dependent variable: GDP (Economic growth); Significance Level: 1% (**), 5% (*)
Source: Author Computation, 2016 (STATA-3.0)

The multiple linear regression outputs explaining the influence of DMBs' reserves, liquidity ratios and loan to deposit ratios on GDP is expressed in the equation form as follows. GDP = 90264.318 + 2.258*DMBsreseves - 468.905*DMBsliquidity-834.755*DMBsloandepo.

Table 4.2 shows the outcome of regression results between the predictors and GDP with a constant β value of 90264.318 and standard error of 25629.024. DMBs' reserves have positive estimated coefficient β value of 2.258, standard error of 0.564, t-value of 4.006 and significance level of 0.000 (1%). Therefore, DMBs' reserves have significant positive influence on GDP and hypothesis one (Ho_1) is rejected. This means 1 percent increase in DMBs' reserves will significantly increase economic growth by same percent. The result is similar to the findings of Oh (2011), Gitau (2015), Anowor and Chisom (2016) that indicated cash reserve ratio has a significant impact on GDP. However, the result is different from the finding of Onyeiwu (2012) and Adigwe *et al.* (2015) that observed banking institutions' Cash Reserve Ratio [CRR] has a positive and insignificant effect on economic growth.

DMBs' liquidity ratios have negative coefficient β value of - 468.905, standard error of 345.872, and t-value of 1.356 and significance level of 0.185. Thus, DMBs' liquidity ratios have an insignificant negative influence on GDP and hypothesis two (Ho_2) not rejected. This means that 1 percent decrease in DMBs' liquidity ratios will

insignificantly decrease economic growth by the same proportion. This result is similar to the findings of Onyeiwu (2012), Akingunola *et al.* (2014) that revealed banking sector liquidity has an insignificant effect on economic growth. However, the finding is different from the research works of Udude (2014), Marlyse and Ngo (2015), Fidrmuc *et al.*, (2015) and Berger and Sedunov (2017) that indicated banks liquidity has a significant effect on economic growth.

DMBs' loan to deposit ratios has negative coefficient β value of - 834.755, standard error of 251.644, and t-value of 3.317 and significance level of 0.002 (1%). Hence, DMBs' loan to deposit ratios have significant negative effect on GDP, and hypothesis three (Ho_3) rejected. This reveals that 1 percent decline in DMBs' loan to deposit ratios will significantly decline economic growth by 1 percent. This result is similar to the finding of Ojiegbe *et al.* (2016) that showed deposit credit ratio has a significant effect on economic growth of Nigeria. But, the finding is different from the studies of Onaolapo (2015) that observed loan to deposit ratio has no significant effect on economic growth of Nigeria.

In diagnose test of the model, the values of R, and R^2 are 0.720 and 0.518 respectively. The R-value is the coefficient of correlation that explains the relationship between the dependent and independent variables which is a strong positive relationship. Also, the R^2 value is thecoefficient of determination that indicates that 51.80 percent of the variation in the dependent variable (GDP) explained by the independent variables of the model. The value of R^2 is strong because a value of R^2 below 0.2 is considered weak; a value of R^2 between 0.2 and 0.4 is moderate; and a value R^2 above 0.4 is strong (SSRL, 2010). Also, the R^2 is strong because variablesare correlated and homoscedasticityas no evidence of omitted variables in theheteroskedasticity test.

The F statistic value (P- value) is 10.758 with asignificance level of 0.000. If the significance of F statistic value is less than 0.005 ($p < 0.005$) it means independent variable contributes to the prediction of the dependent variable (Pallant, 2001;Hair, Black, Babin & Anderson, 2014).

The Durbin Watson (DW) value is 0.380. Normally, the value of DW statistic ranges from 0.0 to 4.0. So, the value of DW close to 2 or around 2 indicates the absence of autocorrelation problem. Autocorrelation is a problem in time series data because the ordinary regression residualscorrelated over time (SAS Institute, 2016).

5. Conclusion and Recommendation

Economic performance of a country is mostly gauged by economic growth which is measured by Gross Domestic Products (GDP). The proxies that significantly influence

economic growth of Nigeria is reserves and loan to deposit ratios of Deposits Money Banks (DMBs). Government must formulate policies that will increase banks reserves with Central Bank of Nigeria (CBN). This is because enough bank reserves with CBN are a signal that the banks have enough liquidity that will influence economic growth. Besides, a policy to increase the ratio of loan to customers deposit liabilities is necessary for the reason that it is an indicator of bank liquidity. On the other hand, if the banks decrease loan or credit disbursements to the private sector it will gradually dwindle the economy.

Therefore, this study recommends that the management of DMBs should increase their deposits with CBN as reserves. This is because an increase in the bank's reserve will increase the economic growth of Nigeria immensely. Also, the management of DMBs should increase the percentage of loan to deposit liabilities ratio. This is because a decrease in the ratio will gradually destroy the economy of Nigeria as fewer funds will be a channel to the productive sector of the economy.

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