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Interest Rate, Savings, and Industrial Performance in Nigeria

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A B S T R A C T

This study examined the effect of interest rate and savings on industrial productivity in Nigeria. This is imperative because there has been low level of savings and investment amongst other impedime nt to industrial productivity. 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 clearly 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.

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INTRODUCTION

The industrial sector plays a significant role in the transformation of the economy as it serve as an avenue for increasing productivity related to import replacement and export expansion, creating foreign exchange earning capacity; and raising employment and per capital income which causes unique consumption patterns (Imoughele & Ismaila, 2014). No country can possibly develop without a high-technology industry. In fact, it is the industrial sector that produces most of the goods and services in developed countries. This is because the secondary sector is highly mechanized and adapts easily to technological changes. More also, the multiplier effect of industrial equipments and productivity improvements which permit the use of machines to produce more with less labour help economies to grow richer; since labour is finally the source of every value added (Tabi & Ondoa, 2011). Industrial growth or industrialization is a deliberate and sustained application and combination of an appropriate technology, infrastructure, managerial expertise, and other important resources in the production of output (Ogunjobi, 2015).

Interest rate is a vital component of the financial market and a crucial tool of monetary policy. This is because whether seen from the point of view of cost of capital or from the perspective of opportunity cost of funds, interest rate has fundamental implications for the economy (Okonkwo & Egbulonu, 2016). It plays a crucial role in the efficient allocation of resources aimed at facilitating growth and development of an economy and as a demand management technique for achieving both internal and external balance with specific attention for deposit mobilization and credit creation for enhanced economic development (Ebirigan, 2012).

The major factor that determines investment is interest rate and this is influenced by savings. According to Olusoji (2003) savings is that portion of income after tax, which is not spent on consumption goods. Conceptually, it represents that part of income not spent on current consumption. When applied to capital investment, savings increase output. Institutions in the financial sector like deposit money banks (DMBs) or commercial banks mobilize savings deposit on which they pay certain interest. To effectively mobilize savings in an economy, the deposit rate must be relatively high and inflation rate stabilized to ensure a high positive real interest rate which motivates investors to save from their disposable income.

Over the years, achieving sustainable growth and development in Nigeria has been very challenging. There has been low level of savings and investment, instability in monetary and fiscal policies, falling crude oil prices in the international market, high level of interest rate, and poor infrastructural development amongst others. Despite these measures put in place by the Government, stimulating the productive sectors of the economy have not been achieved. Interest rate has been unstable and high level of Investment has not yet been achieved (Ajudua & Okonkwo, 2015). In Nigeria, accessing funds for investment is a challenge with lending rate being very high compared to the deposit rate in the economy (Oweoye, 2007). The end result is that almost four decades of policy somersault especially at an interest rate and exchange rate

management, the Nigerian economy has not benefited immensely from the processes (Maiga, 2017).

The broad objective of this study is to examine interest rate, savings and industrial performance in Nigeria. The specific objectives are to:

a. Analyze the trend of interest rate, savings and industrial performance in Nigeria
b. Investigate the effect of interest rate on industrial performance in Nigeria.
c. 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 can be divided into four distinct but interrelated sectors. These are; the industrial, external, fiscal or government and financial sectors. Real sector activities include agriculture, industry, building and construction, and services (Mamman, 2011). The industrial sector is strategic for a variety of reasons. First, it produces and distributes tangible goods and services required to satisfy aggregate demand in the economy. Its performance is, therefore, a gauge or an indirect measure of the standard of living of the people. Second, the performance of the sector can be used to measure the effectiveness of macroeconomic policies. Government policies can only be adjudged successful if they impact positively on the production and distribution of goods and services which raise the welfare of the citizen. Third, a vibrant real sector, particularly the agricultural and manufacturing activities, create more linkages in the economy than any other sector and, thus, reduces the pressures on the external sector. Fourth, the relevance of the industrial sector is also manifested in its capacity building role as well as in its high employment and income generating potentials (Anyanwu, 2010).

According to Keynes, interest is the reward for not hoarding but for parting with liquidity for a specific period of time. Keynes' definition of interest rate focuses more on the lending rate. Adebiyi (2002) defines interest rate as the return or yield on equity or opportunity cost of deferring current consumption into the future. Some examples of interest rate include the saving rate, lending rate, and the discount rate. Professor Lerner, in Jhingan (2003), defines interest as the price which equates the supply of 'Credit' or savings plus the net increase

in the amount of money in the period, to the demand for credit or investment plus net 'hoarding' in the period. This definition implies that an interest rate is the price of credit which like other price is determined by the forces of demand and supply; in this case, the demand and supply of loanable funds.

In the view of Olusoji (2003) savings represent that part of income not spent on current consumption. It is income not spent, or deferred consumption. In personal finance, the act of saving corresponds to nominal preservation of money for future use. A deposit account paying interest is typically used to hold money for future needs, i.e. an emergency fund, to make a capital purchase (car, house, vacation, etc.) or to give to someone else (children, tax bill etc.) (Giordano, 1983). The rate at which people are expected to save is called the Marginal propensity to save or Average propensity to save and is directly related to both the interest rate and investment, largely by way of the capital markets (Giordano, 1983). The Classical economists believe that interest rates would adjust to equate saving and investment, avoiding a pile-up of inventories (general overproduction). A rise in saving would cause a fall in interest rates, stimulating investment, hence always investment would equal saving. But Keynes argued that neither saving nor investment was very responsive to interest rates (i.e., that both were interest inelastic) so that large interest rate changes were needed to re- equate them after one changed. Further, it was the demand for and supplies of stocks of money that determined interest rates in the short run. Thus, saving could exceed investment for significant amounts of time, causing a general glut and a recession.

The Keynesian liquidity preference theory (General theory) advanced by Keynes. The theory postulates that, the level of interest rates in the economy would be reached by the interaction of money supply (government expenditure) and money demand (liquidity preference). Keynes challenged the Classical Quantity theory on the grounds that the interest rate was not the reward for saving but was rather an inducement to part with liquidity. The Keynesian approach discarded certain aspects of the quantity theory ideas and developed others in a new and distinctive format. On the demand for money, it elaborated on the earlier Cambridge approach and also rearranged its presentation in terms of the motives for holding money. This treatment in terms of motives eventually led to the modern treatment of the demand for money in terms of four motives: transactions, speculative, precautionary and buffer stock. The Keynesian emphasis on money as an asset, held as an alternative to bonds, also led to Friedman's analysis of the demand for money as an asset, thereby bringing this approach to money demand into the folds of the classical paradigm. At the macroeconomic level, Keynesian analysis made commodity market analysis, based on consumption, investment and the multiplier, a core part of macroeconomics. The Keynesian approach also integrated the analysis of the monetary sector into the complete 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 was established by Paul Romer (Romer, 1993), and is an important component of the theory of development of

developing countries. This theory assumes that the continued growth is determined by the production process, not by outside factors (Grandy, 1989). One of the most important drivers of this theory is the lack of response by the neo-classical theory about the reason for the different rates of economic growth among countries that have the same technological level. Modern theory also assumes increasing marginal returns on the size of production factors through the role of external effects of returns on human capital investment, which will generate improvements in productivity. Growth depends on savings and investment in human capital on the one hand (Lucas, 1988), and investment in research and development on the other (Mattana, 2004). In addition, it is argued that the free market leads to less than optimal level of capital accumulation in human capital and research and development. Therefore, the government may improve the efficiency of resource allocation through investment in human capital, and encouraging private investment in high-tech industries.

Empirical Review

El-Seoud (2014) investigating the effect of Real Gross Domestic Product (GDP), interest rate, and inflation rate on national saving rate in kingdom of Bahrain over the last twenty years. The study adopts Augmented Dickey-Fuller unit root test and cointegration test to examine the long run relationship between the variables under study. The findings indicate that the Real GDP growth rate has positive effect on national saving in the short run and significant at 5% level in the long run. Nominal interest rate has positive and significant effect on national saving rate at 1%level on the short run; however, its effect in the long run appears to be positive but insignificant, while the inflation rate (as a measure of macroeconomic uncertainty) has positive and significant effect on national saving rate in both the short run and the long run.

Mudaki, Ojala, Mwangi, Charle and Kevin (2014) examined various factors influencing lending interest rates and their impacts on the general performance of the economy. Specifically, it: investigates the effects of international interest rates on local lending interest rates in Kenya and determines the effects of budget deficit financing on lending interest rates. Annual secondary time series data spanning from 1980 to 2010 obtained from the World Bank annual reports, IMF annual reports, annual government publications and reports and other relevant publications were used. This data was parametrically analyzed using EVIEWS to present descriptive and inferential statistics. Unit roots, co integration tests and the Error Correction Model were carried out to investigate the dynamic behavior of the model. Results of the study indicates that the impact of budget deficit and inflation on interest rates in Kenya were positive and significant. This implies that any attempt to control the rise in interest rates must pay attention to expansionary macroeconomic policies and reduce the budget deficit. Such policies should address structural and non-structural causes of inflation. For instance, it involves enacting policies to reduce the cost of doing business in Kenya.

Thaddeus and Anyaogu, (2014) examined a long run relationship between exchange rate, interest rate and inflation using autoregressive distributed lag (ARDL)co-integration analysis. The study is motivated by the desire to ensure stability in exchange regime through a structurally nexus of interest rate and inflation volatility and targeting. Using historical data on Nigeria (1971-2010), the study established a significant short-run and long run positive relationship between inflation and exchange rate. On the other hand, interest rate exhibited a negative relationship, though insignificant. Concerted effort of all monetary authorities is therefore needed to ensure that periodic variation in inflation is kept at the barest minimum for stability in exchange rate regime to be achieved.

Samuel and Peters (2014) examined how interest rates affect the profitability of deposit money banks in Nigeria. The study was based on country aggregate level annual data that covered a period of thirteen years 1999 to 2012 and made use of multivariate regression analysis under an econometric framework. The Augmented Dickey and Fuller unit root test results indicate that the series are either I(0), I(1) or I(2) stationary. The estimated results show that Maximum lending rate, Real Interest rate and Savings deposit rate have negative and significant effects on the profitability of Nigerian deposit money banks as measured by return on assets at the 5% level of significance. Also, the study found that Real interest rate at the 8% level of significance has negative and significant relationship with Return on Equity of money deposit banks in Nigeria. On the other hand, the study found no significant relationship between interest rate variables and Net Interest Margin of Deposit Money Banks in Nigeria.

Akinlo and Lawal (2015) examines the impact of exchange rate on industrial production in Nigeria over the period 1986- 2010. The results of the study obtained using the Vector Error Correction Model (VECM), confirm the existence of long run relationship between industrial production index, exchange rate, money supply and inflation rate. Moreover, exchange rate depreciation had no perceptible impact on industrial production in the short run but had positive impact in the long run. Finally, the results show money supply explained a very large proportion of variation in industrial production in Nigeria.

Anigbogu, Okoli and Nwakoby, (2013) examine Small and Medium Enterprises (SMEs) plays a unique role in every economy and Nigeria inclusive. The study investigates the effect of financial intermediation on small and medium enterprises performance in Nigeria using an econometric model of the Ordinary Least Square (OLS). Findings reveal that with the exception of bank interest rate to SMEs, all other variables - financial intermediation, commercial bank loans and advances to SMEs, bank lending rate to SMEs, exchange rate and monetary policy - have a positive and significant influence on small and medium enterprises performance in Nigeria.

Zacheus, Opafunso, Omoseni and Adepoju (2014) examines the impact of SMEs on Economic Development of Ekiti State (2006-2013). A survey research design was adopted to obtain data from 150 respondents comprising of

traders, artisans, production factories and other small and medium enterprises which were selected using multi stage sampling method across 16 local government areas in Ekiti State. Three Null hypotheses were tested to identify the significant effects of Small and Medium Scale Enterprises on poverty reduction, employment generation and improvement in the standard of living in Ekiti State. Data for this study was analysed using Statistical Package for Social Sciences (SPSS) and Chi-square at 0.05 level of significance was used to test the hypotheses. The findings revealed that there is a positive and significant relationship between SMEs and poverty reduction, employment generation and improvement in standard of living of people in Ekiti State. Furthermore, the result revealed that there was a 57% increase in the number of SMEs in the State between the years 2009-2013.

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:

$Y = f(A, K, L)$ _____(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 industrial sector performance and economic growth, the Romer model specified in equation one above 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, real Gross Domestic Product which proxy economic growth was the dependent variable while industrial output, foreign direct investment and inflation rate are the explanatory variables in line with the study objective. The functional relationship among the variables is specified as follows:

$IOU = f(NS, INTR, INFR)$…….. (1)
For the purpose of estimation, equation (1) can be expressed as:
$IOU = \beta_0 + \beta_1 NS + \beta_2 INTR + \beta_3 INFR + u_t$…….. (2)
Where:
IOU= Industrial Output
INTR= Interest rate
NS= National savings
INFL = Inflation rate
U*t* =Stochastic error term at time t.

The theoretical expectations of the least square regression model analysis require that there should be a positive relationship between interest rate and industrial output. i.e

$$\frac{\partial IOU}{\partial INTR} > 0$$

It is expected that there should be a positive relationship between national savings and industrial output. i.e

$$\frac{\partial IOU}{\partial NS} > 0$$

Inflation rate in line with economic theory is expected to have a negative impact on and industrial output. i.e

$$\frac{\partial IOU}{\partial INFL} < 0$$

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 chapter presents the data for the study, analyzes and interprets the regression result estimated from the model formulated in chapter three. As earlier presented in chapter three, the model for this study is represented below:

$IOU = \beta_0 + \beta_1 NS + \beta_2 INTR + \beta_3 INFR$

Where: *IOU* = Industrial output; *NS* = national savings; INTR = Interest rate and INFR = inflation rate. The scope of the analysis trend across 1981 to 2016. The model was estimated in non-linear form.

The result generated from the econometric estimation of the model facilitated through the use of econometric view **(E-VIEW)** 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

IOU = 0.861+ 0.667INTR + 1.095NS + 0.12INFL + 1.507

t* = (0.541) (5.961) (1.296) (0.438)

se = (1.591) (0.112) (0.845) (0.284)

R^2= 0.75

DW= 1.552

Table 4.2.1 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 percent 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 student t- test compares the t* (calculated) to its tabulated value which defines the critical region in a two tailed table, with n-k degrees of freedom (n= sample size and k= total number of estimated parameters). The above result shows that among all the explanatory variables, savings (β_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 (β_2 =1.094792, t=1.295874, P>0.05) and inflation rate (β_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.

CONCLUSION AND RECOMMENDATION

This study examines interest rate, savings, and industrial performance in Nigeria using annual secondary 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 an attempt to achieve the broad objective of this study, the Ordinary Least Square OLS multiple regression analysis was adopted for the estimation of the regression model formulated and the result of the model was facilitated using the Econometric View (E-View). The data for the analysis of the model were collected from secondary sources to include the 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 clearly that savings (β_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 (β_2 =1.094792, t=1.295874, P>0.05) and inflation rate (β_2 =0.124297, t=0.437929, P>0.05) does not have a significant impact on industrial output in Nigeria. the regression result also indicates that the F-value tabulated was (4, 34) =2.34 while the f-value calculated was F* =, F = 39.84081>F0.05= 2.34 which indicates that the entire regression plane is statically significant. Therefore at 5% level of significance; the overall regression is statistically significant. The high valve of R^2 (0.75) of the regression result shows that the explanatory variables accounted for at least 75% of the variation in 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 above stated findings from the investigation carried out, the study makes the following recommendations.

1) The focus of development policy in Nigeria should be to increase the productive base of the economy in order to reduce unemployment and improve the per capita income of the people. For this to be achieved, a diversification of our resource base is indispensable. The policy thrust should include a return to agriculture, the adoption and implementation of a comprehensive energy policy, with stable electricity as critical factor
2) Government should gear its efforts towards reducing domestic inflation in order to ensure that the rate within the range that can propelled industrial growth. The recent move by the Central Bank of Nigeria to adopt inflation targeting is a step towards the right direction if the necessary macroeconomic environment is put in place for its implementation.
3) There is need for government to pursue financial sector development to promote savings and bank credit. When the size of saving is increased, enough bank loans will be available for both the private and public sector which will enhance economic growth. To this end therefore, there

is need to develop our financial intermediaries towards greater effectiveness and efficiency. A sound financial system instills confidence among savers such that resources are effectively mobilized to increase productivity in the economy.

4) There should be a determined effort by the monetary authorities to bridge the widening gap existing between lending rate and savings rate, so that the people will be fully motivated to save in a bid to generate needed loanable funds for investment in Nigeria.
5) In line with one of the NEEDS financial sector strategies, exchange rate in Nigeria should be stabilized within favourable boundaries and made more competitive to enhance Nigeria's export promotion targets thereby discouraging unwholesome importation of ostentatious goods which reduces people disposable income and savings ability.

FURTHER STUDY

Research still has limitations so that further research is still needed related to the topic Interest Rate, Savings, and Industrial Performance in Nigeria.

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