Money Market and Economic Growth in Nigeria: An Autoregressive Distributed Lag Approach

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Abstract

This study investigated the impact of money market on the economic growth in Nigeria, 1991-2020. The ex-post facto research design was adopted for the study. The Gross domestic product (GDP) was used as proxy for economic growth while Treasury bills, Commercial papers (CP) and Bankers' acceptances (BA) were used as proxy for the money market variables. Tests such as descriptive analysis, unit root, bounds test for cointegration, ARDL, serial correlation, heteroskedasticity and granger causality tests were conducted. The results revealed that there is a significant but positive impact of TB, CP, BA on the GDP. The study recommended that the Monetary authority should initiate policies that would encourage Money market operations while CBN surveillance role should be proactive in order to check practices that could undermine or sabotage market integrity and soundness.

Keywords: *Economic growth; Money market; Treasury bills; Bankers' Acceptances; Commercial papers.*

1. Introduction

Money market is a market where short-term financial products are traded. The money market provides a platform for raising and investing in short-term funds. The time implication of short term securities is usually between a day to two years or lesser. The securities traded in the money market are known for the ease in their convertibility to money, and thus, usually referred to as near money. In Nigeria, money market transactions are usually done through the instrumentalities or platform of the Central Bank of Nigeria (CBN), Deposit Money Banks, Insurance companies, Finance houses, etc (Gbanador, 2021).

The money market is an integral aspect of the financial sector due to the role it plays in the mobilization of short term fund through the vehicle of financial intermediation. As a financial market, certain financial securities are traded in the money market. These securities include treasury bills, commercial papers, treasury certificates, Bankers' Acceptances, etc. Collectively, these securities are called the money market instruments.

In explaining the concept of money market, Adesina-Uthman, Olatunde & Ahmed (2020) are of the opinion that the money market plays an important role in the mobilization of financial resources for short-term investment through financial intermediation. Money market provides instruments for effective liquidity management and acts as the core source of raising short-term funds for lubricating economic activities in any nation. The market serves as the transmission channel of monetary policy for short-term instruments and anchors the entire term structure of interest rates. The market is crucial to the allocation of funds and the effective distribution of liquidity among financial institutions in the banking industry as well as for hedging of short-term risks. It plays a critical function in the credit appraisal system and in the large-value payment systems where transactions and obligations are fully settled. It is indeed worthy to state that the money market is a sub-set of the financial market that manages short-term lending, borrowing, buying and selling of securities with initial maturities of one year or less.

The financial market is expected to influence economic growth and development. However, attention of Researchers over the years tilted mostly towards the link between capital market and economic growth. The research gap regarding the effect of money market on economic growth in Nigeria is probably because, apart from being a market that provides short term funds, money market instruments and activities are used for monetary policy implementation. Thus, people see it mostly as policy instrument rather than tools that drives economic growth and development. As a result, studies regarding how money market influences economic growth in Nigeria did not gather momentum. Thus, the need to empirically investigate the link between money market instruments and economic growth in Nigeria.

2. Literature Review

The theory upon which this study is anchored is the financial intermediation theory. Gurley and Shaw propounded the financial intermediation theory in 1960. The theory emanates due to the asymmetry of information in the financial system. They assert that in order to bridge information asymmetry, there is need to create financial institutions that will act as intermediaries between the Surplus economic units (SEU) and the Deficit economic units (DEU). Deposit Money Banks and other financial institutions are known for granting credit facilities and offering of financial

advisory services to their clients, thus, making this theory more appropriate for this research work.

Etale and Ayunku (2017) examined the effect of money market instruments on economic growth in Nigeria for the period of 1989-2014. The ex-post facto research design was adopted for the study while the multiple regression was used to analyze the data. The study adopted money market instruments such as treasury bills (TBs), commercial papers (CPs) and bankers' acceptances (BAs) as proxy for money market (independent variables), and gross domestic product (GDP) as proxy for economic growth (dependent variable). The study employed econometric techniques such as ADF, Unit Root Test, OLS, multiple regression and Granger Causality Test to analyze data collected for the study. The findings revealed that TBs and CPs have positive and significant influence on economic growth while BAs had positive but insignificant influence on economic growth. The study recommended among others that for the money market to influence meaningful economic growth and development in Nigeria, appropriate policies should be employed to strengthen and deepen the market.

In a recent study, Adesina-Uthman, Olatunde & Ahmed (2020) re-examines money market impact on economic growth in Nigeria using quarterly data from 2000Q1 to 2018Q4. The study used the structural vector autoregressive (SVAR) model framework to generate the impulse responses, and variance decomposition of economic growth in Nigeria, resulting from shocks to treasury bills, prime lending rate, maximum lending rate, and money supply growth rate. The findings from the structural VAR model revealed that, while shocks to money supply growth, prime- and maximum lending rates have negative instantaneous impacts on economic growth, shocks to treasury bills rate has a positive instantaneous impact on output growth.

Agbada and Odejimi (2015) investigated the impact of developments in money market operations on economic viability in Nigeria for the period 1981 to 2011. The Ordinary Least Squares Method was used to analyze the secondary data collated for the study. The Gross Domestic Product was used as a proxy for Economic viability while Treasury bills (TB), Treasury Certificate (TC), Certificate of Deposit (CD), Commercial Papers (CP) and Banker Acceptances (BA) were used as proxy for Money market instruments which also served as the independent variables. The result reveals that some of the independent variables exhibited strong linear relationships with GDP. In particular, Treasury Bills and Banker Acceptances have statistically significant relationships with GDP while other independent variables such as treasury certificate, certificate of deposit and commercial paper exhibit weak relationship with GDP.

In another related study Iwedi and Igbanibo (2015) examines the nexus of money market operations on economic growth in Nigeria during the period 1980–2013, using econometric tools of Vector Auto Regression (VAR), Johansen Co-integration and Granger causality tests in analyzing the data collated for the study. The findings revealed a positive and significant short-run and long-run relationship between money market operations and economic growth in Nigeria. The Causality test revealed that causality flows from economic growth proxy by gross domestic product (GDP) to money market operations but not vice versa. Therefore the study concluded that money market operations produced short-term growth tendencies and help to ensure long-run impressive and steady economic growth rates in Nigeria.

Eze and Nera (2017) conducted a causality analysis on the effect of money market on economic development of Nigeria. The methods of analysis included regression, unit root tests, co-integration tests, and parsimonious error correction. The study utilized the Treasury bills, Treasury certificates, Certificates of deposits, and Bankers' acceptances as proxy for Money market and were regressed against the Gross Domestic Product which serves as proxy for economic growth. The result shows that the money market has significant impact on the growth of the Nigerian economy. However, the impact was specifically significant with respect to bankers' acceptances and certificates of deposits. Therefore, the study recommended that more instruments and innovations should be introduced into the money market to enlarge the scope of the market, and that the money market should be fragmented for expansion.

3. Methodology

The research designs adopted for this study was the ex-post facto research design. The ex-post facto design was used to establish the cause and effect relationship amongst the variables. A time series data spanning through the period of 1991 to 2020 were obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin while the Ordinary Least Squares (OLS) multiple regression econometric techniques was used to analyze the data. The Gross Domestic Product (GDP) was used as a proxy for the growth of the Nigerian economy which is our dependent variable while Treasury bills (TB), Commercial Papers (CP) and Bankers' Acceptances (BA) were used as proxy for Capital market variables which serves as the explanatory variables.

3.1 Model Specification

The model is specified in the general form as;

$$GDP = f(TB, CP, BA) \quad (1)$$

Where;

GDP=Gross Domestic Product
TB = Treasury bills
CP= Commercial papers
BA= Bankers' Acceptances

The functional form upon which our model is based is given as;

$$Y = F(X_1, X_2, X_3) \quad (2)$$

Where;

Y is economic growth or GDP = dependent variable
X_1 to X_3 are independent variables
F represents the functional notation

The OLS linear regression equation based on the above functional relation is;

$$Y = a_0 + \beta_1 x_1 + + \beta_2 x_2 + + \beta_3 x_3 + U_t \quad (3)$$

$$GDP = a_0 + \beta_1 TB + \beta_2 CP + \beta_3 BA + U_t \quad (4)$$

GDP, TB, CP and BA are as stated above while;

a=Regression Constant
β_1, β_2 and β_3 = Regression coefficient.
U_t =Stochastic Error Term

If equation (4) is tested in its logarithmic form (Log-linear) it becomes:

$$LogGDP_t = \beta_0 + \beta_1 LogTB_t + \beta_2 LogCP_t + \beta_3 LogBA_t + \mu_t \quad (5)$$

$\beta_1, \beta_2, \beta_3 > 0$,
Where:
Log = Logarithmic Form

4. Results and Discussions

4.1 Data Presentation

The data shows that the GDP have been on the increment over the years. As the available data shows, the GDP was N21b in 1991. It rose to N22billion in 1992 and peaked in 2020 at N70b. For Treasury bill, the data shows that it has been increasing over the years. It was N56b in 1991, increased to N103b the following year. Commercial Papers has also increased marginally over the same period. The CP shown wild fluctuations over the period 1994 and 2000. Thereafter, it maintained a steady growth trajectory over the years. Finally, the Bankers Acceptance showed that there has been an increase in the usage as a money market tool. The data shows that it has been on the increase over the years.

Descriptive Analysis

	LOG_GDP_	LOG_TB_	LOG_CP_	LOG_BA_
Mean	10.58082	6.499824	2.868087	2.682408
Median	10.59500	6.639820	2.450044	3.098507
Maximum	11.18573	8.183062	6.712592	4.404644
Minimum	9.987732	4.038303	-0.713350	-2.040221
Std. Dev.	0.463679	1.267715	2.036589	1.535416
Skewness	-0.004663	-0.376630	0.077339	-1.643938
Kurtosis	1.377723	1.943162	2.255948	5.679704
Jarque-Bera	3.289836	2.105385	0.721923	22.48867
Probability	0.193028	0.348997	0.697006	0.000013
Sum	317.4246	194.9947	86.04262	80.47223
Sum Sq. Dev.	6.234939	46.60595	120.2832	68.36759
Observations	30	30	30	30

The descriptive statistic gives the Researcher an idea of the type of data they are using at a glance. From the table above, the researcher focused on the skewness, kurtosis and JB of the data set to determine whether they are normally distributed or not. Based on the results of the JB, the Bankers Acceptance is not normally distributed while other variables are normally distributed as shown by their respective JB probability ratios (Prob>0.05).

Unit Root: ADF Tests

Test at levels	Variables	P - Value	Order of Integration
	LOGBA	0.0317	I(1)
	LOGCP	0.9609	I(0)
	LOGTB	0.8608	I(0)
	LOGGDP	0.6539	I(0)
Test at First Difference	**Variables**	**P-Value**	**Order of Integration**
	LOGBA	0.0000	I(1)
	LOGCP	0.0002	I(1)
	LOGTB	0.0000	I(1)
	LOGGDP	0.0062	I(1)

Source: Authors computation using Eviews

The unit root test results are shown in the table able shows that the variables are stationary at various levels. However, LOGBA is stationary at levels. The mixture of the variables in the ADF analysis satisfies for the use of ARDL model in the regression analysis.

Long Run Form and Bounds Test for Cointegration

F-Bounds Test			Null Hypothesis: No levels relationship	
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.475508	10%	2.75	3.79
K	5	5%	3.12	4.25
		2.5%	3.49	4.67
		1%	3.93	5.23

Source: Authors computation from Eviews

Drawing from the result of the stationarity test, it is clear that the order of integration for the variables in each of the three specified model are not the same. A mixed order of integration was evident in the model. By this, the test of cointegration adopted for the model is the ARDL Bounds Cointegration test. This is used to test if there is a long term relationship between the variables used.

ARDL Model Estimation

SHORT RUN RESULTS

Dependent: LOGGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
@TREND	0.016594	0.006962	2.383321	0.0254
LOG_TB_**	-0.065679	0.128858	-0.509702	0.6149
LOG_CP_**	5.334369	3.162590	1.686709	0.1046
LOG_BA_**	-5.834198	3.381586	-1.725285	0.0973

Dependent: LOGGDP **LONG RUN RESULT**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_TB_	-0.265679	0.128858	-2.061797	0.0009
LOG_CP_	-1.004369	0.162590	-6.177311	0.0000
LOG_BA_	-3.356198	1.381586	-2.429257	0.0073
CointEq(-1)*	-0.578051	0.136447	-4.236441	0.0003
R-Squared =0.805644	F-Stat = 9.896152	Prob(F-stat) 0.000529	D-W stat=2.191892	

The results above presents both the short-run and long-run tests results of the ARDL model. The coefficient of determination, which tests the goodness-of-fit, shows that the independent variables explains the changes in the dependent variable at 80.1%. The F-test, which tests for the overall significance of the model, is also statistically significant while the speed of adjustment between the short-run and the long-run is 0.57 (57%) annually.

Serial Autocorrelation Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.652575	Prob. F(2,20)	0.5314
Obs*R-squared	1.776535	Prob. Chi-Square(2)	0.4114

Source: Author's computation from Eviews

The serial autocorrelation helps to determine if the variables are serially autocorrelated or not. As the result shows using the Prob of F-stat (0.5314), there is no problem of serial autocorrelation.

Heteroskedasticity Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.890781	Prob. F(6,22)	0.5185
Obs*R-squared	5.668228	Prob. Chi-Square(6)	0.4614
Scaled explained SS	6.701169	Prob. Chi-Square(6)	0.3494

Source: Author's computation from Eviews

The variance of the model is also constant based on the results of the heteroskedasticity test.

Granger Causality Test

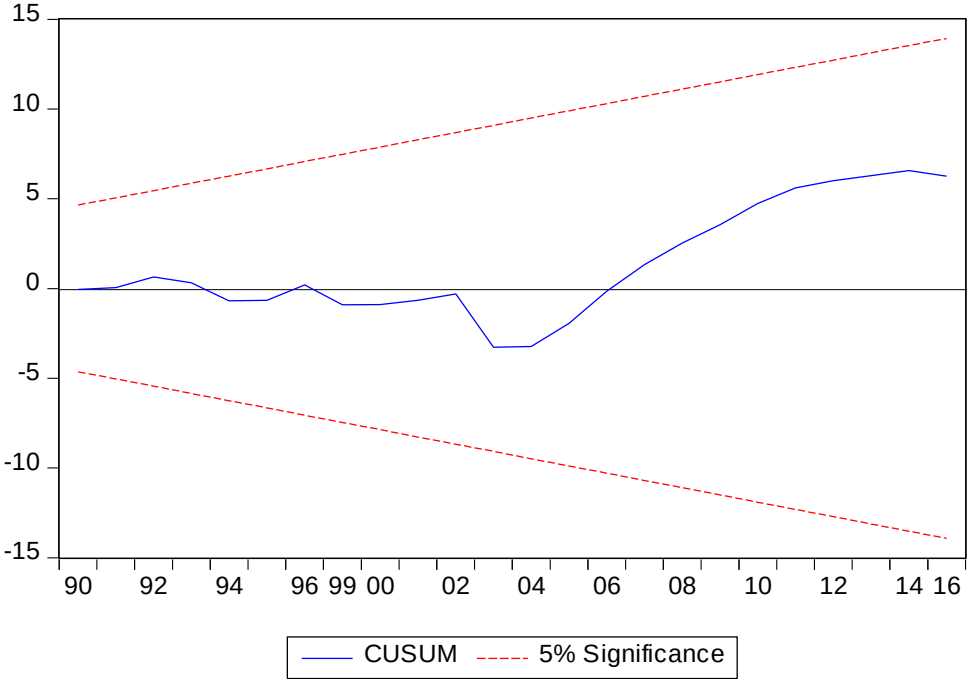
Pairwise Granger Causality Tests
Date: 01/05/22 Time: 07:49
Sample: 1991 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
LOG_TB_ does not Granger Cause LOG_GDP_	28	1.39236	0.2687
LOG_GDP_ does not Granger Cause LOG_TB_		0.85844	0.4370
LOG_CP_ does not Granger Cause LOG_GDP_	28	2.15280	0.1390
LOG_GDP_ does not Granger Cause LOG_CP_		1.14892	0.3345
LOG_BA_ does not Granger Cause LOG_GDP_	28	9.55324	0.0010
LOG_GDP_ does not Granger Cause LOG_BA_		1.87504	0.1760

Source: Author's computation from Eviews

The pair-wise granger causality test shows the direction of cause between the dependent and the independent variables. This does not necessarily connote a relationship between the variables. Based on the above result, there is a bidirectional causalities between the BA and GDP while there is unidirectional causality between CP and GDP. However, there is no causality between GDP and BA over the period.

CUSUM Test



The CUSUM Test shows that the model is well specified.

Tests of Hypotheses

H_{01}: *there is no significant relationship between Bankers Acceptance and the GDP in Nigeria.*

The result shows that there is a positive relationship between BA and GDP as expected apriori. As BA increases by a unit, GDP increases by 0.008025 and vice versa. Again, BA is statistically significant at 5% level of significance based on the t-test. We will therefore accept the alternative hypothesis, reject the null and conclude that there is a significant relationship between GDP and BA over the period.

H_{02}: *there is no significant relationship between Treasury Bill and GDP in Nigeria.*

Further, the result shows that there is a positive relationship between TB and GDP as expected apriori. As TB increases by a unit, GDP increases by 4.489148 and vice versa. Again, TB is statistically significant at 5% level of significance. We will therefore accept the alternative hypothesis, reject the null and conclude that there is a significant relationship between GDP and TB over the period.

H_{03}: *there is no significant relationship between Commercial Papers and GDP in Nigeria.*

Moreover, the result shows that there is a positive relationship between CP and GDP as expected apriori. As CP increases by a unit, GDP increases by 1.221609 and vice versa. Again, CP is statistically significant at 5% level of significance. We will therefore accept the alternative hypothesis, reject the null and conclude that there is a significant relationship between GDP and CP over the period.

5. Discussion of the Findings

The results above have shown the extent to which the independent variables affect the dependent variable over the period. Any increase in the independent variables will lead to an increase in the dependent variable and vice versa. It is evident that the variables are effective tools to increase GDP. The results above agree with the works of Etale and Ayunku (2017) who looked at the relationship between money market instruments and economic growth and concluded that there is a positive and significant relationship with the variables – treasury bills, bankers' acceptance and commercial papers. However, the results disagrees with the works of Adesina-Uthman, Olatunde & Ahmed (2020) who re-examines money market impact on economic growth in Nigeria using quarterly data from 2000Q1 to 2018Q4 and found an instantaneous negative relationship between the independent variables and the GDP over the period. Finally, the above findings agrees with the works of Iwedi and Igbanibo (2015) who examines the nexus of money market operations on economic growth in Nigeria during the period 1980–2013 and found a positive and significant relationship between the treasury bills, commercial papers and bankers note.

6. Conclusion and Recommendation

From the findings, the study concludes that one of the keys to economic prosperity and poverty reduction lies with the improvement in some of the key variables used in this study. The TB, CP and BA have significant impact on the GDP. Thus, with proper government's policy interventions in the money market, there will be an increasing participation and more economic growth in the coming years. The study therefore recommends that:

1. Monetary authority should initiate policies that would encourage Money market operations.
2. CBN surveillance role should be proactive in order to check practices that could undermine or sabotage market integrity and soundness.
3. Policies and structures that will increase a fraud free market must be put in place if the government must be taken serious when it comes to increasing the GDP.
4. Finally, the study recommended that bankers' acceptance should be reformed. Although it contributes to the GDP, this contribution is small compared to the others. The reform should be to encourage more usage of the instrument to strenghten the money market.

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