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# ANALYSIS OF INTEREST RATE DETERMINATION AND ITS EFFECT ON ECONOMIC GROWTH IN NIGERIA (1990-2017)

**Andabai, Priye Werigbelegha, PhD**
Department of Banking and Finance, Niger Delta University, Bayelsa State.

**MaryAnn, Nwamaka Igbodika. PhD**
Department of Banking and Finance, Chukwuemaka Odumegwu Ojukwu University, Anambra State.

**ABSTRACT:** The study examined the analysis of interest rate determination and its effect on economic growth in Nigeria; for the period 1990-2017. Secondary data were used and sourced from Central Bank of Nigeria Statistical Bulletin. The study employed Gross Domestic Product as proxy for Economic Growth and used as the dependent variable; whereas, prime lending rate (interest rate), inflation and private domestic investment were used as explanatory variables to measure interest rate. Hypotheses were formulated and tested using Ordinary Least Square econometrics models. Private domestic investment had a positive significant effect on Gross Domestic Product in Nigeria. Inflation had a positive insignificant effect on Gross Domestic Product in Nigeria. Interest rate had an insignificant effect on Gross Domestic Product in Nigeria. The coefficient of determination indicates that about 65% of the variations in economic growth can be explained by changes in commercial bank lending variables in Nigeria. The study concluded that interest rate determination had a positive; but, insignificant effect on economic growth in Nigeria. The study recommended that Government and policy makers should focus on maintaining inflation at a low rate (single digit) and ensure that the rate is stable; this will take care of the problem of inflation on the economy. CBN should increase their surveillance on the commercial banks; in order to address the issue of arbitrarily increase of the lending rate. Government should provide healthy environment for the banks in the industry so as to render efficient financial services to the economy.

**KEYWORDS:** Analysis, Interest rate, determination, economic, growth, Nigeria

## INTRODUCTION

In any modern economy, the importance of effective interest rate policy as an instrument of monetary policy cannot be overemphasized. But, the study conducted by Adeopko and Amusun (2018) revealed that interest rate policy in Nigeria appears to be one of the controversial of all financial policies. Hence, the reason may not be farfetched; because, interest rate policy has direct effect on some macroeconomic variables such as: investment, capacity utilization, balance of payment, inflation etc. However, interest rate plays a critical function to ensure efficient allocation of resources aimed at facilitating growth and development in an economy. The work of Utile, Okwori and Ikpambese (2018) also reaffirmed that interest rate policy in Nigeria lacked consistency; which was noticed before and after the Structural Adjustment Program; that characterized with the impositions of some credit control measures by the regulatory authorities in the country. Thus, making the business environment very risky and uncertainty



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that rendered firms difficult to service their debt. In addition to this, Andabai and Gbalam (2018) stated that the judicial system is reportedly inefficient and banks cannot easily enforce contracts as at when due. However, the high interest rate in Nigerian financial system seems to be a reflection of the poor economic polies and inefficient institutional framework that brings about high risk associated in financing investment in the Nigerian economy.

Thus, interest rate is expected to play an as one of the instruments used by the Central Bank of Nigeria in managing monetary policy in the Nigerian economy. Hence, interest rate regulations have always been contained either in the federal Government annual budget document or the monetary policy circulars of the Central Bank of Nigeria from time to time (Aliyu & Mammud, 2017). Unfortunately, in Nigeria the various interest rates regimes seem not be effective; because, the economy is still struggling under the shackles of under-development as a result of political and economic instability, infrastructural inadequacy and inconsistency government policies, making it difficult for interest rate policy to strive effectively in Nigerian economy.

This corroborates the work of Andabai and Chukwunulu (2018), which reveals that interest rate has a negative significant effect on economic growth in Nigeria. Thus, the complementary roles played by effective interest rate determination in order to achieve a sound growth and development in Nigerian economy has become imperative (Aniekan & Babalola, 2018). The work of Aliyu and Yusuf (2018) established that the economy had not been effectively stimulated by the interest rate policy; because of inconsistent monetary policies, inability to implement the formulated policies, failure of corporate governance in the financial institutions, corruption, economic and political instability in the country. The performance of the economy for the past years was characterized by conflicting evidences of interest rate instability that negatively affect economic growth in Nigeria, despite the increased number of banks in the economy.

**Theoretical Framework**

The study is predicated on Keynes monetary theory. The theory explains the effects of variation in money supply on the level of economic activity through its effect on the rate of interest which determines investment in the economy. Keynes posits that the rate of interest is determined by the forces of demand and supply of money, which in turn affects aggregate demand that provides a mechanism through which changes in money supply affects the goods in the market which determines the level of output and employment. This theory is clear when viewed from its transmission mechanism. This can be expressed thus:

$M_2 \longrightarrow R \longrightarrow I \longrightarrow AD \longrightarrow Y$

From the mechanism above, an initial expansion of supply of money ($M_2$) will cause a fall in the rate of interest (R) which in turn generates increase in investment expenditure (I) subject to the marginal efficiency of capital (MEC). The assumption is that investment is a function of the rate of interest with an inverse relationship; thus, a fall in the rate of interest induces investment. Increased investment leads to increase in real national income (Y) via effective demand which is an embodiment of consumption expenditure(C), investment (I), government expenditure (G) and net export (Xn). In Keynes view, increments of the existing money stock leads to increment of output as long as the



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economy is operating under unemployment equilibrium and does not affect prices. Hence, when full employment output is achieved, further increments to the money stock exerts pressure on prices which rise proportionally to increase effective demand.

**Empirical Review**

Henshaw (2018) examined the effect of inflation on economic growth in Azerbaijani economy over the period of 1990-2017. The estimated threshold model indicated that there is a non-linear effect of interest rate on economic growth and inflation in the Azerbaijani economy. The threshold level of inflation for GDP growth is 13 percent. The threshold level inflation has statistically significant positive effect on GDP growth, but this positive effect becomes negative when inflation exceeds 13 percent.

Kamalu (2017) investigated the relationship between interest rate deregulation and economic growth in Pakistan between 1990-2016. The study concluded that interest rate liberalization has not impacted positively on economic growth in Pakistan as most of the indicators of the financial liberalization do not show any significant impact on saving, investment or growth. Interest rate liberalization on the economy of Pakistan revealed that long-run economic growth in Pakistan is largely explained by physical capital and real interest rate. The study concluded financial liberalization has had significant negative impacts on economic growth; implying that financial reforms failed to attract new investment.

Osundina and Osundina (2017) investigated the effect of interest rate on private sector growth in Nigeria, 1990-2016. The study used an autoregressive analysis on the variable as well as an assessment of the effects on interest rate indices on money supply. The results among others show that minimum rediscount rate and savings rate have made significant positive impact on money supply. Chinwe (2018) evaluated the relationship between real interest rate and economic growth in Nigeria, 1986-2017. The result showed that there was a unique long run relationship between interest rate and economic growth. The study concluded that interest rate is an important determinant of economic growth in Nigeria. However, the deregulation of interest rate in Nigeria may not optimally achieve its goal if those other factors that affect investment negatively are not sorted out.

**METHODOLOGY**

The study applied *ex-post-facto* research design to source requisite information. Data for this study is collected from the Central Bank of Nigeria Statistical Bulletin, 2017, Online Edition available in: www.cbn.org/Out/2017/SD/2017%20St%20 Bulletin Section, Data collected for the variables form the basis of the study that cover 28-years (1990-2017) as indicated in appendix **1**.

**Model Specification**

Multivariate linear regression models are used to test each of the null hypotheses proposed for this study. Based on the formulated hypotheses: Interest rate determination does not have any significant effect on economy growth in Nigeria. Thus, a model is adapted from the work of (Utile, Okwori & Ikpambese, 2018). The model is stated as: GDP = *f*(EXR, INT, INFL). Where: GDP = Gross Domestic Product as proxy for Economic Growth; EXR = Exchange Rate; INT = Prime Lending Rate; INFL = Inflation



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Rate/The above model is modified in this study by introducing private domestic investment as proxy for exchange rate and was employed as independent variable. Hence, the modified model is stated as: GDP = *f*(PDI, INFL, INT).....(1).

The econometric model can be written as:

$Ln(GDP) = a_0 + a_1LnPDI + a_2LnINFL + Lna_3INT + \mu$.....(2).

Where: GDP = Gross Domestic Product as proxy for Economic Growth; PDI = Private Domestic Investment; INFL = Inflation Rate; INT = Interest Rate (Prime Lending Rate)

$a_0$ = Constant parameter, $a_1$–$a_3$ = Elasticity Co-efficient of each variable. μ = Stochastic error term, Ln = The natural log of the variables. Log transformation is necessary to reduce the problem of heteroskedasticity because it compresses the scale in which the variables are measured, thereby reducing a tenfold difference between two values to a twofold difference (Gujarati, 2004).

**Data Presentation and Discussion**

Data for this study consist of 28-year annual observation period of (1990-2017). The study used Gross Domestic Product as proxy for Economic Growth and used as the dependent variable; whereas, the explanatory variables include Private Domestic Investment, Inflation rate and Interest Rate (Prime Lending Rate) respectively were used as interest rate determination variables as indicated in appendix **1**.

**Descriptive statistics**

**Table 1: Descriptive statistics**

| | GDP | PDI | INTR | INFL |
|---|---|---|---|---|
| Mean | 4476.39 | 5465.94 | 15.76860 | 42.25363 |
| Median | 3475.63 | 4386.58 | 18.06779 | 23.14650 |
| Maximum | 3398.87 | 7364.84 | 48.10079 | 28.10000 |
| Minimum | 2365.46 | 3364.83 | 37.99967 | 22.10000 |
| Std. Dev. | 6.12802 | 1.486.05 | 4.7689.86 | 9.617132 |
| Skewness | 0.28552 | 3.11848 | 1.0670.69 | 0.185586 |
| Kurtosis | 3.07532 | 14.19450 | 5.2562.20 | 2.604247 |
| | | | | |
| Jarque-Bera | 0.46078 | 203.1536 | 12.83670 | 0.253744 |
| Probability | 0.801895 | 0.000000 | 0.001612 | 0.821799 |
| | | | | |
| Sum | 162.3100 | 3173.310 | 596.4000 | 1486.929 |
| Sum Sq. Dev. | 1158.357 | 685374.4 | 907.1700 | 2867.166 |
| | | | | |
| Observations | 28 | 28 | 28 | 28 |

**Source:** Author's computation with the use of E-view 9.0

Descriptive statistics on table 1 shows that Gross Domestic Product for the period under study had a mean value of N4,476.39, Private Domestic Investment had N5,465.7 and Interest Rate had 15.77%; while, inflation had 42.25%. The Jarque-Bera statistic shows that two of the variables, namely Gross Domestic Product and Private Domestic Investment were normally distributed while Private Domestic



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Investment and Interest Rate were highly skewed. Furthermore, Gross Domestic Product has a median of N3,475.6 this implies that for the period under review the Gross Domestic Product was very high.

**Unit Root Test**

The stationary test of the variables was done using the Augmented Dicker Fuller (ADF) Unit Root Test. The result on **table 2** shows that all the variables are integrated at first difference i.e. 1(1) at the 5% or 1% level of significance.

**Table 2**: Unit Root Tests Analysis

| Variables | ADF test Statistics | Mackinnon critical vale @ 5% | No of the time difference | Remark |
|---|---|---|---|---|
| GDP | 2.1634742 | -4.036263 | I(1) | Stationary |
| INTR | -1.4638769 | -6.275648 | I(1) | Stationary |
| INFL | -3.3769503 | -4.199432 | I(1) | Stationary |
| PDI | 3.2743658 | 2.323786 | I(1) | Stationary |

**Notes:** (1)1% level of significance, 5% level of significance, 10% level of significance. The tests accepted at 5% level of significance. S**ource:** Researcher's Estimation using- E-views 9.0.

**Test for Co-Integration**

Having found that all the variables are stationary at first difference, the next step is to perform Johansen integration procedure to ascertain whether Gross Domestic Product (GDP), Interest Rate (INTRD), Inflation (IN and Private Domestic Investment (PDI) are co-integrated in the same order. Hence, the result of the test is presei on table 3**.**

**Table 3:** Multivariate Johansen's Co-Integration Test Result.

| Null hypothes | Alternative hypothesis | Eigen value | Likelihood rat | Critical vales 5% | Critical value 1% | Hypothesized No. of CE(s) |
|---|---|---|---|---|---|---|
| r=0 | r=1 | 0.84539 | 86.25368 | 64.31 | 47.43 | None |
| rd≤1 | r=2 | 0.80362 | 78.43627 | 53.42 | 32.62 | At most 1 |
| rd≤2 | r=3 | 0.78364 | 70.71387 | 33.36 | 27.31 | At most 2 |
| rd≤3 | r=4 | 0.54738 | 24.54637 | 11.62 | 14.43 | At most 3 |

**Source:** E-views Econometrics 9.0. Note: * (**) denotes rejection of hypothesis at 5% (1%) significance level.



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**Table 4: Ordinary Least Square (OLS) Estimation Results**

Dependent Variable: GDP
Method: Least Squares, Time:3:08
Sample: 1990-2017
Included observations: 28

| Date: 30/09/2018 | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 15.64585 | 32.37845 | 12.03086 | 0.00001 |
| Ln(INTR) | 5.231566 | 0.002709 | 0.347699 | -0.26080 |
| LN(INFL) | 6.645373 | 8.243568 | 2.488678 | 0.19054 |
| LN(PDI) | 8.352436 | 0.003752 | 3.354769 | 0.00085 |
| R-squared | 0.650136 | Mean dependent var | | 68.46480 |
| Adjusted R-squared | 0.599543 | S.D. dependent var | | 67.83676 |
| S.E. of regression | 12.37865 | Akaike info criterion | | 10.03759 |
| Sum squared resid | 378.3220 | Schwarz criterion | | 10.46039 |
| Log likelihood | 123.1673 | F-statistic | | 6.896857 |
| Durbin-Watson stat | 1.879687 | Prob(F-statistic) | | 0.184675 |

**Source:** Author's computation with the use of E-view 9.0

From table 4 the coefficient of determination ($R^2$=0.6501364) indicates that about 65% of the variations in economic growth can be explained by changes in interest rate variables (INTR, INFL and PDI) in Nigeria. This implies that a significant portion of economy is explained by interest rate determination variables. F-Test: Decision Rule: Reject $H_0$: If p- value < 0.05 and accept $H_0$ if p- value > 0.05. The result on table 4 reveals that the effect of interest rate determination on economic growth in Nigeria has a F-statistic of 6.896857; and, with a probability value of 0.184675, which is higher than the level of significance of 0.05, which means, the effect is statistically not significant. The null hypothesis is therefore accepted. That is to say that interest rate determination is positive; but, has an insignificant effect on economic growth in Nigeria. This is also confirmed by the F-probability which is statistically not zero.

## CONCLUSION AND RECOMMENDATIONS

The study concluded that interest rate determination has a positive; but, an insignificant effect on the growth of Nigerian economy. This is evident from the Ordinary Least Square (OLS) econometrics test as indicated on table **4**. This implies that interest rate determination variables are statistically insignificant in explaining economic growth in Nigeria. This is also consistent with the work of Audula (2017) which reveals an insignificant impact of interest rate policy on economic growth in Nigeria; for the period (1998-2016). The study therefore, recommends that Government and policy makers should focus on maintaining inflation at a low rate (single digit) and ensure that the rate is stable; this will take care of the problem of inflation in the economy. The policy towards interest rate should be made such that savings would be stimulated thereby placing more funds in the hands of banks to intermediate to the investors that are seeking funds. Lending rate should be reasonable so as not to deter investors from borrowing in order to embark on viable investment projects in the economy. Government should create a conducive business environment to encourage both local and foreign participation in investment thereby engendering economic growth and development. Central Bank of Nigeria should implement policies that will increase the flow of investable funds and improves the capacity of banks to extend credit to the economy.



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Monetary authorities should also promote healthy competition in the financial industry so as to improve the efficiency in rendering financial services in the economy.

**Contribution to Knowledge**

The study was able to modify the model, expand the existing literature, empirical review, geographical spread and updated data that will enable researchers and scholars to use it for further studies. The study concludes that interest rate determination has no significant effect on the growth of Nigerian economy.

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**Appendix 1:**
**Interest Rate Variables and Gross Domestic Product in Nigeria (1990-2017)**

| Years | GDP at Current Market Price (₦ Billion) | Inflation Rate (%) | Interest Rate (%) | Private Domestic Investment (N' Billion) |
|---|---|---|---|---|
| 1990 | 349,76 | 20.9 | 25.50 | 52.86 |
| 1991 | 545.67 | 7.7 | 20.01 | 75.40 |
| 1992 | 875.34 | 23.2 | 29.80 | 111.11 |
| 1993 | 1,089.68 | 39.6 | 18.32 | 165.34 |
| 1994 | 1,399.70 | 5.5 | 21.00 | 230.29 |
| 1995 | 2,907.36 | 5.4 | 20.18 | 289.09 |
| 1996 | 4,032.30 | 10.2 | 19.74 | 345.85 |
| 1997 | 4,189.25 | 38.3 | 13.54 | 413.28 |
| 1998 | 3,989.45 | 40.9 | 18.29 | 488.15 |
| 1999 | 4,679.21 | 7.5 | 21.32 | 628.95 |
| 2000 | 6,713.57 | 13 | 17.98 | 878.46 |
| 2001 | 6,895.20 | 44.5 | 18.29 | 1,269.32 |
| 2002 | 7,795.76 | 57.2 | 24.85 | 1,505.96 |
| 2003 | 9,913.52 | 57 | 20.71 | 1,952.92 |
| 2004 | 11,411.07 | 72.8 | 19.18 | 2,131.82 |
| 2005 | 14,610.88 | 29.3 | 17.95 | 2,637.91 |
| 2006 | 18,564.59 | 8.5 | 17.26 | 3,797.91 |
| 2007 | 20,657.32 | 10 | 16.94 | 5,127.40 |
| 2008 | 24,296.33 | 6.6 | 15.14 | 8,008.20 |
| 2009 | 24,794.24 | 6.9 | 18.99 | 9,419.92 |
| 2000 | 54,204.80 | 18.9 | 17.59 | 11,034.94 |
| 2011 | 63,258.58 | 12.9 | 16.02 | 12,172.49 |
| 2012 | 71,186.53 | 14 | 16.79 | 13,895.39 |
| 2013 | 80,222.13 | 10.1 | 16.72 | 15,158.62 |
| 2014 | 83,193.463 | 11.5 | 16.55 | 17,680.52 |
| 2015 | 87,576.474 | 8.6 | 16.85 | 19,772.87 |
| 2016 | 94,144.960 | 6.6 | 16.87 | 19,988.30 |
| 2017 | 101,489.49 | 32.4 | 16.2 | 110,465.43 |

**Source:** Central Bank Nigeria Statistical Bulletin, 2017.



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