

Impact of Interest Rate on Investment in Nigeria

Davis Ojima, JP.

Bursar Ignatius Ajuru University of Education

Emerenini Fabian M. Ph.D

Department Of Economics, Imo State University, Owerri

Abstract

The study investigates the Impact of Interest rate on Investment in Nigeria. Multipleregressions was used as the statistical method for the study which reveals that high interest rate negatively affect investment. In line with the findings, the study made the following suggestions; that relevant monetary authority should evolve policies that will encourage savings and reduce prime lending rate to genuine investors, among others. It further recommend that since there is a direct relationship between income and savings, relevant authority should consider economic policies that will increase income level of the people in order to mobilize investment.

Keywords: Interest rate, Investment, lending rate.

Interest rate policy in Nigeria is a major instrument of monetary policy with regards to the role it play in the mobilization of financial resources aimed at promoting economic growth and development.

Interest rate is the price paid for the use of money. It is the opportunity cost of borrowing money from a lender. It can also be seen as the return being paid to the provider of financial resources. It is an important economic price. 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 either impacting on the cost of capital or influencing the availability of credit, by increasing savings (Acha&Acha 2011).

Since the time of Adam Smith and Karl Marx, investment has been deemed to be both the engine of economic activity and the primary cause of economic malaise. Investment is the change in capital stock during a period. It is the accumulation of newly produced physical entities, such as factories, machinery, houses and goods inventories. Consequently, unlike capital, investment is a flow term and not a stock term. This means that investment is measured over a period of time. Investment plays a very important role in economic growth in a country. Countries rely on investment to solve economic problems such as poverty, unemployment etc. (Muhammad 2004). As such determinants of level of investment become paramount in an economy.

An understanding of the nature of interest rate behaviour is critical and crucial in designing policies to promote economic growth. Its importance is hinged on its equilibrating influence on supply and demand in the financial sector.

Banks as intermediaries move fund from surplus units of the economy to deficit units by accepting deposits and channelling them into ending activities. The extent to which this could be done depend upon the rate of interest and level of development of financial sector as well as the saving and investment habit of the people. Hence, the availability of investible fund is therefore necessary for all investment in the economy which eventually translates to economic growth and development (Uremadu,2006).

Oresotu (1992) explains that the basic functions of interest rates in an economy in which individual economic agents take decisions as to whether they should borrow, invest, save and/or consume, are summarized by International Monetary Fund (IMF) under three aspect; namely

- Interest rates as return on financial assets serve as incentive to savers, making them defer present consumption to a future date.
- Interest rates being a component of cost of capital affect the demand for and allocation of loanable funds; and
- The domestic interest rate in conjunction with the rate of return on foreign financial assets and goods are hedged against inflation

The behaviour of interest rates, to a large extent, determines the investment activities and hence economic growth of a country. Investment depends upon the rate of interest involved in getting funds from the market by investors, while economic growth to a large extent depends on the level of investment. If interest rate is high, investment is at low level and when interest rate falls, investment will rise.

The effect of real interest rates on investment spending was posited in an investment equation by Jorgenson (1963) in his paper capital theory and investment behaviour. He derived the desired stock of capital as a function of real output and the opportunity cost of capital. In this approach, a representative firm maximizes the present value of its future cash flows. The desired capital stock is directly related to output and inversely related to the cost of capital a decrease in the real interest rate lowers the opportunity cost of capital and, therefore, raises the desired capital stock and investment spending.

The need to promote an interest rate that will ensure increase in investment and consequently enhancing economic growth cannot be over emphasized. Deposit rates, lending rates, Treasury bill rate, interbank rate and Minimum Rediscount rate are all examples of interest rates.

Statement of the Problem

Prior to SAP in 1986, interest rate in Nigeria was generally fixed by the CBN with periodic adjustments depending on the government sectoral priorities. The monetary authority in promoting investment in key sectors in the economy (Agricultural, Manufacturing etc) charged special interest rates on loans taken by these sectors so as to encourage the growth in the output of the sectors for a possible improvement in economic growth (Udoka, 2000). The prevailing rates of interest were regulated by government through the Central Bank of Nigeria (CBN) so as to guide the economy towards economic growth through these key sectors. The period is considered as a financial repression period (government regulations, laws, and other non-market restrictions preventing financial intermediaries from functioning at full capacity) as explained by Mckinnon& Shaw (1973), and was characterized by a highly regulated monetary policy environment in which policies of directed credits, interest rate ceiling and restrictive monetary expansion were the rule rather than exception (Soyibo and Olayiwola, 2000). Although the interest rate instruments remain fixed, there were increases. The deposit rate increased from 4% in 1975 to 9.5% in 1986, while the lending rate rose from 6 to 10.5% within the same period. However, the low rates of interest that prevailed could not be sustained. The low and sometimes negative real interest rates discouraged savings, increased the demand for loan able funds. The demand for credit soon exceeded the supply of funds while essential sectors of the economy were starved of funds (Obute, Asor and Idoko 2012)

On 31st July 1987, the CBN deregulated interest rate. Interest rate became market driven where the forces of demand and supply determined interest rate level. This came about as a result of economic shocks of the 1980s and the financial repression which manifested through indiscriminate distortions of financial prices interest rate inclusive, reduced the real rate of growth. The position of the deregulated interest rate among other things was to enhance the provision of sufficient funds for investors, especially manufacturers who were considered prime agents and by implication promoters of economic growth so as to stimulate exports, correct price distortion.

In a policy reversal 1994, measures of regulation of interest rate management was re-introduced. A claim of variation and high rate under the regulation of interest rate led to the reversal. Deposits rate were set at 12% to 15% per annum while a ceiling of 21% per annum was fixed for lending. A minor modification to allow for flexibility was seen in 1995, in which flexible interest rate were bank deposits and lending rate were determined by forces of supply and demand for fund (Udoka&Anyingang, 2012), (Omole&Falokun, 1999).

Since 2004, the monetary policy committee of the Central Bank of Nigeria fixed the rates depending on performance of the economy. In 2013, the lending rate was 17.10% while the monetary policy rate was 12% while saving rate 2.39% (CBN, 2012).

The role and effect of interest rate is possible due to the link between the financial sector and real sector of the economy, for instance the lending rate which translates into cost of capital has direct implications for investment. High lending rate discourages borrowing for investment. Also, high saving rate encourages savings which means more lendable funds for investments. As such the directional flow of interest rate has a linkage to the investment in an economy. This relationship calls for the need to examine the impact of interest rate on investment in Nigeria, hence the need for this research work.

Objective of the Study

The main objective of the study is to examine the impact of interest rate on investment in Nigeria. Specifically, the study sought to;

- i) Examine the determinants of interest rate and how they impact on investment in Nigeria
- ii) Investigate the causal relationship between interest rate and investment in Nigeria.

Research Hypotheses

The following hypotheses were tested

Ho₁: There is no significant relationship between interest rate and its determinants on investment in Nigeria

Ho₂: There is no causal relationship between interest rate and its determinants on investment in Nigeria

Conceptual Framework and Literature Review

The accelerator theory of investment of Clark (1917) posits that current net investment is a function of changes in income. It explains net investment in terms of expected growth in aggregate output. That is firms maintain a stable relationship between the stock of a capital and aggregate output. The rate of investment is proportional to the change in the economy output

The Keynesian marginal efficiency theory see investment decision as being dependent on the

differentials of two rates: the internal rate of return generated on investing on a particular asset and the prevailing market rate of interest

James Tobin in 1969 put forth the Tobin Q theory of investment. The theory explains investment expenditure by relating the market value of financial assets (equity and debt) to the replacement cost of its real assets because incremental return from capital addition exceeds the cost of these additions.

Neoclassical theory of investment showed that the demand for capital is determined by the process of maximizing the present value of the firm subject to a variety of market and non market constraints.

Empirical Review

Ekwenem (2005), studied interest rate and investment behavior in Nigeria from the period 1976- 2006 using time series data, he found out that the behavior for investment have significant influence on interest rate and inflation rate.

Majed and Ahmad (2010) investigated the impact of interest rate on investment in Jordan between 1990 and 2005 using co integration technique. The study found that real interest rate has a negative impact on investment. An increase in the real interest rate by 1% reduces the investment level by 44%.

Greene and Villanueva (1990) studied the determinants of private investment in less developing countries for 23 countries between 1975-1987 period, and found that the real deposit interest rate has a negative impact on private investment.

Hyder and Ahmad (2003) investigated the slowdown in private investment in Pakistan. They found that higher real interest rate reduces private investment.

Mahmudul and Gazi (2009) in their study in Jordan on stock investment (based on the monthly data from January 1988 to March 2003) found that interest rate exerts significant negative relationship with share price for markets of Australia, Bangladesh, Canada, Chile, Colombia, Germany, Italy, Jamaica, Japan, Malaysia, Mexico, Philippine, South Africa, Spain, and Venezuela. For six countries from this sample, they argued on the availability of significant negative relationship between changes of interest rate and changes of share price.

Recently, Olubanjo, Atobatele and Akinwumi (2010) simulated the inter-relationships among interest rates, savings and investment in Nigeria between 1993 and 2010 using two stages least square method. Their result suggested that a marked decrease in the real lending rate would not result automatically into increased domestic investment.

Eregha (2010) examined variations in interest rate and investment determination in Nigeria and deduced that investment has an indirect relationship with interest rate variation and other variables that he used.

Theoretical Framework

Theories of interest rates try to explain variables which determined interest rates. These theories differ because of differences of opinion as to whether rates are monetary or real phenomenon.

Basic tenets of the neo classical loanable fund theory of interest rate propounded by Dennis Robertson, advocate that savings and investment are responsible for determination of interest rate in the long run. The rate of interest is the price that equates the demand for and supply of loanable funds (Jhingan 1997). The demand for loanable fund for investments such as purchase of capital goods, constructions etc, depends on the expected rate of profit as compared with the rate of interest. This demand is met by past savings or through dis-saving and are interest elastic. The loanable fund regards the rate of interest as a function of four variables: savings, investment, the desire to hoard and the money supply.

The classical theory of interest rate defined the rate of interest as the element that equates savings and investment. The theory holds the proposition based on the general equilibrium theory of interest rate determined by the demand for and supply of capital. The demand for capital stems from investment decision while the supply of capital results from savings in the community.

The Keynesian liquidity preference theory determines the interest rate by the demand for and supply of money in a stock theory. It emphasized that the rate of interest is purely a monetary phenomenon. It is a stock analysis because it takes the supply of money as given during the short run and determines the interest rate by liquidity preference or demand for money. The Keynesian theory implies that low interest rate as a component of cost administered is detrimental to increase savings and hence investment demand. They argue that increase in the real interest rate will have strong positive effects on savings which can be utilized in investment, because those with excess liquidity will be encouraged to save because of the high interest rate, thus banks will have excess money to lend to investors for investment purpose thereby raising the volume of productive investment.

The Financial Liberalization Theory put forth by Mckinnon and Shaw (1973) postulate that interest rate regulations usually lead to low and negative real interest rates, which stunts economic growth of developing countries. The financial repression which causes low interest rate discourages savings and thus, shrinks investment. The quality of investment will also be low because the projects that would be undertaken under a regime of repression would have a low rate of yield. They advocated that interest rate deregulation would

increase interest rate rise which will encourage both savings and investment thereby boosting economic growth.

Both Mckinnon and Shaw advocated that interest rates deregulation was needed to remedy the problems caused by financial repressive policy of developing countries. This study thus, looks at investment performance since the Structural Adjustment Programme of Nigeria when interest rate was deregulated so as to observe the directional flow of investment in this period.

The body of literature reviewed indicate that a lot of work have been done in the area of interest rate and investment within the economy. Most of these studies concentrated on interest rate as it impacts positively on the behaviour of the naira. But not much has been done in trying to investigate the impact of interest rate on investment in Nigeria. We found a gap in this area and this is the contribution that this study will provide for policy making.

Research Methodology

The research design is the structure and strategy for investigating the relationship between the variable of the study. In this section, we will focus on how the study is being designed, data sourced and method of analysis and model specification.

Model Specification

In order to understand the impact of interest rate on investment in the Nigeria economy, we specify a model which state that investment depends on interest rate. Given the fact that globalization has been embraced by all nations, exchange rate also has its effect on the investment. Obadan (2006) revealed that the naira exchange rate devaluation or depreciation (i.e. naira rising) will encourage export which will encourage investment so as to produce exportable goods. The study will thus employ econometric techniques using the OLS method to estimate the relationship between selected variables.

$$GCF=f(INT, INF, EXR) \quad (1)$$

Econometrically, this can be stated thus;

$$GCF= \beta_0+ \beta_1 INT + \beta_2 INF + \beta_3 EXR + \mu \quad (2)$$

Where

- GCF = Gross capital formation
- INT = Interest rate
- INF = Inflation rate
- EXR = Exchange rate
- μ = stochastic or error term

Apriori theoretical expectation

$$\beta_1>0; \beta_2>0; \beta_3>0.$$

Analysis of Result

The estimated procedure in this study draws on the recent development in co-integration analysis and the error correction model (ECM) that have been used to explore several economic phenomena.

Unit root test result

The Augmented Dickey Fuller test in the table below shows that all variables achieved stationarity at first differencing at 5% critical value.

	T-Statistic	Critical Value 1%	Critical Value 5%	Critical Value 10%	Prob.	Order of Integration
D(LGCF)	-2.991128	-3.7343	-2.9907	-2.6348	0.000000	I(1)
D(INT)	-5.026041	-3.7343	-2.9907	-2.6348	0.000000	I(1)
D(EXR)	-3.276339	-3.7343	-2.9907	-2.6348	0.000585	I(1)
D(INF)	-4.996898	-3.7343	-2.9907	-2.6348	0.000129	I(1)

The unit root result above shows that all tests were significant at 5 percent level. At ordinary level none of the variables were stationary and hence none of the variables were integrated of order zero (i.e. 1 (0) variables). In other words, INT, INF and EXR were stationary at first differencing. The result from the stationairty test therefore calls for long-term relationship.

Cointegration test result

The cointegration test was based on the Johansen and Juselius (1989) test. Johansen's test was carried out to check if the above variables are cointegrated. In the model, it indicates two cointegrating equations while one variable indicated non-cointegration at even 5 percent level. We therefore, reject the null hypotheses and hence conclude that there exist at least one cointegrating relationship. In other words, there is a stable long-run

relationship between them hence we can avoid both spurious and inconsistent regression problems which otherwise would occur with regression of non stationary data series. This is shown below

The Johansen co-integration test was used to determine if there exists long-run equilibrium relationship among the variables under study.

Date: 11/21/14 Time: 11:02

Sample: 1986 2012

Included observations: 25

Test assumption: No deterministic trend in the data

Series: LGCF INT EXR INF

Lags interval: 1 to 1

Eigenvalue	Likelihood Ratio	5 Percent Critical Value	1 Percent Critical Value	Hypothesized No. of CE(s)
0.715985	68.67942	53.12	60.16	None **
0.497503	37.21125	34.91	41.07	At most 1 *
0.421897	20.00710	19.96	24.60	At most 2 *
0.222973	6.307011	9.24	12.97	At most 3

*(**) denotes rejection of the hypothesis at 5%(1%) significance level

L.R. test indicates 3 cointegrating equation(s) at 5% significance level

Error Correction Mechanism (ECM)

The confirmation of the existence of a cointegration vector among our series gives us enough background for carrying cointegration makes it possible to estimate error correction mechanism (ECM) while it is a solution to the problem of spurious result associated with estimating equations involving time series parameterized error correction model from where a parsimonious (preferred) error correction model would be obtained. The parsimonious error correction results in this study are as discussed below.

Dependent Variable: D(LGCF)

Method: Least Squares

Date: 11/21/14 Time: 22:59

Sample (adjusted): 1990 2012

Included observations: 23 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.409954	0.087363	4.692536	0.0011
D(INT)	-0.014186	0.021962	0.645917	0.5345
D(INT(-1))	-0.007712	0.019654	0.392387	0.7039
D(INT(-2))	-0.019071	0.016547	-1.152541	0.2788
D(INT(-3))	-0.011762	0.016046	-0.733043	0.4822
D(INF)	0.001182	0.004470	0.264346	0.7975
D(INF(-1))	-0.004698	0.004606	-1.020028	0.3344
D(INF(-2))	-0.000833	0.004036	-0.206403	0.8411
D(INF(-3))	-0.004134	0.004847	-0.853006	0.4158
D(EXR)	-0.002309	0.005385	-0.428891	0.6781
D(EXR(-1))	-0.005537	0.004020	-1.377312	0.2017
D(EXR(-2))	-0.005160	0.003728	-1.383990	0.1997
D(EXR(-3))	-0.007765	0.003992	-1.944961	0.0836
ECM(-1)	-0.409043	0.152469	-2.682800	0.0251
R-squared	0.597498	Mean dependent var		0.209981
Adjusted R-squared	0.016106	S.D. dependent var		0.212094
S.E. of regression	0.210379	Akaike info criterion		-0.000691
Sum squared resid	0.398334	Schwarz criterion		0.690479
Log likelihood	14.00795	Hannan-Quinn criter.		0.173136
F-statistic	1.027703	Durbin-Watson stat		1.767412
Prob(F-statistic)	0.497651			

The parsimonious error correction model above shows that the error correction term is well specified and it is also significant at 5 percent level. Supporting our earlier conclusion that interest rate and its regressors are indeed cointegrated. The speed of adjustment is the coefficient of the error correction term. It also indicates how

the movement from the long-run equilibrium is corrected in the short-run. The explanatory variables included in the model explained 60 percent of the variability in investment.

The coefficient of the ECM is -0.409 or -0.41. The negative sign is an indication of the existence of a long-run equilibrium relationship between investment and the variables that influence its short-run movement which were used in the model. In point of fact, there is a fairly fast speed of adjustment (41 percent) between the short-run and long-run equilibrium behaviour of investment and its explanatory variables. The adjusted R^2 shows that about 16 percent of the total variation in investment is determined by changes in the explanatory variables. Hence, it means,

it will take a very short-time for the explanatory variables to adjust themselves. The F-statistics measuring the joint significance of all the regressors in the model is

significant at 5 percent level. Also the Durbin Watson statistics is approximately 2. Since this is slightly above 1, it is hoped that even if there is serial correlation its effect will not be so severe as to affect the value of the estimated coefficients.

From the result, the effect of interest rate in the first period is positive and insignificant. In the second and third periods it is negative but significant even at 5 percent level. This reveals that as investment increases, interest rate declines. This is contrary to our theoretical expectation. The negative sign shows that a fall in interest rate will encourage investors to invest more of their money within the economy. Inflation in the first, second and third periods are negative but significant even at 5 percent level of significance in the first and third periods, while it is insignificant in the second period. This shows that as inflation declines more money is invested into productive activities to boost economic growth and development. As more money goes into investible activities, the volume of money in circulations reduces as disposable income falls. Exchange rate in the first, second and third periods is negative but significant in the first and second periods is negative but significant in the first and second periods even at 5 percent and 10 percent respectively. In the third period it is insignificant. The negative signs in the first, second and third periods reveals that as investment increases, exchange rate declines. It also means that a fall in exchange rate results in investors investing more money within the economy. It also shows that the value of the local currency is high against foreign currencies.

Summary and Conclusion

The research work assess the link between investment and interest rate in Nigeria using investment as a dependent variable while interest rate, exchange rate and inflation rate were explanatory variables from 1986 to 2012. Data used were gotten from the CBN and the multiple regression method of econometrics was used in estimation.

The study found that high interest rate negated investment as an increase in interest rate by 1% reduced investment by 14%. Thus, there exist an inverse relationship between investment and interest rate in Nigeria. Interest rate here is the prime lending rate. In line with the important role investment plays in stimulating economic growth through diversification of the economy, job creation, economy self reliance, policies to improve investment should be enacted in the economy. Such policies include:

- Monetary authorities should make policies which would help to improve the saving culture of the people such as increase in the deposit rate which would lure the people to deposit their money in banks thereby increasing the supply of loanable funds. This would lead to a fall in interest rate and eventually rise in investment.
- A reduction in the prime lending rate to investors so as to encourage investors to borrow more and increase investment
- Since savings encourage investment and income lead to savings, a programme or policies by the authority that will facilitate an increase in income level of under developed citizen in order to ensure sufficient saving

that bring about high rate of investment which will eventually lead to economic growth and development.

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