

## The Micro Economic Implication of Interest Rate Policy on Private-Domestic Investment in Nigeria: 1980-2010

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### Abstract

Nigeria's macroeconomic indicators reflect poor performances of private domestic investment in Nigeria between 1986 and 2005. The question that arises is: do Nigeria's interest rate policies actually have any effect on private domestic investment? Arising from this problem; this study however examined empirically the economic implication of interest rate policy on private domestic investment in Nigeria using time series data which spanned 1980 to 2010. The study which used an error correction mechanism precipitated results which are in tandem with the findings of existing literature that private investment has a stronger and more favourable effect on growth than public investment. This trend is suggestive of the general believe that private investment tend to be more efficient and less prone and susceptible to corruption. The significant role played by governance in explaining the long-term pattern of domestic investment in Nigeria constitutes the distinctive feature of the study. The study revealed that within a long-run framework; a well structured and stable socio-economic environment could boost domestic investment. The findings of this study support the need for the government to reduce the interest rate within the economy so as to give a boost to private sector participation in domestic investment.

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**Keywords:** interest rate, private domestic investment, private sector, public investment, corruption.

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### INTRODUCTION

In virtually all economies of the world, monetary regulatory authorities adopt policies that are aimed at achieving certain macro economic stability such as sound balance of payment position, controlling inflation with the resultant price stability thus ultimately guaranteeing a stable external value of the country's currency. A strong monetary tool often used to accomplish these is the interest rate. Whether from the perspective of economic theories of investment or relevant empirical studies and literature, it is an incontrovertible assertion that investment is fundamental to the economic growth of a nation. Foreign Direct Investment (FDI) has been found to be influenced largely by the level of Domestic Investment (DI) in any economy. Private Domestic Investment being an integral part of the Domestic investment is to a large extent dependent on the prevailing interest rate or rather the prime lending rate. Interest rate or the prime lending rate is the ultimate cost of funds to borrowers of money.

It has been found that the economies of most developed nations are private sector driven. Igweike (2006) found that 80% of the workforce of the United States of America is employed by the private sector. The reverse is the case in Nigeria where government remains the largest employer of labour with unemployment figure soaring on yearly basis. The seemingly non significant contribution of the private sector in Nigeria in the early 1980s actually

culminated in the 1986 introduction of the Structural Adjustment Programme (SAP) which employed interest rate policy as a tool to ensure trade liberalisation and openness in domestic investment. With SAP, the economy got deregulated as the Minimum Rediscounting Rate (MRR) which has the capacity to influence other rates was under the perpetual grip of the Central Bank of Nigeria. The Minimum Rediscounting Rate which was 15% in August 1987 was reduced to 12.75% in December of the same year to structure investment and economic growth.

To date Nigeria has pursued two interest rate regimes. In the 1960s to the mid 1980s with the administration of low interest rate which was intended to encourage investment. The fixed and low interest rates were gradually phased out by the introduction of a dynamic interest rate regime under the auspices of the Structural Adjustment Programme (SAP) in the third quarter of 1986 which ensured that rates were more influenced by market forces.

### OBJECTIVES OF THE STUDY

Given the period before 1986 when the regulated interest rate was in vogue and the deregulated interest rate regime which was precipitated by the introduction of SAP, it was expected that the policy shift would align the Nigerian economy along the path of economic recovery and development susteneity. On the contrary, what the economy

witnessed were low level of savings and investment and stagflation which was symptomatic of a high rate of inflation which existed simultaneously with a very high level of unemployment and poverty. Researchers were then beginning to wonder whether SAP was actually a blessing.

SAP notwithstanding, Nigeria's macro economic indicators reflect poor performances of private investment in Nigeria between 1986 and 2005. Private investment declined from 12.3% of GDP in 1991 to 8.34% of GDP in 1992. It increased to 12.5% in 1993 and 16.0% in 1994. 1995 and 1996 witnessed continuous decline while the rate stood at 8.9% in 1996. Another increase in the ratio to 13.0% was again recorded in 1999. The all-time-high ratio of 16.2% was recorded in 2002 and ever since, there had only been gradual and not too significant increases.

Given the fluctuation trend therefore, the questions that are germane are: do interest rate policies actually have any effect on private domestic investment? Is economic growth really impacted by the interest rate policy? and what relationship, if any, exists between private domestic investment and economic growth? It is within the context of these questions that the study examines the economic implications of interest rate on private domestic investment in Nigeria, thus examining how economic reforms affect interest rate and its resultant pattern and direction. The study covers the periods between 1986 and 2005. Data inadequacy limit the period of the research to 2005.

This paper is therefore formatted in such a way that the introduction and statement of problems and objectives are the focus in section I. A review of the existing literature is focused on in section II, while the methodology is presented in section III. In section IV, the search light is beamed on the impact of interest rate on private domestic investment in Nigeria handled with the use of a parsimonious regression analysis of the available time series data. Section V draws the curtain on this study with the summary and conclusion of the study.

## LITERATURE REVIEW

Conceptually, investment has defined and described by several authors such as Vaish (2003), Kuznets (1966) and Uchendu (1993). Vaish (2003) defined it as the value of the part of the aggregate output for any given time period which takes the form of new construction of new structure, installation of new capital equipment and positive changes in business inventories in the economy. Whereas Kuznets (1966) describes domestic investment to include not only additions to constructions, equipment and inventories within the country but also other expenditure on education, recreation and material luxuries that contribute to the greater health and productivity of

individuals and all expenditure by society that serves to raise the morale of the employed population. Uchendu (1993) believes that interest rate policy is among the emerging issues in current economic policy in Nigeria in view of the role it is expected to play in the deregulated economy in inducing savings which can be channelled to investment and thereby increasing employment, output and efficient financial resource utilisation.

Empirically, Rama (1990) investigated the theoretical and empirical determinant of private investment in developing countries and identified macroeconomic and institutional factors such as financial repression, foreign exchange shortage, lack of infrastructure and economic instability as important variables that explain private investment. In another way Chetty (2004) with his model of non-convex adjustment costs and the potential to learn was able to show that the investment demand curve is always a backward-bending function of interest rate. He opined that an increase in interest rate is more likely to stimulate investment when the potential to learn is larger and in the short rather than the long-run. But Mchinnon (1993); Shaw (1973); Fry (1988) all postulate that an increase in real rates has a positive effect on the volume and on the quality of investment in financially repressed economies.

On the shores of Nigeria, contemporary economic researchers have taken indepth stands on the issues at stake in this study. Obamuyi (2009) examined the relationship between interest rate and economic growth in Nigeria. The study employed co-integration and error correction modelling techniques and revealed that lending rate has significant effect on economic growth. The study then postulated that investment and interest rate policies are germane to the necessary promotion of economic growth particularly when properly formulated and anchored. In corroborating these findings Iyoha (1998) investigated the macroeconomic issue important to stimulating investment by estimating equations for the aggregate and private investment in Nigeria. His findings showed that interest rate, marginal product of capital foreign exchange rate premium, external debt to income ratio and inflation rate are the key determinants of investment.

## METHODOLOGY AND MATERIALS

### Research Design and Strategy

Given the researcher's calculated wish to observe the effect of the explanatory variables on the dependent variables, the experimental research design is adopted thus making it possible for the researcher to combine theoretical consideration with empirical observation. It is within the context of this design that the economic implications of interest rate on private domestic investment in Nigeria for the period spanning 1980 – 2009 have been examined. The

study equally seeks to establish the effects or impact of saving and private domestic investment on economic growth.

**Population of the Study**

The study covers a period of 29 years, 1980 – 2009. A period long enough to enable the researcher capture the long-run relationship between interest rate and private domestic investment albeit under regulated and deregulated regimes in Nigeria. The conceivable variables relate to the rate of investment in the private domestic investment which under this study is assumed to be affected by interest rate policy in Nigeria.

**Types and Services of Data**

Two models are presented in this study and given the nature of the models, the determinant of private investment and its macroeconomic implications are better captured by parameters such as, interest rate, investment rate, savings rate, gross domestic product money supply, inflation rate, infrastructure, exchange rate etc. Time series data in respect of these variables as obtained from the published bulletins of the Central Bank of Nigeria and the National Bureau of Statistics are used.

**The Model: Private Domestic Investment Trend Model**

In consonance with the World Bank (1997) formulation, private domestic investment is a function of public investment, interest rate, exchange rate, the level of inflation etc such that

$$PDINV = f(INTR, PUBINV, EXCHR, INFLR) \quad 1$$

Given the observable fact that infrastructure and private domestic savings tend to impact majorly on investment in Nigeria, a modified version of the above model will suffice to expitomise the Nigerian unique investment nature. To this end we have:

$$PDINV = f(INTR, PDSAVR, PUBINV, INFRAST, INFLR) \quad 2$$

Where

PDINV = Private Domestic Investment

INTR = Interest Rate

PDSAVR = Private Domestic Savings

PUBINV = Public Investment

INFRAST = Infrastructure

INFLR = Inflation Rate

Expresssing equation 2 in a linear form we have

$$PDINV = \lambda_0 + \lambda_1 INTR + \lambda_2 PDSAVR + \lambda_3 PUBINV + \lambda_4 INFRAST + \lambda_5 INFLR \quad 3$$

For the researcher to have the latitude to include random term the model is further expressed econometrically as :

$$PDINU = \lambda_0 + \lambda_1 INTR + \lambda_2 PDSAVR + \lambda_3 PUBINU + \lambda_4 INFRAST + \lambda_5 INFLR + \dot{\eta}_i \quad 4$$

Where  $\dot{\eta}_i$  is the error term or stochastic term which is assumed to be normallooy distributed. Parameters to be estimated are  $\lambda_1, \lambda_2, \lambda_3, \lambda_4$  and  $\lambda_5$

**A PRIORI EXPECTATION OF THE MODEL**

In tandem with economic theory, the apriori expectations are that

$$\begin{matrix} \frac{dPDINV}{dINTR} > 0, & \frac{dPDINV}{dPDSAVR} > 0, \\ \frac{dPDINV}{dPUBINV} > 0, & \frac{dPDINV}{dINFRAST} > 0, \\ \frac{dPDINV}{dINFLR} > 0, & \end{matrix}$$

High interest rate is expected to deter investment and vice versa because investment is often financed through borrowing. Since investment could also be financed out of retained profit, high interest rate is expected to make investment relatively less attractive than saving money. High inflation rate is expected to affect private investment adversely by making longer-term investment riskier, reducing the average maturity of commercial loans and signalling distorted information through the general price trend. A negative relationship is expected between interest rate and public domestic investment

**DATA ANALYSIS AND DISCUSSION**

In order to test for stationarity under this research work, the Augmented Dickey – Fuller (ADF) (1980) Unit Root Test was used because of its superiority over the Dickey Fuller Test because it adjusts approximately for the occurrence of serial correlation. The ADF test decision rule is that the ADF test statistic must be values in absolute term before one can accept stationarity. In the light of the above, the tables below show the results for the test for stationarity in respect of the model

Table1: Analysis of The Unit Root Test At Level

VARIABLES	TEST STATISTIC	5% CRITICAL VALUE	LEVEL	S/NS
PDINV	/4.088802/	/2.963972/	1(1)	S
INTR	/2.208784/	/2.963972/	1(0)	NS
PDSAVR	/2.937856/	/2.963972/	1(0)	NS
PUBINV	/1.820842/	/2.963972/	1(0)	NS
INFRAST	/0.585065/	/2.963972/	1(0)	NS
INFLR	/2.843428/	/2.963972/	1(0)	NS

Table2: Analysis of the Unit Root Test at First Difference

VARIABLES	TEST STATISTIC	5% CRITICAL VALUE	LEVEL	S/NS
INTR	/6.539995/	/2.971853/	1(1)	S
PDSAVR	/5.350349/	/2.971853/	1(1)	S
PUBINV	/4.013670/	/2.971853/	1(1)	S
INFRAST	/3.374759/	/2.971853/	1(1)	S
INFLR	/5.170036/	/2.971853/	1(1)	S

Source: Researcher’s Computation

Private Domestic Investment (PDINV\*) is the dependent variable while all others are the explanatory variables. The dependent variable PDINV is not characterised by unit root problem

since it is stationary at level while all other variables are not stationary (NS) at level 1(0) given that the t-statistics are less than the critical values at 5% level of significance in absolute term. However, at first difference 1(1) the other explanatory variables are free from unit root tangle, since the t-statistics are more than the critical values at 5% level of significance in absolute term.

Table 3: Cointegration Result for the Model

TRACE STATISTICS	5% CRITICAL VALUE
137.6953	95.75366
74.49740	69.81889
57.78486	47.85613
15.31732	29.79707
4.309775	15.49471
0.011866	3.841466

Source: Researcher's Computation

Table – above shows that there is a long run equilibrium relationship between the dependent and independent variables since the trace statistics of half of the variables show heavy greater than values over the critical values at 5% level of significance.

**THE MODEL RESULT INTERPRETATION**

Using the parsimonious Error Correlation Mechanism, we have the result as presented below:

Table4: Regression Results

Dependent Variable: PDINV

Method: Least Squares

Date: 03/31/12 Time: 13:49

Sample (adjusted): 1982-2010

Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-11.93812	5.319858	-2.244068	0.0074
INT	0.142959	0.011973	11.940115	0.0000
PDSAVR	0.307534	0.040564	7.581553	0.0000
PUBINVRATE	0.163670	0.093100	3.398105	0.0037
INFRAS	0.254528	0.099986	2.545638	0.0001
INF	-0.3712260	0.065643	-5.650024	0.0002
ECM(-1)	-0.376554	0.151144	-2.491359	0.0028
PUBINVRATE(-1)	-0.012326	0.009217	-1.337411	0.0735
PDSAVR(-1)	0.006246	0.048538	0.128680	0.1010
INT(-1)	-3.879258	2.356639	-1.646097	0.1307
INFRAS (-1)	0.384369	0.1707661	2.250901	0.0022
INF(-1)	-0.338277	0.608797	-0.555649	0.5906
ECM(-2)	-0.470996	0.122893	-3.832570	0.0013
PUBINVRATE(-2)	-0.027735	0.055285	-0.501674	0.6567
PDSAVR(-2)	-3.354584	1.155401	-2.903393	0.0157
INT(-2)	0.143127	0.074407	1.923569	0.0381
INFRAS(-2)	0.476598	0.167700	2.841967	0.0021
INF(-2)	1.188670	0.502081	2.367486	0.0394

R-squared	0.811550	Mean dependent var	26.55214
Adjusted R-squared	0.726241	S.D. dependent var	35.56572
S.E. of regression	1.065203	Akaike info criterion	9.561061
Sum squared resid	11.34657	Schwarz criterion	4.076720
Log likelihood	-27.08424	F-statistic	7.641835
Durbin-Watson stat	2.076050	Prob (F-statistic)	0.000

Source: Author's computation

**DISCUSSIONS**

This result shows that t-statistic and the standard error test confirm the positive significance of the independent explanatory variables. The lagged error correction term ECM(t-1) built into the model to capture the long run dynamics, between the cointegrating series are correctly signed (negative)

and statistically significant. A 37% adjustment from actual changes in the previous year to equilibrium rate of interest rate and its policy implication on private domestic investment is indicated by the coefficient in the model. Thus, the adjustment is symptomatic of the tendency for the error to get corrected within one year. A long run relationship between the explanatory and dependent variables is thus shown by the built-in ECM of the model.

The positive coefficient of interest rate shows that interest rate is a major determinant of private domestic investment, implying that increase in interest rate encourages more savings. This leads to increase in the level of capital stock which ultimately means increased National Income. The result shows that a 1% rise in interest rate causes private domestic investment to decrease by 14%. On the other hand, a 1% rise in savings causes a 30% rise in the level of private domestic investment on its own, while a 1% increase in infrastructure causes the private domestic investment to rise by 25%.

The standard error test and the t-test confirm that the estimated values of  $\lambda_0, \lambda_1, \lambda_2, \lambda_3, \lambda_4$  and  $\lambda_5$ , are all statistically significant. Testing at 5% levels makes it expedient for us to reject the null hypothesis (Ho) while accepting the alternative hypothesis to the effect that there is significant relationship between interest rate and private domestic investment. This is more so as the value of the adjusted R<sup>2</sup> for the model at 0.726241 implies that, interest rate, private domestic savings, public investment, infrastructure and inflation rate explained about 72% systemic variation in private domestic investment over the observed years while the remaining 28% is explained by other exogenous variables not captured by the model.

**CONCLUSION AND POLICY RECOMMENDATION**

By this study, it has been established that interest rate policy has positive and significant impact on savings and negative effects on investment in an emerging economy like Nigeria. The study revealed that the immediate economic circumstance of Nigeria and the desire for growth is one that would demand encouraging industrial investments in the private domestic investment, thus a policy that seems to curtail this, will just be economically undesirable. We cannot hope to achieve efficiency in resource allocation by allowing interest rates to be determined by inter-play of market forces in a financial system still manifesting serious signs of imperfections. It can thus be concluded that interest rate policy is effective in Nigeria and this is a signal to investors; the Nigerian policy makers as well as researchers.

Policy implication of the research discussed pointed to the inadequacy effectiveness of the market in

producing the “magic” which would correct imperfections in the financial system. Nevertheless, the research revealed that the government has a role to play in providing the proper regulatory and legal framework in which the productive sector can operate safely and efficiently, as well as correcting the imperfection in the financial system. In other words, the government can make use of monetary policy to influence the level of interest rate through its influence on investment incentive.

The seemingly creeping inflation pressure in Nigeria can be tamed if the interest rate reform is left to the strict interplay of the forces of demand and supply. However, since high interest rate in Nigeria seems to be associated with the state of poor infrastructural facilities, government must create conducive environments that would attract both local private investors and foreign direct investment in the provision of infrastructure. Nigeria must as a matter of policy make specific choices as to what interest rate reform policy it should embark upon and determine from the onset the specific sectors at which the reform measures are targeted.

This in effect will give the country a long-term firm grip on the economy. The Nigerian policy maker must pursue a paradigm shift to ensure that macroeconomic objectives are pursued within the framework of coordinated economic environment devoid of political instability and other economic imperfections.

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