

## INTEREST RATE, SAVINGS, AND INDUSTRIAL PERFORMANCE IN NIGERIA

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**Abstract:** *This study examined the effect of interest rate and savings on industrial productivity in Nigeria. The Ordinary Least Square OLS multiple regression analysis was applied on data from Central Bank of Nigeria (CBN) Statistical Bulletin in a model where industrial sector output was the dependent variable while national savings, interest rate INTR and inflation rate INFL were the explanatory variables. The result of the analysis at 5% level of significance shows that savings exerts a significant impact on industrial output in Nigeria. The result also showed that interest rate and inflation rate does not have a significant impact on industrial output in Nigeria. The study concluded that, savings has a significant positive impact on industrial output while the impact of interest rate and inflation rate on industrial output in Nigeria was positive but insignificant. It was recommended that there is a need to bridge the widening gap between lending rate and savings rate to encourage savings to generate needed loanable funds for investment in Nigeria.*

**Keywords:** *Interest rate, Savings, Industrial productivity, Inflation*

### Introduction

The development of a nation hinges significantly on a robust high-technology industry. The industrial sector holds a pivotal role in shaping economic transformation of a nation or region. It contributes to expansion in productivity through import substitution, export expansion, foreign exchange earnings and employment growth (Imoughele & Ismaila, 2014). Most of the developed and emerging market economies rely heavily on the industrial sector, which generates the majority of their goods and services due to the advancement in technology and mechanization. The industry through the multiplier effect

of productivity in the sector by enhancing growth in other sector of the economy facilitates economic expansion and prosperity (Tabi & Ondo, 2011). According to Ogunjobi (2015), industrial growth or industrialization is a deliberate and consistent amalgamation of suitable technology, infrastructure, managerial expertise, and other essential resources to bolster output. Interest rates constitute a pivotal aspect of the financial landscape and a pivotal instrument of monetary policy. This significance of interest rates emerges from its role as the cost of capital and the opportunity cost of funds, thereby fundamentally impacting the economy (Okonkwo & Egbulonu, 2016). It plays a critical role in determining the efficiency of resources allocation and serves as a demand management tool to attain internal and external equilibrium thereby fostering economic growth and development. It facilitates deposit mobilization and credit creation and thereby promotes economic progress (Ebirigan, 2012). Also, interest rate has a substantial influence on savings and investment. Savings, as defined by Olusoji (2003), constitutes the after-tax portion of income not expended on consumer goods. In the context of capital investment, savings drive output growth. Financial sector institutions like deposit money banks (DMBs) or commercial banks channel savings deposits, providing interest payments. Effective savings mobilization necessitates relatively high deposit rates and stable inflation rates, resulting in a positive real interest rate that incentivizes investors to save from their disposable income (Ebirigan, 2012).

The drive to achieve sustainable growth and development in Nigeria is facing challenges including the low savings and investment climate, volatile monetary and fiscal policies, high and volatile interest rates (Ajudua & Okonkwo, 2015). Despite government efforts to enhance productivity across sectors through savings mobilisation and the promotion of investment, interest rates remain volatile, and the desired high investment levels have not materialized (Oweye, 2007). Obtaining funds for investment is challenging in Nigeria, with lending rates significantly surpassing deposit rates (Maiga, 2017). Despite decades of policy adjustments, particularly on interest rate and exchange rate management, the Nigerian economy has not reaped substantial benefits from these processes. The broad objective of this study is to examine interest rate, savings and industrial performance in Nigeria. The specific objectives are to:

- Analyze the trend of interest rate, savings and industrial performance in Nigeria
- Investigate the effect of interest rate on industrial performance in Nigeria.
- Examine the effect of savings on industrial performance in Nigeria.

The policy outcome of this study will of immense benefit to the monetary authority, commercial bank, investors, government and academia and researchers. To the monetary authority, the policy outcome of this study will be of an immense benefit as it will shed light on the implication of the prevailing interest rate on industrial performance. This will assist them on their effort achieve macroeconomic stability through appropriate policy framework capable of mitigating against the adverse effect of interest rate instability which has been recognised as a prominent factor accountable for poor savings mobilization. This research work will further serve as a guide and provide insight for future research on this topic and related field for research scholars who are willing to improve it. Hence, the importance of this study cannot be overemphasized.

## **Literature Review**

An economy comprises four interconnected sectors: the industrial, external, fiscal or government, and financial sectors. The real sector encompasses activities such as agriculture, industry, construction, and services, serving as indicators of living standards and the effectiveness of macroeconomic policies (Mamman, 2011). The industrial sector holds strategic significance for several reasons. Firstly, it produces goods and services to meet aggregate demand, reflecting people's standard of living. Secondly, its performance gauges macroeconomic policy effectiveness, evaluating policies based on their impact on welfare-enhancing production and distribution. Thirdly, a dynamic real sector, especially in agriculture and manufacturing, fosters strong economic linkages and reduces external sector pressures. Lastly, the industrial sector contributes to capacity building, employment, and income generation (Anyanwu, 2010).

Keynes defined interest as the compensation for foregoing liquidity for a specific period (Adebiyi, 2002). Interest rates encompass the return on equity or the opportunity cost of deferring consumption (Adebiyi, 2002). The different types of interest rate include saving rates, lending rates, and discount rates. Jhingan (2003), described interest as the price balancing credit supply, net money increase, demand for credit, and net hoarding. This underscores interest rates as credit prices determined by supply and demand forces for loanable funds. Savings, according to Olusoji (2003), denote income not allocated to immediate consumption, representing deferred consumption. Savings are preserved for future needs, capital purchases, or financial provisions (Giordano, 1983). The Marginal Propensity to Save (MPS) or Average Propensity to Save (APS) describes the rate at which people save, directly linked to the interest rate and investment through capital markets (Giordano, 1983). Classical economists theorize that interest rates balance saving and investment, averting inventory overloads. However, Keynes challenged this, asserting that both saving and investment were unresponsive to interest rates, necessitating significant interest rate changes to restore equilibrium. Keynes further argued that the short-term interest rate is determined by the demand and supply of money stocks, enabling saving to exceed investment, potentially leading to overproduction and recession.

## **Theoretical Review**

The Keynesian liquidity preference theory, put forth by Keynes in his *General Theory*, posits that the equilibrium level of interest rates in an economy results from the interplay between money supply (government expenditure) and money demand (liquidity preference). In contrast to the Classical Quantity theory, Keynes challenged the notion that interest rates are merely a reward for saving, contending instead that they serve as an incentive for relinquishing liquidity. The Keynesian approach retained certain elements of the quantity theory while reconfiguring others in a novel manner. Concerning the demand for money, it expanded upon the earlier Cambridge approach and organized its exposition around the motives for holding money. This categorization eventually culminated in the contemporary classification of four motives: transactions, speculative, precautionary, and buffer stock. Moreover, Keynesian emphasis on money as an alternative asset to bonds led to Friedman's asset-based analysis of money demand, thereby harmonizing this approach with the classical paradigm. At the macroeconomic level, Keynesian analysis made

commodity market assessment, founded on consumption, investment, and the multiplier, an integral facet of macroeconomics. This approach also integrated monetary sector analysis into the comprehensive macroeconomic model for the economy, hinging on the previously unknown concept of the multiplier.

The endogenous growth theory, introduced by Paul Romer (Romer, 1993), constitutes a pivotal element in the developmental theory of developing countries. This theory posits that sustained growth is determined by the production process itself rather than external factors (Grandy, 1989). A significant driver of this theory arises from the neo-classical theory's inability to account for differing rates of economic growth among countries possessing the same technological level. Modern theory also assumes increasing marginal returns stemming from the scale of production factors due to external effects on human capital investment, resulting in enhanced productivity. Growth is contingent upon savings and investment in human capital (Lucas, 1988), as well as research and development investments (Mattana, 2004). Furthermore, the theory contends that free markets may lead to suboptimal levels of capital accumulation in human capital and research and development. Consequently, governments can enhance resource allocation efficiency by investing in human capital and encouraging private investment in high-tech industries.

### **Empirical Review**

In the literature several studies abound linking interest rate and savings to productivity in industry or investment. For instance, El-Seoud (2014) conducted a study examining the impact of Real Gross Domestic Product (GDP), interest rate, and inflation rate on the national saving rate in the Kingdom of Bahrain over the past two decades. Employing the Augmented Dickey-Fuller unit root test and cointegration analysis, the research aimed to unveil the long-term relationship among the studied variables. The findings revealed that Real GDP growth rate exhibited a positive influence on national saving rate in the short run and demonstrated statistical significance at the 5% level in the long run. The nominal interest rate demonstrated a positive and significant effect on the national saving rate at the 1% level in the short run; however, its long-term effect appeared positive but insignificant. Conversely, the inflation rate, serving as an indicator of macroeconomic uncertainty, displayed a positive and significant impact on the national saving rate in both the short and long run.

Similarly, Mudaki, Ojala, Mwangi, Charle, and Kevin (2014) explored multiple factors influencing lending interest rates and their ramifications on the general economic performance. The study specifically investigated the impact of international interest rates on local lending interest rates in Kenya and assessed the effects of budget deficit financing on lending interest rates. Utilizing annual secondary time series data from 1980 to 2010 from sources like the World Bank, IMF, and government publications, the researchers employed EViews for parametric analysis including descriptive and inferential statistics. The investigation involved unit root tests, co-integration tests, and the Error Correction Model to uncover the model's dynamic behavior. The results unveiled a positive and significant impact of budget deficit and inflation on interest rates in Kenya, suggesting that controlling interest rate escalation requires addressing expansionary macroeconomic policies and curbing budget deficits to mitigate inflationary pressures and structural causes.

Also, Thaddeus and Anyaogu (2014) explored the intricate nexus between exchange rate, interest rate, and inflation using autoregressive distributed lag (ARDL) co-integration analysis. The study sought to ensure exchange rate stability through a structurally linked relationship between interest rate and inflation volatility. Analyzing historical data from Nigeria (1971-2010), the study established a significant short-term and long-term positive correlation between inflation and exchange rate. In contrast, the relationship between interest rate and exchange rate was negative but insignificant. The study underscored the necessity for collaborative efforts by monetary authorities to minimize periodic inflation variations for achieving exchange rate stability.

In another study, Samuel and Peters (2014) investigated how interest rates influenced the profitability of deposit money banks in Nigeria. Their research spanned thirteen years (1999-2012) at the aggregate country level and employed multivariate regression analysis under an econometric framework. The Augmented Dickey and Fuller unit root test results determined the series' stationarity. The estimated results demonstrated that Maximum lending rate, Real Interest rate, and Savings deposit rate exhibited negative and significant impacts on the profitability of Nigerian deposit money banks, measured by return on assets, at the 5% level of significance. Additionally, Real interest rate had a negative and significant relationship with Return on Equity at the 8% level of significance. However, the study found no significant association between interest rate variables and Net Interest Margin of Deposit Money Banks. Similarly, Akinlo and Lawal (2015) delved into the impact of exchange rate on industrial production in Nigeria from 1986 to 2010. Utilizing the Vector Error Correction Model (VECM), the study confirmed the existence of a long-term relationship between industrial production index, exchange rate, money supply, and inflation rate. While exchange rate depreciation exhibited no immediate impact on industrial production in the short run, it manifested a positive impact in the long run. Furthermore, money supply emerged as a significant determinant, explaining a substantial proportion of the variation in industrial production in Nigeria.

Anigbogu, Okoli, and Nwakoby (2013) investigated the impact of financial intermediation on the performance of Small and Medium Enterprises (SMEs) in Nigeria. Employing the Ordinary Least Square (OLS) econometric model, the study explored variables such as financial intermediation, commercial bank loans, bank lending rate, exchange rate, and monetary policy. The results unveiled a positive and significant influence of all variables, except for bank interest rate to SMEs, on small and medium enterprises' performance in Nigeria. Also, Zacheus, Opafunso, Omoseni, and Adepoju (2014) conducted a study on the impact of SMEs on the Economic Development of Ekiti State (2006-2013). Employing a survey research design, data was collected from 150 respondents representing various SMEs across 16 local government areas. The study tested three null hypotheses related to the effects of SMEs on poverty reduction, employment generation, and improvement in the standard of living in Ekiti State. Statistical Package for Social Sciences (SPSS) and Chi-square analysis were employed, and the results indicated a positive and significant relationship between SMEs and poverty reduction, employment generation, and improvement in the standard of living. The study also revealed a substantial increase in the number of SMEs in the state between 2009 and 2013.

**Methodology**

This study adopts the ex post factor research design. This research design is so selected because it is a quasi-experimental research design particularly useful in examining how an independent variable, present prior to the study in the participants, affects a dependent variable. The quantitative aspect of this study was carried out using graphical presentations, descriptive statistics and the estimated parameters of the model for the study generated from the results.

The model specification used in this research followed the model of Romer (1986), which was established due to the weakness of the Solow growth model. The production function under the Solow growth model implies that  $Y = f(K, L)$ , where technology is exogenously determined. The Romer model is different as technology which is seen as energy, is an endogenous variable. Romer takes investment in research technology as endogenous factor in terms of the acquisition of new knowledge by rational profit maximization firms. His aggregate production function of the endogenous theory is as follows:

$$Y = f(A, K, L) \tag{1}$$

Where: Y= aggregate real output; K= stock of capital; L= stock of labour; and A= Technology (or technology advancement). Adopting this model, Y or the aggregate real output is used as a proxy for Industrial output growth is expressed as a function of capital, labour employed, energy disaggregated into electricity generation and consumption.

In order to examine the relationship between interest rate, savings and industrial productivity, the Romer model is modified in line with the study conducted by Bennett, Anyanwu, and Kalu (2015) on the effect industrial development on the Nigeria’s economic growth where Gross Domestic Product at current basic price was the dependent variable while industrial output growth, total savings, foreign direct investment and inflation rate were the explanatory variables. In the present study, economic growth proxy by real Gross Domestic Product is the dependent variable while industrial output, foreign direct investment and inflation rate are the explanatory variables. The functional relationship among the variables is specified as follows:

$$IOU = f(NS, INTR, INFR) \tag{1}$$

For the purpose of estimation, equation (1) can be expressed as:

$$IOU = \beta_0 + \beta_1 NS + \beta_2 INTR + \beta_3 INFR + u_t \tag{2}$$

Where:

IOU= Industrial Output

INTR= Interest rate

NS= National savings

INFL = Inflation rate

Ut =Stochastic error term at time t.

The theoretical expectations of the least square regression model analysis require that the relationship between interest rate and industrial output should be negative.

i.e.  $\partial IOU/\partial INTR < 0$ ; A positive relationship is expected between national savings and industrial output. i.e.  $\partial IOU/\partial NS > 0$ ; and inflation rate in line with economic theory is expected to have a negative impact on and industrial output. i.e.  $\partial IOU/\partial IBFL < 0$

This study used secondary annual time-series data for the period of 1981 to 2016 collected from the Central Bank of Nigeria Statistical Bulletin and World Bank Development Index. The choice of the period was inform by the need to cover the period for which data on rural area is available for Nigeria and to ensure that the period of observation is large enough to ensure that the estimates of the model approach a normal distribution such that they closely approximate the true parameters. The Ordinary Least Squares (OLS) approach is employed in this study in the estimation. The choice of OLS as the estimation technique was based on the fact that the technique is easier to use and also has all the computing power required. Another main reason why the OLS was selected is that OLS results have desirable characteristics. A desirable attribute of any estimator is for it to be a good predictor. The study also adopts the following methods of evaluation for analysis and the estimates. The estimated model of this study is evaluated using based on a priori criterion, statistical test, Jarque-Bera test for normality, the test for multicorrelation and trend analysis using the line graph.

## Results and Discussion

This section presents the analysis and interpretations of the regression result estimated from the model. The scope of the analysis trend across 1981 to 2016 and the result generated from the econometric estimation of the model facilitated through the use of econometric view (E-Views 9) is presented below:

**Table 1 Regression Result**

Variables	Coefficient	Std. Error	T-value	T-Prob
NS	0.667173	0.111921	5.961095	0.0000
INTR	1.094792	0.844829	1.295874	0.2024
INFL	0.124297	0.283829	0.437929	0.6638
Constant	0.860678	1.591383	0.540836	0.5916
R-Squared	0.75			
Durbin Watson Statistics	1.552			

Source: Author, 2020

Table 1 shows that in terms of direction national savings conforms to a priori expectation on the estimate. While interest rate and inflation failed to conform with the prediction of economic theory on the estimates. This result suggests that savings exerts a positive impact on industrial performance in Nigeria. The coefficient of savings (0.667173) shows that a one percentage increase in savings will on the average bring about approximately 67% increase in industrial output in Nigeria. The coefficient of interest rate INTR (1.094792) shows that a one percent increase in interest rate will on average bring about approximately 109% increase in industrial output in Nigeria. The coefficient of inflation (0.124297) shows that a one percent increase in inflation rate will on average bring about approximately 12% increase in industrial output in Nigeria.

The above result shows that among all the explanatory variables, savings ( $\beta_2 = 0.667173$ ,  $t = 5.961095$ ,  $P < 0.05$ ) is the only variable that exerts a significant impact on

industrial output in Nigeria. Interest rate ( $\beta_2 = 1.094792$ ,  $t = 1.295874$ ,  $P > 0.05$ ) and inflation rate ( $\beta_2 = 0.124297$ ,  $t = 0.437929$ ,  $P > 0.05$ ) does not have a significant impact on industrial output in Nigeria. By and large, savings has a significant impact on industrial output in Nigeria.

### **Summary, Conclusion, and Recommendation**

This study examines the effect of interest rate and savings on industrial productivity in Nigeria using annual time series data from 1981 to 2016. The study specifically, analyze the trend of interest rate, savings and industrial performance in Nigeria, investigate the effect of interest rate on industrial performance in Nigeria, examine the effect of savings on industrial performance in Nigeria. In the analysis, the Ordinary Least Square OLS multiple regression analysis was adopted for the estimation of the regression model formulated. The data for the analysis of the model were collected from Central Bank of Nigeria (CBN) Statistical Bulletin and National Bureau of Statistics. In the model, industrial sector output was the dependent variable while national savings, interest rate INTR and inflation rate INFL were the explanatory variables. The result of the analysis at 5% level of significance shows that savings ( $\beta_2 = 0.667173$ ,  $t = 5.961095$ ,  $P < 0.05$ ) exerts a significant impact on industrial output in Nigeria. The result also showed that interest rate ( $\beta_2 = 1.094792$ ,  $t = 1.295874$ ,  $P > 0.05$ ) and inflation rate ( $\beta_2 = 0.124297$ ,  $t = 0.437929$ ,  $P > 0.05$ ) does not have a significant impact on industrial output in Nigeria.

From the result, it was concluded that, savings has a significant positive impact on industrial output in Nigeria. While the impact of interest rate and inflation rate on industrial output in Nigeria was positive but insignificant. Based on the findings, the study recommended that the need to encourage savings through education and incentives to boost funds available for industrial development. Government and policy makers need to align monetary policy, including interest rates, to support industrial growth. Finally, there is need to strengthen supply chain management to mitigate the impact of inflation on industrial output.

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**Table 2 Relevant Data**

YEAR	IOU (N'million)	NS (N'million)	INTR	INFL
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1981	6,603.25	23801.3	10.00	21.42
1982	6,272.83	29651.2	11.75	7.16
1983	5,264.88	37738.2	11.50	23.22
1984	5,621.18	10988.1	13.00	40.7
1985	6,379.60	12521.8	11.75	4.7
1986	6,234.41	13934.1	12.00	5.4
1987	6,135.33	18676.3	19.20	10.2
1988	6,474.98	23249	17.60	56.0
1989	7,100.76	23801.3	24.60	50.5
1990	8,531.59	29651.2	27.70	7.5
1991	8,094.63	37738.2	20.80	12.7
1992	8,170.47	55116.8	31.20	44.8
1993	8,122.08	85027.9	36.09	57.2
1994	7,917.40	110966.8	21.00	57.0
1995	7,985.54	108490.3	20.79	72.8
1996	8,450.31	134503.2	20.86	29.3
1997	8,561.92	177648.7	23.32	10.7
1998	8,515.83	200065.1	21.34	7.9
1999	8,031.92	277667.5	27.19	6.6
2000	8,808.65	385190.9	21.55	6.9
2001	9,351.86	488045.4	21.34	18.9
2002	9,061.67	592094	30.19	12.9
2003	10,893.91	655739.7	22.88	14.0
2004	11,418.60	797517.2	20.82	15.0
2005	11,674.74	1316957	19.49	17.8
2006	11,481.76	1739637	18.70	8.2
2007	11,332.36	2693554	18.36	5.4
2008	11,068.22	4118173	18.70	11.6
2009	11,353.42	5763511	22.90	12.4
2010	12,033.20	5954260	22.51	13.7
2011	12,874.25	6531913.009	22.42	10.8
2012	13,028.05	8062901.347	23.79	12.2
2013	13,014.51	8656124.802	24.94	8.5
2014	13,791.25	12008210.00	25.80	8.0
2015	13,319.13	11418405.55	26.96	9.0
2016	12,062.05	12118210.00	18.5	10.5

Source: Central Bank of Nigeria Statistical Bulletin, Vol. 27, 2017



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