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# Interest Rate and Investment Nexus in Nigeria

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**Abstract**

Since interest rate policy is one of Nigeria's most contentious laws and has attracted the attention of several academics, it is unknown how it will affect the country's investment base. Thus, between 1981 and 2015, this study looked at how interest rates affected investment in Nigeria. The 2016 Statistical Bulletin of the Central Bank of Nigeria included secondary data that were gathered. In order to examine the data, the study calculated the Johansen Multivariate Co-integration model and the Error Correction Model (ECM). The co-integration test results indicate that there is a long-term link between investment, as measured by gross fixed capital formation (GFCFG), and the proxies for interest rates (MLR, MPR, and SAVR). According to the ECM conclusion, MLR and MPR have a statistically significant negative impact on investment in Nigeria. Although SAVR increases investment, this effect is not statistically significant. Additionally, according to the ECM, 40% of the disequilibrium from the previous year would be addressed in the present time. The conclusion of this study is that high interest rates discourage investment. To encourage investors to access money, it is suggested, among other things, to lower the lending and monetary policy rates to a single digit. This would result in the nation's economy growing.

**Keywords:** *Interest rate, Investment, Monetary policy rate, Maximum lending rate, Savings rate*

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**Background to the Study**

The prevailing interest rate in the economy determines investment decisions everywhere in the world. The cost of using money is represented by the interest rate. In order to promote economic growth, it is essential to reallocate scarce financial resources from surplus economic units to deficit units. This may also be thought of as the return given to the source of the financial resources. According to Acha (2011), interest rates have a significant influence on the cost of capital, the availability of credit, and the amount of savings in a country's economy.

Due to shifting federal government policies, crises in the local and global financial markets, and shifts in the outlook for inflation and long-term economic development, Nigeria's interest rate policy has historically been erratic. It has been concerning that the Nigerian economy is experiencing both macroeconomic instability and interest rate volatility. Nigeria has liberalised its domestic financial market, eliminated capital movement restrictions, and implemented interest rate policies and structural reforms, but the majority of investment has gone into the oil sector of the economy, which accounts for about 90% of the nation's GDP. Nigeria has not yet realised the full extent of her potential when it comes to diversifying domestic investment into other economic sectors (Chuba, 2005).

According to the World Bank (2002), the high interest rates in the Nigerian financial system are a result of the country's incredibly inadequate institutional framework and infrastructure, which make it difficult to significantly lower the risk of financing investments in a severely damaged economy. A dynamic interest rate regime was introduced by the administration of low interest rates, which was meant to stimulate investment prior to and during the SAP era of 1986. However, the anticipated outcome of promoting investment growth in Nigeria was not achieved. This resulted from the monetary policy's inconsistency and the incapacity to create an interest rate policy that would be a part of the comprehensive policy package meant to facilitate financial intermediation and monetary management, which may involve low interest rate investment expenditure.

Nigerian bank loan interest rates are significantly higher than 20%, which makes it difficult for prospective investors to obtain the capital they need to make investments that would boost the country's economy. Nonetheless, in July 2016, the Monetary Policy Committee (MPC) of the Central Bank of Nigeria (CBN) increased the Monetary Policy Rate (MPR) by 200 basis points to 14.00% in response to a steadily declining economy and rapidly increasing inflation, which was recorded at 17.6% at the time. Several academics have questioned this choice in light of Nigeria's faltering labour market and contracting economy (Toni, 2016).

The Lagos Chamber of Commerce and Industry, the Manufacturers Association of Nigeria (MAN), and other organised corporate sectors demanded in September 2016 that the federal government lower interest rates sharply in order to boost economic recovery. Professional associations including the Institute of Fiscal Studies of Nigeria, the Chartered Institute of Finance and Control, and well-known economists also counselled the government to reassess its policies immediately and increase spending in order to draw in

more foreign and domestic capital for the economy. In light of this, this study looked at how interest rates affect investments in Nigeria.
This paper tested the validity of the following hypotheses.

1. Maximum lending rate does not have a significant impact on gross fixed capital formation in Nigeria.
2. The impact of monetary policy rate on gross fixed capital formation in Nigeria is not significant.
3. Savings rate does not have any significant impact on gross fixed capital formation in Nigeria.

**Theoretical Literature**

**The Keynesian liquidity preference theory (General theory)**

According to this theory, money supply-government spending-and money demand-liquidity preference-interact to determine the level of interest rates in the economy. Keynes argued against the Classical Quantity theory, arguing that the interest rate was a disincentive to save money rather than a reward for doing so. Some of the quantity theory concepts were abandoned by the Keynesian approach, while others were expanded upon in a novel way. It built on the earlier Cambridge approach to the demand for money and reorganised its presentation in terms of the reasons people keep money. "The understanding of the need for money is based on four motivations: transactional, speculative, precautionary, and buffer stock. This treatment of the demand for money originated from this approach to motives. Friedman's study of the demand for money as an asset followed the Keynesian emphasis on money as an asset, held as a substitute for bonds, so putting this method of studying money demand inside the boundaries of the classical paradigm. Commodity market analysis, which is focused on consumption, investment, and the multiplier, became a fundamental component of macroeconomics thanks to Keynesian analysis. The examination of the monetary sector was also incorporated by the Keynesian method into the overall macroeconomic model for the economy. This contribution was based on the concept of the multiplier, which was unknown in the traditional classical period.

**The endogenous Growth Theory**

This theory was established by Paul Romer (Romer, 1993), and is an important component of the theory of development of developing countries. According to this idea, the production process, not external variables, determines the rate of growth (Grandy, 1989). The neo-classical theory's failure to explain why nations with similar technology levels have differing rates of economic growth is one of the main forces behind this idea. In addition, current theory makes the assumption that growing marginal returns on the size of production elements will result from the external impacts of returns on investments in human capital, which would raise productivity. Growth is contingent upon two factors: investments in research and development and savings and human capital (Lucas, 1988). Furthermore, there is a claim that the free market results in less-than-ideal levels of capital accumulation in R&D and human capital. Therefore, by investing in human capital and promoting private investment in high-tech businesses, the government may increase the effectiveness of resource allocation (Mattana, 2004).

**Empirical Review**

Adegboyega, et al. (2023), looked at how savings and interest rates affected Nigeria's industrial productivity. Using data from the Central Bank of Nigeria (CBN) Statistical Bulletin, the Ordinary Least Square (OLS) multiple regression analysis was performed in a model with national savings, interest rate INTR, and inflation rate INFL as the explanatory variables and industrial sector output as the dependent variable. The outcome demonstrated that Nigeria's industrial output is not much impacted by interest rates or inflation rates. The study revealed that, savings had a large positive influence on industrial output whereas the impact of interest rate and inflation rate on industrial output in Nigeria was positive but minor.

Oluwole and Ushie (2022), using time series data from the Central Bank of Nigeria statistics bulletin, researchers examined the impact of interest rate liberalisation on investment in Nigeria between 1986 and 2020. For the long-term Co-Integration, the study used the bound test and Autoregressive Distributed Lag (ARDL). The ARDL's findings demonstrated that, in Nigeria, savings had a large and favourable impact on domestic investment, whereas interest rates had a negligible and negative influence. Additionally, it was shown that Nigerian domestic investment was significantly and favourably impacted by the savings rate. Ultimately, domestic investment in Nigeria was significantly and favourably impacted by the loan rate. The study came to the conclusion that interest rates were important because they influenced how financial resources were allocated, and that improving the country's investment position was necessary for an economy to have sustained growth and development.

Madu and Umole (2020), examined how interest rates affected Nigerian domestic investment. Data on an annual basis for the years 1986–2016. Johansen cointegration and the Error Correction Mechanism were used to investigate the relationship between these chosen variables in Nigeria. The empirical analysis's conclusion shows that DDIR, DDMB, PLDR, TCPS, EXCR, INFR, and DINV have a long-term association. It was discovered that there was a direct and substantial correlation between the interest rate on demand deposits, the total amount of loans given to the private sector, and the demand and time deposits of deposit money institutions. The findings also showed a substantial inverse link between Nigerian domestic investment and the prime lending rate and currency rate. Despite being negatively connected; the inflation rate was shown to be inconsequential in explaining the dependent variable.

Apere and Akarara (2018), explored the relationship between interest rates and investment in Nigeria from 1981 to 2015 using secondary data from the Central Bank of Nigeria Statistical Bulletin 2016. The study estimated the Johansen Multivariate Co-integration model and used the Error Correction Model (ECM) to analyse the data. The findings of the co-integration test indicate that there is a long-term relationship between the proxies for interest rate (MLR, MPR, and SAVR) and investment, as measured by Gross Fixed Capital formation (GFCFG). The results of the ECM model indicate that MLR and MPR have a negative and statistically significant impact on investment in Nigeria. Although SAVR

increases investment, this effect is not statistically significant. Additionally, according to the ECM, 40% of the disequilibrium from the previous year would be addressed in the present time. Using multi regression analysis, Davis and Emerenini (2015) investigated how interest rates affected investment in Nigeria. According to the survey, investing in Nigeria is adversely impacted by high interest rates. As a result, they promoted the implementation of pertinent monetary measures to promote savings and lower the prime lending rate for sincere investors.

In their research "How to Boost Investment in the MENA countries," Aysam et al. (2004) employed the real interest rate, external stability, situation reform, macroeconomic volatility, and physical infrastructure as its independent factors. Forty developing nations made up the panel for their study. To ascertain if there was a long-term link between investment and its drivers, they employed co-integration approaches. They discovered that practically every explanatory factor significantly affects investment; nevertheless, a higher interest rate seems to have the opposite effect.

Majed and Ahmad (2010) used the co-integration approach to look at how interest rates affected investment in Jordan between 1990 and 2005. According to the study, real interest rates have a detrimental effect on investments. A 1% rise in the real interest rate results in a 44% decrease in the investment level. Abiodun and Okechukwu (2004) looked at how macroeconomic factors affected foreign direct investment. Using the Johansen co-integration test and error correction technique, the data for their analysis covers the years 1974–1997. According to the report, macroeconomic factors significantly and favourably affect foreign direct investment in Nigeria. Ekwenini (2005) used time series data to examine interest rates and investment behaviour in Nigeria from 1976 to 2006. He discovered that investment behaviour significantly affects both interest rates and inflation rates.

Using the Granger causality test and Johasen co-integration, Omoke and Ugwuany (2010) examined the link between investment, money supply, and inflation in Nigeria. The outcome implies that price stability may help to raise investment levels. According to the study, real production, inflation, monetary aggregates, and exchange rates were the main factors influencing investment. The impact of government spending on the amount of investment was never taken into account in this study. Additionally, Adofu, Abula, and Audu (2010) found that interest rate deregulation has a significant and positive impact on agricultural productivity in Nigeria in their study on changes in agricultural production since the deregulation of interest rates in 1986. The study used the ordinary least square method to examine data from 1986 to 2005. The empirical analysis conducted during the reviewed period also indicated that interest rates were important in stimulating economic activity. For this reason, monetary authorities should make sure that the right interest rate is set, which will prevent interest rates from having a negative feedback loop that affects both local investors and savers.

Using secondary data, regression analysis, and error correction techniques, Enyioko (2012) examined the relationship between interest rates and bank performance in Nigeria and discovered that interest rate policies have greatly improved banks' overall performance, particularly in the area of return on assets (ROA). Using ordinary least square (OLS) regression analysis, Okeye and Eze (2013) examined the impact of interest rates and monetary policy rates on the performance of Nigerian deposit money banks. They discovered that monetary policy had a noteworthy and favourable impact on these banks' operations.

**Research Methodology**

In order to evaluate the association between a few selected variables, the study used the Ordinary Least Square (OLS) approach. This study uses the following variables: real gross domestic product, lending rate, monetary policy rate, saving rate, and gross capital formation. Of these, real gross domestic product, lending rate, monetary policy rate, and saving rate are the independent variables, and gross capital formation is the dependent variable. The Central Bank of Nigeria Statistical Bulletin (2022) provided the data set, which covered the years 1981–2022. The data's stationarity was tested using the Augmented Dickey-Fuller (ADF) Unit Root Test, and the long-run connection between the variables was examined using the Johansen co-integration approach. In order to assess how quickly the parameters will be adjusted to return to their equilibrium route in the event that they stray from it, the study also assessed the error correction model.

**Model Formulation and Specification**

The study specified a model that states that investment, which is proxied by gross fixed capital formation growth (GFCFG), depends on broad money supply growth, maximum lending rate, monetary policy rate, and saving rate in order to understand the impact of interest rates on investment behaviour in the Nigerian economy.

Mathematically, it is expressed as:

*GFCFG = f(MLR, MPR, SAVR) … … … … … … … … … … … … … … … (1)*

Econometrically, this can be stated thus;

$$GFCFG = a_0 + a_1 MLR_t + a_2 MPR_t + a_3 SAVR_t + U_t \ldots \ldots \ldots (2)$$

Where:

GFCFG = Gross fixed capital formation growth rate
MLR = Maximum Lending rate
MPR = Monetary Policy Rate
SAVR = Savings Rate
U = Error term or Stochastic term

**Method of Data Analysis**

The present investigation employed the multiple regression approach of ordinary least squares (OLS) within the context of the error correction model (ECM). To analyse the data gathered, the Eviews 10 econometric software package's multiple regression techniques were utilised as a tool.

**Results and Discussion**

**Table 1:** Augmented Dickey-Fuller Root Test

| Variables | ADF at level | ADF at 1st Diff. | 5% critical Val. | Ord. of Int | Remarks |
|---|---|---|---|---|---|
| GFCFG | -0.267460 | -3.929238 | -2.951125 | I(1) | Stationary |
| MPR | -0.972396 | -3.956739 | -2.951125 | I(1) | Stationary |
| MLR | -2.935521 | -6.491505 | -2.951125 | I(1) | Stationary |
| SAVR | -1.844508 | -5.922681 | -2.960411 | I(1) | Stationary |
| ECM(-1) | -4.147372 | | -2.960411 | I(0) | Stationary |

**Source**: Authors' Computation.

After one differencing, all of the variables became stationary, as indicated by the unit root result in table 1 above. As predicted, the short-run model's (ECM) residual is stationary at level. In order to estimate the Johansen cointegration test and determine if the model's variables have a long-term connection, this prerequisite must be met. Table 2 below displays the cointegration test outcome.

**Table 2:** Johansen Cointegration Test

Sample (adjusted): 1983 2022
Included observations: 37 after adjustments
Trend assumption: Linear deterministic trend
Series: GFCFG(-1) MPR(-1) MLR(-1) SAVR(-1)
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.506403 | 44.65826 | 29.79707 | 0.0005 |
| At most 1 * | 0.377980 | 18.53494 | 15.49471 | 0.0169 |
| At most 2* | 0.610485 | 51.41811 | 47.85613 | 0.0223 |
| At most 3 | 0.334146 | 22.18964 | 29.79707 | 0.2881 |

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

**Source**: Authors' computation

The result of the co-integration test revealed that there are three cointegrating equations in the model at 5 per cent level of significance. This shows that there exist three cointegrating vectors in the model and it is a clear indication that there is a long-run relationship between the variables in the model. This also endorses the unit root test result in Table 3 above, and it is

a necessary condition for the estimation of the error correction model (ECM) which is presented below in Table 3

**Table 3:** Parsimonious Error Correction Model Result

Dependent Variable: D(GFCFG)
Included observations: 39 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.012929 | 0.014395 | 0.898125 | 0.3925 |
| D(MPR) | -0.277095 | 0.124013 | -2.241297 | 0.0287 |
| D(MPR(-1)) | -0.054946 | 0.012653 | -4.342523 | 0.0019 |
| D(MLR) | -0.091165 | 0.037116 | -2.456218 | 0.0185 |
| D(MLR(-2)) | -0.028771 | 0.037776 | -0.761621 | 0.4658 |
| D(MLR(-3)) | -0.051490 | 0.037300 | -1.380432 | 0.2408 |
| D(SAVR) | 0.044590 | 0.086168 | 0.517477 | 0.3213 |
| D(SAVR(-1)) | 0.007902 | 0.006225 | 1.269398 | 0.0712 |
| D(SAVR(-3)) | 0.030517 | 0.007259 | 4.204023 | 0.0023 |
| ECT(-1) | -0.403110 | 0.047644 | -8.460877 | 0.0000 |

$R^2 = 0.77$; Adj. $R^2 = 0.68$; Prob(F-statistic) = 0.000114; F-value = 15.307; Durbin-Watson Stat. =1.88

**Source**: Authors' Computation

Table 3 shows that, in addition to the high adjusted R-squared value and the acceptable Durbin Watson statistic, the general error correction model fits well when analysing the linear combination of Gross Fixed Capital Formation (investment) and all the identified explanatory variables. It also allows us to monitor the rate at which the model is adjusted in the event that any of the variables deviate from their equilibrium path.

According to the findings, a 1% rise in the monetary policy rate would cause the economy's gross fixed capital formation growth to decrease by almost 28%. This is a blatant sign that when borrowing costs rise, any increase in the interest rate (MPR) will deter potential investors. Based on the probability value of 0.0287, the conclusion indicates that MPR has a considerable negative influence on investment (GFCFG) in Nigeria. As a consequence, hypothesis two (2) of the study is denied. The study's first hypothesis, (1), is likewise rejected since the maximum loan rate has a statistically significant negative impact on investment in Nigeria, as seen by its probability value, which is well below the 5 percent significance limit. It illustrates that a 9 percent reduction in investment would be the outcome of any attempt to raise MLR (GFCFG). The study's third hypothesis, however, is accepted as the savings rate has a beneficial effect on investment in Nigeria and is not statistically significant at the five percent significance level. This suggests that in Nigeria, the rate of savings and investment are directly correlated. A 4% rise in the nation's Gross Fixed Capital Formation would result from any increase in the saving rate.

The percentage of investment variation (gross fixed capital formation) that can be accounted for by the independent variables in the model is indicated by the coefficient of determination ($R^2$), which stands at 0.77. This data suggests that MPR, MLR, and SAVR together account for 77% of the growth in Nigeria's investment (GFCF). Other characteristics not included in the study's model account for the remaining 23 percent. The whole model is jointly significant, as indicated by the computed F-value of 15.307, which is significant at 0.05 levels of significance. According to the ECM, 40% of the disequilibrium that happened the year before would be addressed in the present year.

The model has no autocorrelation, as indicated by the D.W statistic of 1.87. This eliminates any serial correlation between the exploratory variables in the model and renders the model/estimate valid.

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**Table 4:** Diagnostic Tests

| | | | |
|---|---|---|---|
| Jargue-Bera Normality test | | | |
| Jargue-Bera stat. | 0.87 | Probability | 0.64 |
| Breusch-Godfrey Serial Correlation LM test | | | |
| F-statistic | 0.96 | Probability | 0.32 |

**Source**: Authors' computation

The errors in the series exhibit a normal distribution, as demonstrated by the Jargue-Bera normality test. According to the Breusch-Godfrey Serial Correlation LM test, the residuals in the estimated model have no serial correlation. As seen in figure 1 below, the Cumulative Sum of Recursive Residual Stability (CUSUM) test further validates this argument.

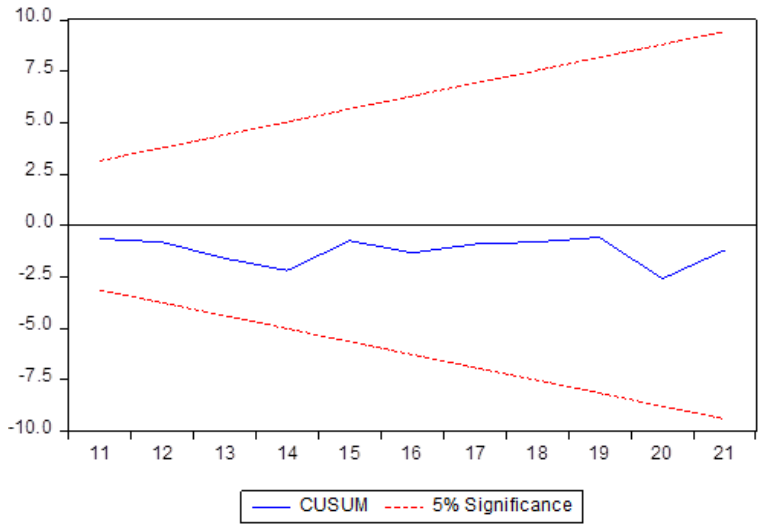


**Figure 1:** Cumulative Sum of Recursive Residual stability (CUSUM) test

**Discussions and Conclusions**

The influence of interest rates on investment choices in Nigeria is examined econometrically in this research. It made use of the Johansen cointegration and ECM framework together with the ordinary least square regression approach. The analysis's conclusion demonstrated that there is a negative and substantial association between MPR and MLR and GFCFG (investment) in Nigeria. The costs of borrowing, known as MPR and MLR, are important to investment (GFCFG) as it is commonly understood that high interest rates deter investment. Although it is not statistically significant, SAVR—the disposable income that is not used for consumption—has a favourable effect on investment in Nigeria. This may be because individuals prefer to have their cash on hand, or it could be because households are not making a lot of money. The analysis comes to the conclusion that Nigerian investment has not been greatly impacted by interest rate policy, which has been faulty. Consequently, based on the findings, the following suggestions are made:

In order to boost investment and raise production, policymakers should first implement a strategy that lowers interest rates. The goal of policy should be well implemented and coordinated, and this should be actively sought. Second, monetary authorities ought to implement measures that support people's saving habits. This may be accomplished by raising the deposit rate, which would encourage customers to put money in banks and hence increase the amount of money available for loans. This would cause borrowing rates to drop and eventually increase investment. Thirdly, it is advised that the government immediately raise the minimum salary for workers in Nigeria since savings spur investment and high income produces savings. This would guarantee enough saving, which will result in a high rate of investment and, ultimately, economic expansion and growth.

**Limitation and Directions for Future Research**

Investment choices are influenced by a variety of factors besides interest rates. Therefore, it is advised that other factors like the money supply and monetary policy rate be incorporated in the future.

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