

THE IMPACTS OF INTEREST RATES ON BANK DEPOSITS, INVESTMENTS AND THE NIGERIAN ECONOMY

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ABSTRACT

In theory, interest rate is said to be positively related to bank deposits (savings) while it is negatively related to investments. What this means in effect is that high interest rates encourage savings but discourage investments. And without adequate investment, growth in the economy, as measured by the Gross Domestic Product is retarded. How has the Nigerian economy fared between 1990 and 2004, a period of fifteen years, in the face of changes in interest rates? In finding an answer to this and other questions, the researchers made use of secondary data. Using multi-linear regression analysis, it was found that there is a positive relationship between interest rates and bank deposits. Investments and prevailing interest rates, as expected, are negatively correlated. Though investments depend on prevailing interest rates, the dependence is rather too low, That the economy reacts differently to investments and bank deposits is obvious Other variables that affect the Nigerian economy should be adequately developed

Keywords: Bank deposits, Interest rates, Investments, Gross Domestic Product.

INTRODUCTION

Literarily, growth can be defined as the rate of developing Economic growth, according to Pritchard (1985), is "an increase in the real national production of the country". It can be measured by using the Gross Domestic Product (GDP). The level of national production is largely determined by factors of production, which include capital, labour, land and entrepreneurship. The most important is capital, which is determined by the level of savings and the rate of interest in an economy. The rate of interest is the rate of return paid on borrowed money. Simply put, it is the price of capital. Interest rate is determined either by market forces of demand and supply or by government regulations. Leite and Sundararajan (1990) argued that under an administered (regulated) interest rate policy, the level of nominal rates of interest on credits neither varies with banks nor sensitive to changes in the pressure on demand for bank loans.

Deregulated interest rate policy on the other hand, is believed to be critical for both economic stabilization as well as financial development (Ahmed, 2003). Bank deposits as defined by Furness (1978), is the evidence of the debt that a bank owes its customers. The benefits to the economy as identified by him are numerous. Through bank deposits, banks are able to grant

loans to customers, thus leading to an improvement in the standard of living. Another effect is that banks are able to make loans to businesses, which help them to finance plant expansion and production of new goods, thereby leading to increase in employment and economic growth. Koleoso (2007) identified the roles of bank deposits to the growth of the Nigerian economy. According to him, saving (deposit) mobilization of commercial banks is a catalyst for capital formation, which is an essential ingredient for investment. In order words, bank deposits encourage investments, thus increasing the growth of the economy.

Short term and medium term loans are useful for the development of the real or productive sector of the economy, while commercial banks, through their customers' deposits invest directly in the productive sectors of the economy through collaborative efforts and acquisition of shares in companies. Real investment depends on the general state of investment expectations, the cost of producing capital goods and the long-term rate of interest. Given the state of investment expectations and the cost of capital goods, a fall in the long-term rate of interest raises the value of capital goods in relation to their cost, so giving a general encouragement to real investments. On the other hand, a rise in the rate of interest lowers the present value of capital assets in relation to cost and discourages the purchase of new capital goods.

In accordance to both Classical and Keynesian economists, the rate of interest is the main determinant of investment. Having seen the role of bank deposits in an economy and how interest rates are determined, one would like to imagine the effects of interest rates on bank deposits, investments and how the three variables affect the economy as measured by the Gross Domestic Product (GDP). The question to ask is: what is the direction of such effects? An answer to this and other questions is what this study seeks to investigate. The rest of this paper is divided into four sections. In section 2, related literature is reviewed. Section 3 contains model specification, data requirements and estimation of the methods used. Section 4 gives analysis of the results while Section 5 summarizes and concludes the paper.

LITERATURE REVIEW

Olusoji (2003) identified three types of personal savings. These are: forced saving, contractual saving and voluntary saving. Forced saving includes tax and inflation. Contractual savings occur when the individual concludes voluntarily the contract of savings (eg, life insurance), Voluntary savings are those ones done voluntarily by households. That type of saving, according to Olusoji (2003), is mostly encouraged by monetary authorities. In Africa, the extent of personal savings is relatively low and possibility of saving is limited by the per capita income that is rising very slowly (Ligeti, 1989).

The classical school believes that whatever is not consumed is saved (Olusoji, 2003). Thus, saving is a residual, representing what is left of income after consumption is satisfied. Furthermore, it is generally agreed that the forces of supply and demand determine the price of factors of production in the market system. Savings constitute the major source of credit while

investment is the outcome of demand for credit. Invariably therefore, what is saved becomes investment. The classical school also believes that the mechanism by which savings and investments are mobilized is the interest rate. That is, interest rate is positively related to saving while it is negatively related to investment (Olusoji, 2003). The school concludes that interest rate adjustment equalizes savings and investments. Further, assuming the rationality of man, it is argued that there will be motivation to save more when interest is high than when it is low.

The theoretical framework often used to examine the relationship between savings and investments is the two gap-model. The model characterized by unfettered capital flows argues that countries with high level of investments need not rely on an equally high domestic savings. The gap between domestic savings and gross investment must equal the difference between imports and exports and is financed by external capital or foreign savings (Feldstein and Horioka, 1980). However, empirical evidence from their study contrasted with the sign of theoretical relationship. It was found that gross national savings and domestic investment rate are positively correlated for both developed and developing countries.

Mikeseli and Zinser (1973), in their contribution showed that savings have a strong positive correlation with the rate of growth of national product. However, the co linearity between independent variables employed in savings make it difficult to determine the significance of exports as an independent determinant of savings. Chenery and Exkštejn (1970), used export - GDP ratio as independent variable and the coefficient was significantly positive. Masson et al (1998) regressed saving rates for industrial and developing countries on government current expenditure, government investment, growth rate of real output, consumer prices, terms of trade, real short term interest rate, GDP per capita and current account surplus. They concluded that there was a positive relationship between GDP growth and private savings in developing countries. They also found a significant positive effects of per capita income for developed countries and otherwise for developing countries. In spite of interest rate being a major economic indicator, growth in an economy can only be achieved through increased national output.

In his analysis, Hardwick (1994) sees economic growth as an increase in a country's productive capacity, identifiable by a sustained rise in real national income over a period of years. It is an increase in the real national production of a country (Pritchard, 1985). However, economic growth cannot exist without changes in national income of an economy. In his words (Lawal, 1982). "changes in national income of an economy will always influence the level of investments of that country". The accelerator's theory states that a given change in the level of national income produces a more than proportionate change in the level of investments. Melitz and Pardue (1973) recognized that the demand for bank loan is a demand for credits. They contended that the demand for loans depend on time preference or taste which can be measured by the rate of interest. They also argued that the demand for credits depend on the productivity, which is the level of economic activities 25, measured by Gross Domestic Product (GDP) or its components like investments and exports.

In another empirical study by Ojo (1978) on the Nigerian commercial bank loans, the following features were observed. First, Fisher's capital theory formed the basis of his analysis although with adequate reservation for the underdevelopment nature of the Nigerian economy. To compute the Fisher's model, he measured time preference by the rate of interest and the productivity of the system by GDP and its components. In his analysis of interest rate, level of investment and the national income, Lawal (1982), postulated that the level of national income produces a more proportionate change in the level of national investment. He also said that savings are the major source of supply of investment funds. According to him, interest is the price that investors have to pay savers for the use of their savings for investments. A rise in the rate of interest would curtail the demand for loan able funds, while a fall in the rate of interest would mean an increase in the demand for investment funds. The level of interest rates thus becomes the main determinant of the level of investment (Koleoso, 2007).

Using Spearman Rank Correlation, Koleoso (2007), concluded that changes in bank deposits (represented by savings) do not depend much on the prevailing interest rates, as the correlation between them is "very weak". He however concluded that there exists a high positive correlation between bank deposits and the growth of the Nigerian economy, as measured by the Gross Domestic Product (GDP) This means that the GDP depends highly on bank deposits. He therefore concluded that a change in bank deposits would bring about a change in the GDP of the Nigerian economy. His study covered 1996-2005.

Model Specification

Data Requirements and Estimation Methods The model for this paper takes cue from Oloyo (2001) to establish the effects of one or more independent variables on one dependent variable. The problem of using this method according to Fagoyinbo (2004:221) is when more than two independent variables are highly correlated. To overcome the normality problem, transformation of the data by logarithm or square root is undertaken. For the multi co linearity, factor analysis of principal components can be employed. The multivariate specification is as follows:

Model Specification

Model 1:

Hypothesis to be tested.

Ho: Bank deposits do not depend on interest rates.

Hi : Bank deposits depend on interest rates.

Total Bank Deposits = f (Interest Rates)

$$\text{Total Bank Deposits} = a + b_1(\text{Sav})\text{IR} + b_2(7\text{Days})\text{IR} + b_3(30 \text{ Days})\text{IR} + b_4(90\text{Days})\text{IR} + b_5(180 \text{ Days})\text{IR} + b_6(360 \text{ Days})\text{IR} + \mu$$

Where:

a = Intercept of the regression on y – axis

b₁, b₂, b₃, b₄, b₅, b₆ = Marginal effects of interest rates on bank deposits

IR (Sav)	= Interest Rate on savings
IR (7 Days)	= Interest Rate on 7 Days
IR (30 Days)	= Interest Rate on 30 Days
IR (90 Days)	= Interest Rate on 90 Days
IR (180 Days)	= Interest Rate on 180 Days
IR (360 Days)	= Interest Rate on 360 Days
μ	= The random error which is normally distributed

Secondary data are used to estimate the above model. The data employed are extracted from different sources and these include the Nigerian Deposit Insurance Corporation (NDIC) Annual Reports and Accounts, NDIC Quarterly Reports and Central Bank of Nigeria (CBN) Annual Report and Accounts of various years.

Model II

Hypothesis to be tested.

Ho: Gross Domestic Products do not depend on Investments and bank deposits.

Hi: Gross Domestic Products depend on Investments and bank deposits.

$GDP = f(\text{Investments and Total bank deposits})$

$GDP = a + b_1(\text{Investments}) + b_2(\text{Total bank deposits}) + \mu$

Where:

GDP = Gross Domestic Products

a = The intercept of regression line on y – axis

b_1, b_2 = Marginal effects on Investments and Total Bank Deposits on GDP

μ = The random error which is normally distributed.

Model III:

Hypothesis to be tested.

Ho: Investments do not depend on prevailing lending rates.

H₁: Investments depend on prevailing lending rates.

Investment = $a + b(L.R) + u$.

Where:

a=The intercept of the regression line on the x-axis.

$b = T$ marginal effect of prevailing lending rates on investments.

LR = (Prevailing) Lending Rates.

$u =$ The random error which is normally distributed.

Here, a simple linear regression is used. This, according to Oloyo (2001) is because only one independent variable is involved and the functional relationship between the dependent (Investments) and the independent (Prevailing Interest Rates) is linear.

Analysis of Results

Model 1:

The tested hypothesis is:

Ho: Bank deposits do not depend on interest rates.

Hi: Bank deposits depend on interest rates.

Total Bank Deposits = f(Interest Rates)

Total Bank Deposits $a + b_1(\text{Sav})IR + b_2(7 \text{ Day})IR + b_3(30 \text{ Day})IR + b_4(90 \text{ Day})IR + b_5(180 \text{ Day})IR + b_6(360 \text{ Day})IR + u$

From SPSS, the model obtained is:

Bank Deposits = $-266.295 - 127.050b_1 - 25.672b_2 - 97.741b_3 + 259.306b_4 + 70.708b_5 - 67.607b_6 + u$

With Standard Error (SE): $(602.775) (34.121) (57.901) (105.369) (133.489) (158.882) (79.838)$

The t-value statistic is given by: 442 -3.724 -443- 928 1.934 .445 -847

The p value p-value in terms of probability is: .670 .006 .669 .381 .088 .668 .422

The Beta of coefficients are: -1.138 -985 1.790 503 -541

The Coefficient of Determination (R^2) = 89.2% with the Degree of Freedom (df) = 8

Interpretations

From the above, it is observed that a unit increase in interest rates of savings, 7 day deposits, 30 day deposits and 360 day deposits will lead to a loss of bank deposits by 127.150, 25.672, 97.741 and 67.609 respectively. A unit increase in the interest rates of 90 day and 180 day will however increase bank deposits by 259.306 and 70.708 respectively. The values of coefficient (b_1 , b_2 , and b_6) represent a negative correlation of the independent variables, giving values of: -1.138 (Savings), -.281 (7 day), -985 (30 day) and -541 (360 day). And a positive correlation of 1.790

(for 90 day) and .503 (for 180 day). The regression's goodness of fit with coefficient of determination (R^2) is about 89 per cent, implying that the variables account for about 89 per cent of total bank deposits. Other factors account for just 11 per cent. The calculated t-values are all negative except for the 90 day interest rates and 360 interest rates. The p-values are also significant especially for b_1 , b_3 , b_4 , and b_5 and this implies that the null hypothesis is rejected showing that interest rates have a significant role to play in the level of savings.

Model II:

The hypothesis to be tested is: do not depend on investments and total bank deposits.

Ho: Gross Domestic Products Hi: Gross Domestic Products depend on investments and total bank deposits.

GDP = f(Investments and Total Bank Deposits).

GDP = $a + b_1$ (Investments) + b_2 (Total Bank Deposits) + u

The regression is given by:

GDP = 745.023 + 3.191 b_1 + 0.703 b_2 + u

The Standard Error is given by: Error (SE) = (241.161) (1.225) (1.306)

t- value p-value = (3.089) (2.605) (0.507)

p-value = .009 023 621

The Beta coefficient = .817 159

Degree of Freedom = 12

The Coefficient of Determination = 94.5%

Interpretations

A unit increase in investments and total bank deposits will increase the GDP by 3,191 and 0.70) respectively. The values of coefficients (b , b_i ,) represent a positive correlation of 0,817 for investments and 0.119 for total bank deposits. The regression has a very strong goodness of fit with coefficient of determination (R) of about 95 per cent, implying that both investments and bank deposits account for 95 per cent of GDP. Other factors account for just 5 per cent. The calculated t- values are positive for the two variables: 2.605 for investments and 0.507 for total bank deposits. The p-value for investment is 0.023, investments alone. Examining the p-value for total bank deposits, the case is otherwise. Thus, the hypothesis is not statistically significant since the p-value (0.621) is greater than 5% significant level.

Model III:

The hypothesis to be tested:

Ho: Investments do not depend on prevailing lending rates.

Ho: Investments depend on prevailing lending rates.

Investments = a + b(Prevailing lending rates) + u

The regression equation is given by:

Investments = 1648.172 - 46.131b + u

Standard Error = (828.058) (35.760)

t-value = (1.990) (-1.290)

p value = 0.068 0.220

Beta = -0.337

Degree of Freedom = 13

The Coefficient of Determination (R^2) is 11.3%

Interpretations

The results show that a unit increase in prevailing interest rates will lead to a loss of 46.131 of investments. The value of coefficient (b) represents a negative correlation of the independent variable, with a value of - 0.337. The regression has a very weak (poor) fit with coefficient of determination (R) of about 11 per cent, implying that prevailing lending rates account for just 11 per cent of investments. Other factors account for 89 per cent. The calculated t-value is negative. Since the p-value (0.220) is greater than 5% significant value (0.05), we refuse to accept the Null hypothesis (Ho) and conclude that the hypothesis is not statistically significant.

SUMMARY AND CONCLUSIONS

The results of the analyzed data give credence to the assertion that bank deposits (savings) depend on interest rates offered on them. Investments and prevailing interest rates, as expected are negatively correlated. Though investments depend on prevailing interest rates, the dependence is rather too low (just 11%). Other factors like good infrastructural facilities, friendly and stable political climate, good government policies etc also influence investment decisions. That the economy responds differently to investments and total bank deposits is obvious. The GDP is affected by other factors like agriculture, industry, building and construction, wholesale and

retail trade as well as services (CBN, 2005:128). These areas and other factors earlier identified should be adequately developed.

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Table 1: Deposits Mobilized, Hanks' Credits to the Economy AND GDP, 1990-2004. Hank Deposits Bank Credits GDP at Current