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UNIVERSITY OF PORT HARCOURT
CHOBA, RIVERS STATE
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MONEY MARKET DEVELOPMENT AND ECONOMIC GROWTH IN NIGERIA FROM 1981 -2016

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Abstract

The financial market is an important place in most economies of the world, the primary aim of a financial market is to enable funds to be efficiently allocated from the surplus units of the economy to the deficit units for productive investment and economic growth and development. The money market have developed and functioned in a maladapted form that has not satisfy the basic demands for having such markets particularly the aspects of liquidity of financial instruments, mobilization and investment of funds to foster economic growth .This study empirically examines the relationship between money market and economic growth in Nigeria from 1981to2016.Secondary data used in this study were sourced from the publication of the Central Bank of Nigeria Statistical Bulletin and World Development Indicators from 1981to 2016. The Ex post factor research design was adopted. The money market development variables for which the data were sourced included treasury bill, monetary policy rate, deposit rate. Real Gross Domestic Product was used to proxy economic growth for the periods of study. Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test of unit root were conducted to affirm the stationery of the series and guard against spurious regression outcomes from the times series data. The Bound co-integration test was also conducted to affirm the existence of co-integration among the variables in the long run while autoregressive distribution Lag model (ARDLM) was adopted to examine the short and long run effects of money market development on economic growth. Results showed that, in the long run, monetary policy rate and deposit rate recorded negative impact on RGDP while treasury bill rate had positive effect on RGDP . In short run, the result revealed that treasury bill had negative impact while monetary policy rate and deposit rate had positive impact on real gross domestic product. The study recommends that government should. implement reforms that will enhance financial intermediation through stable and sustainable monetary policy followed by sound macroeconomics policies.

Keywords; Money Market, Economic Growth, Authoregressive Distribution Lag Model

Introduction

Money market development as per the market for short term mobilization of funds has extremely contributed to the mobilization of investible funds from surplus sector to the deficit sector, like every other market. Adegbite (2007) is of the opinion that the Nigeria money market has been potentially under explored in achieving economic growth and development due to an ineffective institutional framework. It is very important to note that, the policies implemented by the money market in financial intermediation has not affected the economy at large successfully due to the low level enhancement of interest rate mechanism in the Nigeria economy. This is however, reflected in the inability of several programmes organized by the

government to achieve their targeted goals, as a result of poor local participation by this federal government established economic programmes, with the aim of fostering economic and financial development, which include, Structural Adjustment programme (SAP) 1986, Vision 2010, Vision 2020, Millennium Development Goal (MDGs), National Economic Empowerment Development Strategy (NEEDS), State Economic Empowerment Development Strategy (SEEDS), and other development plans.

The problem with money market and its function of quickening Nigeria economic development was evidently acknowledged by Dabwor (2010) when he opined that money laundering and misappropriation of government resources mount pressure on the money market as unethical officials buy up foreign exchange for export thus leading to capital flight. Factors such as misappropriation of funds and insider trading was revealed in the study of Edo and Okelegbe (2014) to be part of the problems militating against the development of the Nigerian money market. Exploitation of the system was also seen by them as the major problem obstructing the market such that transparency is unable to fix it due to lack of earnest corporate governance. They speculated that if the system was operating as it should, the influence on economic growth would be positive in that the economy could recuperate and support the nation.

The universal financial crisis of 2008 significantly pressurized the money markets of many economies as a result of the limited restriction of capital movement across many market exchanges. The contagion result of the crisis had significant consequences for the Nigerian money market, which culminated in the Nigerian banking crisis of 2009. Subsequently, some uncertainties and lack of assurance in the market have emerged, coupled with foreign exchange rate volatility. This has prompted significant interest rate movement in the banking system, a negative indication for investors . The financial system of Nigeria following the crisis of banks in 2009 has witnessed sustained excess liquidity, following the mitigating intervention policies of the CBN. The liquidity surfeit has inadvertently blunted the impact of monetary policy in influencing money market rates, credit conditions and bank lending to priority sectors. This has serious implication for sustaining price and monetary stability, necessary for promoting economic development. In addition, the high returns offered in the money market on government securities when compared to other developed and developing nations has led to significant capital inflows of a short term nature. The fear of capital repatriation is ever present, with negative consequences for the nation foreign reserves and currency valuation. Retention of short term portfolio investment poses a serious concern for the monetary authorities, due to its knock on effects on price and monetary stability. (CBN 2013).

There has been no widely accepted fundamental relationship between money market development and economic growth in Nigeria in spite of the contributions of the numerous existing studies on money market development and economic growth. This is probably because most of these studies have used majorly one or two variables once to examine economic growth. The empirical proofs from such studies on the impact of money market development on economic growth in Nigeria have so far generated diverse results that are inconclusive and contradictory. This means that there is a significant gap in literature which calls for attention. The gap that must be filled centers on some problems that this study sets out to provide innovative and empirical solution to. One of such needful solutions involves examining the relationship between money market development variables and economic growth variables.

On account of the contradictions in the available facts from earlier studies, the question of whether money market development has positive or negative impact on economic growth is still worthy of further investigation, and this will be one of the focal points of this study. This study attempts to fill this gap by studying the situation of the Nigerian money market development on economic growth. The main objectives of the study is to examined the relationship between money market development and economic growth in Nigeria. The key money market indicator considered in this study are treasury bill, monetary policy rate , and deposit rate and their individual effect on economic growth in Nigeria were investigated.

Literature Review

Lyndon and Peter (2017), examined the relationship between money market and economic growth in Nigeria, using data for the period of 1989-2014. The study adopted money market instruments such as treasury bill (TBs), Commercial papers (CPs), and bankers acceptances (BAs) as proxy for money market, and gross domestic product (GDP) as proxy for economic growth. The study employed econometric techniques such as ADF, Unit Root Test, OLS, multiple regression and Granger Causality Test to analysed the study data. The study found strong evidence that TBs and CPs had positive and significant influence on GDP, while BAs had positive but insignificant influence on GDP in Nigeria.

Ehigiamusoe (2013), examine the link between money market and economic growth in Nigeria, using data for the period 1980-2013. The study used econometric techniques such as Ordinary Least Square (OLS) method, Johansen Co-integration test and Vector Error Correction Model to examine both the short run and long run relationship between money market and economic growth. The result suggest that though, a long run relationship exists between money market and economic growth, but that the present state of the Nigerian money market is significantly and negatively related to economic growth.

Iwedi and Igbanibo (2015) investigates 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 the analysis of their Data. The result indicate there is a positive significant short run and long run relationship between money market operations and economic growth in Nigeria. The results of the causality test suggest that causality flows from economic growth proxy by gross domestic (GDP) to money market operations but not vice versa.

Agbada and Odejimi (2015) investigated the development in money market operations and economic viability in Nigeria for the period 1981- 2011, using multiple regression techniques for data analysis. The study adopted money market instruments such as treasury bills (TBs), treasury certificates (TCs), certificate of deposits (CDs), commercial papers (CPs) and bankers acceptances (BAs) as independent variables and proxy for money market operations, while gross domestic product (GDP) was used as proxy for economic growth and the dependent variable. They found that the variations in the growth trends of GDP and the explanatory variables in the graphical representation appear to cast doubt on whether money market operations made significant contribution to GDP growth for the period under review.

Ikpefan and Osabuohien (2012), investigated the interaction between discount houses, money market instruments and economic growth in Nigeria for the period 1992-2007, using Co-integration and Vector Error Correction techniques. They found that a long run relationship

exists between discount house operations, money market instruments and economic growth in Nigeria. They posited that discount houses can serve as a veritable tool in stimulating economic growth in Nigeria, especially in the era of the global economic meltdown that brought serious financial challenges to the Nigerian stock market.

Theoretical Review

The Theory of Financial Intermediation

The theory of financial Intermediation advocates that financial intermediaries play a crucial role of intermediation in the growth process by transferring financial resources from the net savers to net borrowers, thus influencing investment and thereby economic growth. The theory suggests that financial intermediaries can overcome a market failure and resolve an information asymmetry problem by transforming the risk characteristics of assets. Theses asymmetries in credit markets arise because borrowers generally know more about their investment projects than lenders do. Information failures lead to specific forms of transaction costs and financial intermediaries appear to overcome these costs, at least partially. The notion of transaction costs encompasses not only exchange or monetary transaction costs (Tobin, 1963) but also searches, monitoring and auditing costs (Benson and Smith, 1976).

The work of Schumpeter (1911), supports the view that well –functioning financial intermediaries can promote the overall economic efficiency. By pooling and allocating funds, financial intermediation promotes entrepreneurship and innovation which are necessary components for economic development. Gurley and Shaw (1960) supported the view that financial intermediaries are an opportunity to enhance borrower's financial capacity in the savings and investment process. Thus, the higher the intermediation level in the financial sector, the higher the savings mobilized and higher would be investments, which in turn will increase the level of economic growth. In the same way , according to Goldsmith (1969), the financial structure of an economy accelerates economic performance to the extent that it facilitates the migration of funds to the best user, i.e, to the place in the economic system where the funds yield the highest social return. The opinion of Greenwood and Jovanovic (1990) is in line with this view; they argue that financial intermediation promotes growth because it allows a higher rate of return to be earned on capital, and growth in turn provides a means to implement costly financial structures.

The Theory of Financial Liberalization

Financial Liberalization refers to the process to liberalize the financial sector of a country with an aim to create favourable environment to increase the money demand in the economy.

This is assumed to take place in two ways;(i) By increasing the financial resources to lead the supply- induced demand for money (ii)By creating suitable environment to make investments in the economy. The theory of financial liberalization pioneered by Mac Kinnon (1973) and Shaw (1973) advocates for the liberalization of the financial sector as an effective way to accelerate growth. The theory suggests that the liberalization of financial markets allows financial deepening which reflects an increasing in use of financial intermediation by savers and investors as well as the monetization of the economy. In other words, by lowering financial market frictions, domestic savings are increased and foreign capital is attracted. The theory is based on the premise that the higher the real rate of interest, the greater the degree of financial deepening, the more saving, financial saving will be allocated and invested more

efficiently than if saving is invested directly in the sector in which it takes place, without financial intermediation. The Mckinnon- Shaw theory of financial liberalization suggests a complementarity relationship between the accumulation of money balances (financial assets) and physical capital accumulation in developing countries, leading to economic growth.

Methodology

Secondary data used in this study were sourced from the publication of the Central Bank of Nigeria Statistical Bulletin and World Development Indicators from 1981to 2016. The Ex post factor research design was adopted. Augmented Dickey Fuller (ADF) and Phillips Perron (PP) test of unit root were conducted to affirm the stationery of the series and guard against spurious regression outcomes from the times series data. The Bound co-integration test was also conducted to affirm the existence of co-integration among the variables in the long run while autoregressive distribution Lag model (ARDLM) was adopted to examine the short and long run effects of banking sector development on economic growth.

This study employs the Autoregressive Distributed Lag (ARDL Bounds) testing approach to co- integration proposed by Pesaran and Shin (1999). The ARDL approach offers some desirable statistical advantages over other co-integration techniques. While other co-integration techniques require all the variables to be integrated of the same order, ARDL test procedure provides valid results whether the variables are I(0) or I(1) or mutually co- integrated and provides very efficient and consistent test results in small and large sizes.

Model Specification

The study employs a simplified econometric model to analyse the precise implications of Money market development on economic growth in Nigeria. The model is formulated based on reviewed empirical and theoretical studies. It is worthwhile to note that the Solow version of the neoclassical theory indicates that the functional relationship between output and factor inputs, which can be expressed in a typical Cobb-Douglas production function as:

$$Y = f(AK, L) \quad 3.1$$

Empirical Modeling of Money market Development and Economic Growth

The empirical model revealing the impact of the money market development on output growth is reported in equation (3.15) which is state in line with the theoretical framework. The money market development indicators are Treasury bill rate, monetary policy rate and deposit rate.

$$lnY_t = \sigma_0 + \sigma_1 lnK_t + \sigma_2 lnLAB_t + \sigma_3 lnTBR_t + \sigma_4 lnMPR_t + \sigma_5 lnDR + \sigma_6 lnFDI_t + \sigma_7 lnTOPEN_t + e_t \ldots \quad (3.2)$$

Where: *Y* is aggregate output measured by real GDP growth; *K* is capital measured by gross fixed capital formation; *LAB* is labour force; *TBR* is Treasury bill rate; *MPR* is monetary policy rate; *DR* is deposit rate; *FDI* is foreign direct investment; *TOPEN* is trade openness; σ_0, σ_{1-7} are parameters; *t* is time; *e* is error term.

Estimation Technique

Augmented Dickey Fuller Test

The most popular strategy for testing the stationarity property of a single time series involves using the Dickey Fuller or Augmented Dickey Fuller test.

The standard Dickey Fuller test is carried out by estimating the following;

$$y_t = \rho y_{t-1} + x_t'\delta + \varepsilon_t \quad (1)$$

After subtracting y_{t-1} from both sides of the equation:

$$\Delta y_t = \alpha y_{t-1} + x_t'\delta + \varepsilon_t \quad (2)$$

Where $\alpha = \rho - 1$

The null and alternative hypotheses may be written as: H_0: $\alpha = 0$ and $H_1 : \alpha < 0$

Based on these hypotheses, if the calculated t-statistic is below the Dickey and Fuller critical value, we reject the hypothesis that the time series has a unit root and conclude that the series is stationary. On the other hand, if the calculated t-statistic is above the Dickey and Fuller critical value, we fail to reject the hypothesis that the series has a unit root and conclude that the series is non-stationary.

The simple Dickey-Fuller unit root test described above is valid only if the series is an AR (1) process. If the series is correlated at higher order lags, the assumption of white noise disturbances ε_t is violated. The Augmented Dickey-Fuller (ADF) test constructs a parametric correction for higher-order correlation by assuming that the *y* series follows an AR (*P*) process and adding *P* lagged difference terms of the dependent variable *y* to the right-hand side of the test regression:

$$\Delta y_t = \alpha y_{t-1} + x_t'\delta + \beta_1 \Delta y_{t-1} + \beta_2 \Delta y_{t-2} + \ldots \beta_p \Delta y_{t-p} v_t \quad (3)$$

The usual practice is to include a number of lags sufficient to remove serial correlation in the residuals and for this; Akaike Information Criterion is employed. Therefore, for the purpose of this study, the test to be carried out is the Augmented Dickey-Fuller unit test.

Phillips-Perron (PP) Test

Phillips and Perron propose a non-parametric alternative method of controlling for serial correlation when testing for a unit root. The P-P method estimates the non-augmented DF test equation (3), and modifies the t-ratio of the α coefficient so that serial correlation does not affect the asymptotic distribution of the test statistic. The PP test is based on the statistic:

$$t_\alpha = t_\alpha \left(\frac{\gamma_0}{f_0}\right)^{\frac{1}{2}} - \frac{T(f_0 - \gamma_0)(se(\hat{\alpha}))}{2 f_0^{\frac{1}{2}} s} \quad (4)$$

Where $\hat{\alpha}$ is the estimate, and t_α the t-ratio of α, $se(\hat{\alpha})$ is the coefficient standard error, and *s* is the standard error of the test regression. In addition, γ_0 is a consistent estimate of the error variance in equation (3) (calculated as $(T - K)s^2$ where *k* is the number of regressors). The remaining term, f_0, is an estimator of the residual spectrum at frequency zero.

Autoregressive Distributed Lag (ADRL) Bounds Test Approach

The idea of cointegration is that the linear combinations of two non-stationary series can be stationary. This implies the existence of a long run relationship between the variables. Thus, they can be modelled. In order to empirically analyze the short run dynamic interactions

and the long run relationships among the variables of interest, the auto-regressive distributed lag (ARDL) bounds co-integration technique was used.

The co-integration techniques approach was developed by Pesaran and Shin (1999) . Comparatively, the technique has three advantages over other previous and traditional co-integration methods. Firstly, ARDL test is relatively more efficient in the case of small and finite sample data sizes. Secondly, Pesaran et al. (1999) advocated the use of the ARDL model for the estimation of level relationships because the model suggests that once the order of the ARDL has been recognised, the relationship can be estimated by OLS. Lastly and most importantly, the bounds test allows a mixture of I(1) and I(0) variables as regressors, that is, it does not need that all the variables under study must be integrated of the same order and it can be applied when the under-lying variables are integrated of order one, order zero or fractionally integrated. Summarily, by applying the ARDL technique according to (Harris and Sollis, 2003), unbiased estimates of the long-run model is obtained.

According to Pesaran and Shin (1999), the ARDL$(p, q_1, q_2, \dots q_k)$can be written as:

$$\alpha(L,p)y_t = \alpha_0 + \sum_{i=1}^{k} \beta_1(L,q_i)x_{i,t} + \varepsilon_t \quad (5)$$

Where$\alpha_0$is a constant,$y_t$denotes the dependent variable, L is a lag operator,$x_{i,t}$is the vector of regressors (where i = 1, 2,..., k) and$\varepsilon_t$is the disturbance term.

Nonetheless, to apply the bounds test, it is important to ensure that the variables under consideration are not integrated at an order higher than one. In the presence of I(2) variables, the critical values provided by Pesaran et al.(1999) are no longer valid. The following ARDL representation of equation (8) will be estimated in order to test the existence of long run relationship between economic growth and financial development

The structural lags are established by using minimum Akaike's information criteria (AIC). From the estimation of UECMs, the long-run elasticities are the coefficients of one lagged explanatory variable (multiplied by a negative sign) divided by the coefficient of one lagged dependent variable (Bardsen, 1989).

After estimating the ARDL models, the Wald test (F-statistic) was computed to differentiate the long-run relationship between the concerned variables. The Wald test can be carried out by imposing restrictions on the estimated long-run coefficients of the variables. The null and alternative hypotheses are as follows:

$H_0 = \beta_1 = \beta_2 = \beta_3 = 0$ (no long-run relationship)

Against the alternative hypothesis

$H_0 \neq \beta_1 \neq \beta_2 \neq \beta_3 \neq 0$ (a long-run relationship exists)

The computed F-statistic value will be evaluated with the critical values. The lower bound critical values assumed that the explanatory variables x_t are integrated of order zero, or I(0), while the upper bound critical values assumed that x_t are integrated of order one, or I(1). Therefore, if the computed F-statistic is smaller than the lower bound value, then the null hypothesis is not rejected and we conclude that there is no long-run relationship between the dependent variables and their determinants. Conversely, if the computed F-statistic is greater than the upper bound value, then variables share a long-run level relationship. On the other hand, if the computed F-statistic falls between the lower and upper bound values, then the results are inconclusive.

Result and Discussion

HO_1; Relationship between Money Market Development and Economic Growth in Nigeria

The estimation approaches using Augmented Dickey Fuller (ADF) and Phillips Perron (PP) are employed to test the stationary level of the money market development indicators and output growth to suggest the appropriate technique to estimate the parameter coefficients. The results of the unit root for the indicators are presented in Table 4.1. The tau-statistic results for intercept and trend model were used to find the statistically significant of the variables at 1%, 5% and 10% critical point at levels and first difference.

Table 1

Variables	Unit Root Tests				
	Level		First Difference		I(d)
	ADF	PP	ADF	PP	
Y	-2.392(1)[-3.549]	-2.529(2)[-3.5443]	-3.616(0)[-3.549]	-3.907(3)[-3.549]**	I(1)
K	-3.692(0)[-3.544]**	-3.669(1)[-3.544]**	-	-	I(0)
LAB	-3.443(0)[-3.544]*	-3.749(0)[-3.549]**	-2.976(3)[-3.544]	-3.937(3)[-3.549]**	I(1)
TBR	-2.964(0)[-3.544]	-2.964(0)[-3.544]	-6.853(0)[-3.549]***	-7.213(5)[-3.549]***	I(1)
MPR	-3.154(0)[-3.544]	-3.061(3)[-3.544]	-6.347(1)[-3.554]***	-7.387(0)[-3.549]***	I(1)
DR	-5.687(7)[-3.581]***	-5.584(3)[-3.544]***	-	-	I(0)
FDI	-2.039(0)[-3.544]	-1.717(1)[-3.544]	-9.377(0)[-3.549]***	-9.785(4)[-3.549]***	I(1)
TOPEN	-0.938(1)[-3.544]	-1.788(2)[-3.544]	-5.478(6)[-3.581]***	-8.812(3)[-3.549]***	I(1)

Note: **** significant at 1%; ** significant at 5%; * significant at 10%. Calculated at trend and intercept and lag lengths selected automatically using the Schwarz Info Criterion (SIC).*
( ) represent lag length value, [ ] are criteria value

Source: Author (2019).

It should be noted that the lag length for ascertaining this stationarity level of our variables as well as unit-root test is automatic and optimally chosen by the Schwarz-Bayesian Information Criterion (SIC) while few were fixed. The two unit root tests under the conventional methods follow the same decision on stationary level of variables of interest at varying significant levels except for capital investment (K) and deposit rate (DR) which were stationary at levels at 1%. The unit root test results of others, that is output growth measured by real GDP growth (Y), labour force (LAB), foreign direct investment (FDI), trade openness proxy by total trade as a ratio of GDP (TOPEN), Treasury bill rate (TBR) and monetary policy rate (MPR) were found not to reject the null hypothesis "not stationary at level" at 5% McKinnon significance level. They were further tested at first differences which were found significant 5% significance level. This result suggests that at first difference, the time series of the variables were stationary and integrated of order one and therefore suggests that after differencing at first levels the series, they converge to their long-run equilibrium or true mean.

Table 2: Long-Run Relationship Using ARDL Bound Test (2, 3, 3, 3, 3, 3, 3, 3)

Test Statistic	Value	K
F-statistics (*Y | K LAB TBR MPR DR FDI TOPEN*)	28.1454	7
Critical Value Bounds		
Significance (*Y | K LAB TBR MPR DR FDI TOPEN*)	**I0 Bound**	**I1 Bound**
10%	1.92	2.89
5%	2.17	3.21

2.5%	2.43	3.51
1%	2.73	3.9

Note: Extracted from Appendix v
Source: Author (2019).

The autoregressive distributed lag (ARDL) model is found appropriate for establishing the relationship between money market development and output growth since the unit root results of our variables are stationary at levels and first difference. The estimation approach is employed because it is suitable for variables at different order of integration. The F-statistics estimate for testing the existence of long-run relationship between the variables is presented in Table 4.2. The estimated F-statistics of the normalized equations (F_{arb} = 28.1454) was greater than the lower and upper critical bound at 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at 5% significance level. The implication of the above estimation is that there is existence of long-run relationship between money market development variables and economic growth measured by real GDP growth in Nigeria. The model has equilibrium condition that keeps the variables together in the long-run. In addition, the short-run and long-run estimates are shown on Table 4.3 for the hypothesis as the evidence that there exist a long relationship between money market development and economic growth has been established.

Table 3: Results of Estimated ARDL Model of Money Market and Economic Growth

Dependent Variable: Real GDP (Y)				
Selected Model: ARDL(2, 2, 3, 3, 3, 3, 2, 3)				
Sample: 1981 2016				
Included observations: 33				
Short-Run Estimates				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
Δ(Y(-1))	0.362691	0.022861	15.86537	0.0000
Δ(K)	0.012739	0.004412	2.887554	0.0038
Δ(K(-1))	-0.016193	0.004770	-3.395159	0.0021
Δ(K(-2))	0.008877	0.003754	2.364998	0.0180
Δ(LAB)	0.109795	0.037739	2.909286	0.0074
Δ(LAB(-1))	-0.172635	0.025556	-6.755157	0.0000
Δ(LAB(-2))	0.453238	0.026822	16.89797	0.0000
Δ(TBR)	-0.001097	0.000748	-1.466720	0.1498
Δ(TBR(-1))	-0.008003	0.000844	-9.480480	0.0000
Δ(TBR(-2))	-0.006484	0.000706	-9.189327	0.0000
Δ(MPR)	0.004326	0.000956	4.524998	0.0000
Δ(MPR(-1))	0.009505	0.001038	9.152945	0.0000
Δ(MPR(-2))	0.004105	0.000825	4.978582	0.0000
Δ(DR)	0.001233	0.000344	3.582394	0.0005
Δ(DR(-1))	0.004117	0.000408	10.10263	0.0000
Δ(DR(-2))	0.007279	0.000404	18.01817	0.0000
Δ(FDI)	0.009267	0.001825	5.078341	0.0000

Δ(FDI(-1))	-0.043585	0.002773	-15.71869	0.0000
Δ(FDI(-3))	-0.026524	0.002357	-11.25160	0.0000
Δ(TOPEN)	-0.000755	7.75E-05	-9.732680	0.0004
Δ(TOPEN(-1))	0.001248	0.000119	10.47705	0.0000
Δ(TOPEN(-2))	0.000322	8.35E-05	3.853646	0.0004
ECT(-1)	-0.227266	0.006386	-35.58854	0.0000
Long-run Estimates				
K	0.049691	0.022593	2.199441	0.0286
LAB	1.000802	0.443280	2.257718	0.0240
TBR	0.055125	0.028934	1.905198	0.0568
MPR	-0.053963	0.049909	-1.081226	0.2802
DR	-0.018417	0.024065	-0.765306	0.4442
FDI	0.396921	0.197716	2.007527	0.0448
TOPEN	-0.007407	0.005375	-1.378047	0.1684
Constant	27.05923	7.438354	3.637798	0.0006
R-squared	0.8968	F-stat	41.024 (0.000)	
Adj. R-squared	0.7896	D-Watson	1.9015	

Source: Author (2019). Note; Extracted From Appendix v

Prior to the estimates, the ARDL automatically choose the lag length on all variables as the model was set at three to ensure sufficient degree of the freedom based on automatic selection of Akaike Information Criterion. The short-run parameters of the current and lag one and two of Treasury bill rate have negative and significant relationship with real GDP. This implies that low Treasury bill rate in the short-run contributes significantly to the overall output growth in Nigeria. The coefficients of the short-run current and lag one and two of monetary policy rate and deposit rate have positive and significant impact on economic growth at the conventional level. The short-run first lag of real GDP has positive and significant association with its current values. The coefficients of capital, labour force, foreign direct investment and trade openness are also reported at different lags and significance levels. On average, capital, FDI and trade openness have positive parameter estimates while the coefficients of labour force was negative. The error correction mechanism that measures the speed or degree of adjustment is reported in the short-run estimation results has its coefficient to be negative and statistically significant at the conventional level. The ECM value (-0.2273) implies that the model corrects its short-run disequilibrium by 22.73% speed of adjustment in order to return to the long run equilibrium. The rate of adjustment at 22.73% in real output growth adjust due to changes in money market indicators, capital, labour, FDI and trade liberalization.

The long-run estimates from Table 4.14 indicates that output growth (Y) was positively affected by growth in Treasury bill rate (TBR), capital (K), labour force (LAB) and foreign direct investment (FDI). The result shows that the indicators were in tandem with the theoretical expectations except Treasury bill rate. Also, on magnitude basis, 10% increase in Treasury bill rate (TBR), capital (K), labour force (LAB) and foreign direct investment (FDI) lead to an increase in real GDP growth by 0.55%, 0.50%, 10.01% and 3.96% respectively. However, the table reported that monetary policy rate (MPR), deposit rate (DR) and trade openness (TOPEN) have

indirect effects on real output growth, which all conform to a'priori expectations except trade openness. A 10% increase in monetary policy rate (MPR), deposit rate (DR) and trade openness deteriorate real output growth by 0.54%, 0.18% and 0.074% respectively. In terms of partial significance, capital, labour and FDI were found to be statistically significant at 5%, Treasury bill rate at 10% while others were not during the reviewed periods.

The coefficient of determination (Adjusted-R^2) is high (78.96%) indicating that about 78.96% of the total variations in real output growth was explained by the variables in the model. It simply indicates that the variation of changes in real output growth was explained by 78.96% variations in money market variables, capital, labour, FDI and trade liberalization. The overall test using the F-statistic (41.024) is statistically significant at 5% showing that the model is well specified and statistically significant. The Durbin Watson statistic (1.9015) shows that there is absence of serial autocorrelation in the model.

Table 4: Diagnostic Tests

Model (*Y | K LAB TBR MPR DR FDI TOPEN*)	
Serial Correlation: 0.3928 [0.6436]	**Normality Test:** 0.0369 [0.9817]
Functional Form: 1.8462 [0.1295]	**Heteroskedasticity Test:** 0.8716 [0.6690]

Source: Author (2019). Note; Extracted from Appendix v

The estimated ARDL model is tested for heteroskedasticity, serial correlation, functional form misspecification, parameter stability and normality. The results from these tests are shown in the Table 4.4. The estimated ARDL model revealed that the models passed the serial correlation test indicating that the error terms are not correlated up to order 3. The null hypothesis of normality and heteroskedasticity tests were not rejected at the conventional rate implying that the error terms are normally distributed and have same variance. Likewise, the functional form test using the Ramsey RESET tests were also satisfactory indicating that the ARDL model is not mis-specified. The cumulative sum and cumulative sum of square tests presented in Figure 4.1 showed that the residual and its variance are stable during the sample period respectively.

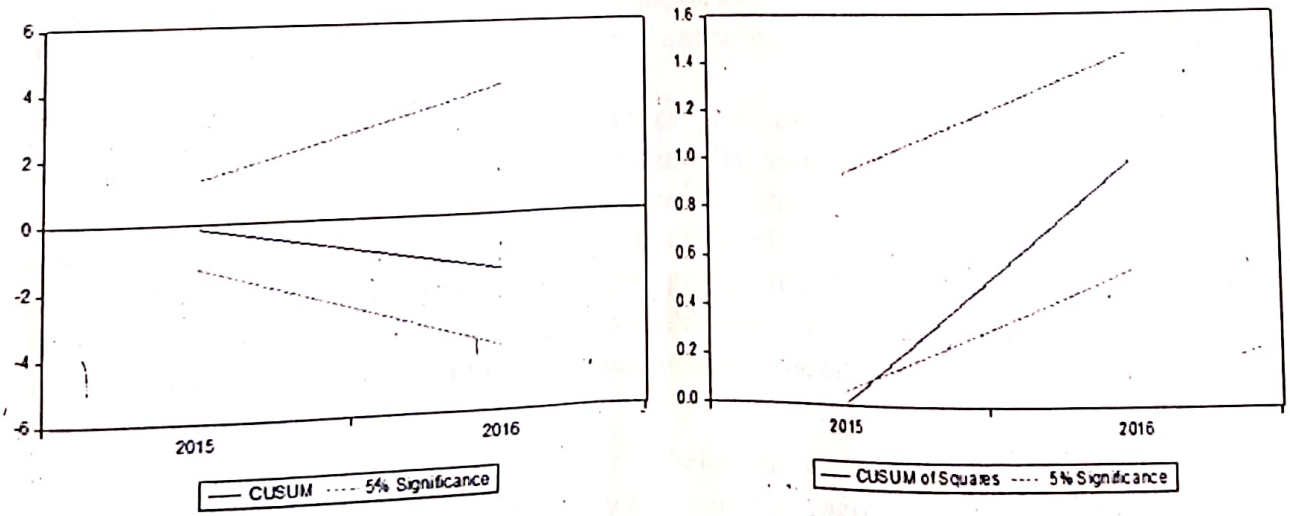


Figure 1: CUSUM and CUSUM of Squares Tests

Discussion of Findings

The study established that money market development significantly contributed to the Nigerian growth more in the short-run than in the long-run. A lower Treasury bill rate enhances output growth while the other two indicators do not in the short-run. This indicates that open market operations like government securities and bonds have significant impact on output in the short-run which are in tandem with Iwedi and Igbannibo (2015). The significance of the other indicators (monetary policy rate and deposit rate) implies that the role of the apex bank in monitoring the official interest rate has great impact on growth, likewise how high deposit rate attract more savings that can be employed for investment. In the long-run, the positive relationship between Treasury bill rate and output implies that government can only attract funds locally for long-term projects if the rates are attractive to investors. For monetary policy rate and deposit rate, they influence growth as the rates are lower to attract investment but their impacts are not significant. On average, the money market development does not enhance output growth positively in the long-run. The findings conform to the results of Ehigiamusoe (2013) but negate the results of Lyndon and Peter (2017). The finding of Agbada and Odejimi (2015) was inconclusive. Nevertheless, the results of the long-run relationship of money market and economic growth conform with Ikpefan and Osabuohien (2012), Ehigiamusoe (2013), and Agbada and Odejimi (2015). In respect of the control variables introduced into the models, capital and labour force have significant impact on economic growth whereas the coefficients of foreign direct investment and trade openness were inconclusive.

Conclusion and Recommendations

The policy implication of outcomes relating to money market and economic growth in this study is that high returns offered in the money market on government securities when compared to other developed and developing nations resulted in significant capital inflows of a short term nature. The fear of capital repatriation is ever present, with negative consequences for the nation's foreign reserves and currency valuation. Retention of short term portfolio investment poses a serious concern for the monetary authorities, due to its knock on effects on price and monetary stability. Appropriate policies that would make the money market stronger and wider should be explored by monetary authorities. The following recommendations are made base on the finding of study;

There should be a diversification of the stock to include more fixed security instruments. This will enable more companies to source finance for long term financing there by freeing the money market and dropping the current problem of credit mismatch whereby companies borrow short term from banks to finance long term projects. This practice has also led to some of the non- performing loans in the banking industry. The study also recommends that government should implement reforms that will enhance financial intermediation through stable and sustainable monetary policy followed by sound macroeconomics policies.

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