

Interest rate policy and private domestic investment in Nigeria

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Keywords

Interest Rate, Domestic Investment, Ordinary Least Square (OLS), Error Correction, Macro-Economic.

Abstract

The economic implication of interest rate on private domestic investment has been a subject of both theoretical and empirical investigation over the years. In an attempt to examine the relationship between these two economic variables in Nigeria, this paper made use of secondary data spanning through 1980 – 2012. The study employed Ordinary Least Square (OLS) multiple regression technique to estimate the equation specified for the study. The time series properties of the variables were examined using error correction model. The high coefficient of determination (R^2) depicts that the independent variables explain systematic variation in private domestic investment to about 72%. The positive coefficient of interest rate showed that it is a major determinant of private domestic investment, as an increase in interest rate is assumed to encourage savings which further enhances investment.

It was thus concluded that interest rate policy exerts positively on the nation's private domestic investment. The result of the analysis suggested the need for appropriate regulatory and legal framework with buoyant macro-economic policies that would encourage interest rate regime needed to foster investment growth and private domestic investment in particular in Nigeria.

1.0 Introduction

The fact that Interest Rate has fundamental implications on Private Domestic Investment either from the perspective of economic price, as opportunity cost of funds or cost of capital has undergone intensive debate in the literature over the years (Duncan, *et al.* 1999; Chhiber, A. and Dailami, M. (1990). It is often regarded as a germane factor for the determination of investment level in an economy either by impacting on the cost of capital, influencing the availability of credit or by increasing the level of savings. What Vaish (2003) defined as the value of the part of the aggregate output for any given time period which takes the form of construction of new structure, installation of new capital equipment and positive changes in business inventories in the economy.

This study therefore focus on the impact of interest rate on private domestic investment, thus, the implications of the policy shift of the Nigerian government will be appreciated. Among others, the study aimed at examining the behavior of private domestic investment as interest rate policy regime strives.

The study therefore hypothesized that, there is no significant relationship between interest rate policy and private domestic investment in Nigeria. It is expected that the results derived from this study will go a long way to reveal to the government the implication of her policy as regards interest rate in her efforts to solve varying national problems, most especially, poverty through investment drive policies of government.

2.0 Conceptual Framework

Interest is defined as the return or yield on equity or opportunity cost of deferring current consumption into the future (Uchendu, 1993:35). Thus, an extra, additional or and premium gained for postponing present consumption for future consumption is referred to as interest. In the words of Irvin Fisher, interest rate can be categorized as nominal or real in order to accommodate the moderating influence of inflation on interest rate. Nominal interest rate according to him is the observed rate of interest incorporating monetary effects. Real interest rate on the other hand is arrived at by considering the implications of inflation on nominal interest rate (Uchendu, 1993:35; Essia, 2005; 82). Savings rate, when high, encourages savings which ultimately translates into increased availability of loanable funds.

Chizea, 1993:6 posits that the high savings rate is also bound to translate into high lending rates with attendant negative consequences on investment

In the view of classical economists, level of savings is determined by savings rate of interest (Olusoji, 2003:86). This view holds that increase in interest rate will lead to increased savings and, hence, a positive relationship.

3.0 Theoretical and empirical literature.

Policy reforms of government over the years were either aimed at providing a conducive investment environment or conditions that would enhance investment drive of the nation. Reforms that are investment-friendly often raise expected returns, however, they may in addition increase uncertainty if investors believe that the reform measures could be reversed abruptly. In both the developed and developing economies of the world, there had been debates all over the years as to the impact and or the implication of interest rate on private domestic investment (Ataulah et al., 2002; Khan and Khan, 2001). However, these debates as extensive and intensive as they are, are as well been inconclusive and unresolved.

Khan and Khan (2001) attempted to analyze the determinants of private investment by using ARDL co-integration technique to check the existence of long run equilibrium relationship as well as short run dynamics of investment. The results of their study suggested protection of policy rights, enforcement of contracts and voluntary exchange at market determined prices as necessary factors supporting the idea of providing suitable environment for markets. Varied empirical literature exist on the subject of the impact of interest rate policy on private domestic investment (Chetty, 2004; Kuznets, 1966; and Uchendu, 1993). Chetty (2004), with his model of non-convex adjustment costs and the potential to learn opined that the investment demand curve is always a backward bending function of interest rate. He stressed 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.

Green and Villanueva (1991), Serven, L. and A. Solimano (1992) confirmed in their studies that a negative relationship exist between interest rates and investment. Study by Serven and Solimano (1993) showed that in repressed financial markets, credit policy affects investment in a distorted manner. Contemporary economic researchers in Nigeria have taken in-depth stands on the issues at stake. In his study, Obamuyi (2007) examined the relationship between interest rate and economic growth in Nigeria. The study employed co-integration and error correction modeling techniques and revealed that lending rate has significant effect on economic growth. This re-emphasized the *a priori* expectation.

4.0 Methodology

This study made use of time series secondary data for the analysis. The secondary data were obtained from World Bank publications, Central Bank of Nigeria statistical bulletin and International Financial Statistics.

5.0 Model specification

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, such that:

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

Given the fact that infrastructure and private domestic savings tend to impact majorly on investment, a modified version of the above model will suffice to epitomize the Nigerian unique investment nature, hence:

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

Where:

PDINV =	Private Domestic Investment
INTR =	Interest Rate
PDSAVR	= Private Domestic Savings
PUBINV	= Public Investment
INFRAST	= Infrastructure
INFLR =	Inflation Rate

The linear form of equation 2 above is presented thus;

$$PDINV = a_0 + a_1INTR + a_2PDSAVR + a_3PUBINV + a_4INFAST + a_5INFLR.....3$$

In order to have the latitude to include random term, the model is further expressed econometrically as:

$$PDINV = a_0 + a_1INTR + a_2PDSAVR + a_3PUBINV + a_4INFAST + a_5 INFLR + \Psi_14$$

Ψ_1 is the error term or stochastic term which is assumed to be normally distributed. Parameters to be estimated are a_1, a_2, a_3, a_4 and a_5

a priori

In tandem with economic theory, the apriori expectations are that:

$$\frac{\partial PDINU}{\partial INTR} > 0, \frac{\partial PDINU}{\partial PDSAVR} > 0, \frac{\partial PDINU}{\partial PUBINV} > 0, \frac{\partial PDINU}{\partial INFAST} > 0, \frac{\partial PDINU}{\partial INFLR} > 0$$

Interest rate is expected to impact positively on private investment and vice versa because investment is often financed through borrowing.

6.0 Analysis Of Results

Our results using parsimonious Error Correlation Mechanism (ECM) are presented below:

Table5: Regression Results Dependent Variable: PDINV

Method: Least Squares

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Sample (adjusted): 1982-2012

Included observations: 30 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)	0.000000	

Source: Author’s Computation, 2013

The results of the Standard error and t-statistics at 5% level showed that the parameters are statistically significant. Testing at 5% levels, the results of the analysis thus countered the earlier stated null hypothesis and therefore we reject it that there is no significant relationship between interest rate and private domestic investment, and accept the alternative hypothesis that there is significant relationship between interest rate and private domestic investment.

The F-statistic used to test for stability in the regression parameter coefficient when sample size increase, as well as the overall significance of the estimated regression models was conducted.

We thus reject the null hypothesis if $F^* > F_{0.05}$, and accept the alternative hypothesis. From the statistical table, $F_{0.05}$ at (5, 23) degree of freedom is 2.21, while estimated F^* is 7.641835 for our model. Obviously, $F^* > F_{0.05}$ in the model, that is $7.641835 > 2.21$, then we reject the null hypothesis that, there is no significant relationship between interest rate and private domestic investment. This implies that there exist a significant impact from the identified independent variables and interest rate by implication on private domestic investment.

In addition, the value of the adjusted R^2 of 72% for the model can be said to be high, implying that interest rate, private domestic savings, public investment, infrastructure and inflation rate explained about 72% systematic variation in private domestic investment over the observed years in Nigeria, while the remaining 28% variation is explained exogenously, i.e. by variables outside our model.

The Durbin - Watson statistics which is used to test for the presence of serial correlation or autocorrelation, between the successive values is 2.0 for our model. This fall within the determinate regions (i.e. $1.5 < d < 2.5$) and imply that there are negative first order serial autocorrelation among the explanatory variables in the model.

7.0 Discussions

From the results, the t-statistic and the standard error test confirm the positive significance impact 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 co-integrating 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 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 in Nigeria. however, 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 a_0, a_1, a_2, a_3, a_4 and a_5 , are all statistically significant. Testing at 5% levels makes it expedient for us to reject the null hypothesis and accept the alternative hypothesis that there is significant relationship between interest rate and private domestic investment in Nigeria. This is more so as the value of the adjusted R^2 for the model of 0.726241 implies that, interest rate, private domestic savings, public investment, infrastructure and inflation rate accounted for 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.

8.0 Conclusion And Policy Recommendations

The analysis in this study revealed that the immediate economic circumstance in Nigeria and the desire for growth is one that would require encouraging industrial investments in the private domestic investment, thus a policy that seeks to curtail this will just be economically undesirable.

With this, the government should make use of monetary policy to influence the level of interest rate through its influence on investment incentives. Also, the interest rate reform should not be left solely to the strict interplay of the forces of demand and supply in order to arrest the resulting inflationary pressure in the country. In addition, government must create a conducive atmosphere of infrastructural development.

Nigeria has to make specific choices as regard the interest rate reform policy in some areas so as to have a firm direction for the long term implication. To achieve macro-economic objectives therefore, the policy makers must pursue a modest and coordinated economic policy environment, coupled with the existence of stable political atmosphere and the situation of the present prevalent instability in the face of chaotic political and highly uncertain economic environment should be jettison.

Thus, if the government could embark on broad-based policies that would enhance the present infrastructural facilities and put in place framework that will encourage savings, the environment will be

more conducive for domestic private investment and economic growth and development will be highly recorded.

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