

Interest Rates in Nigeria: An Analytical Perspective

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Abstract

This paper set out to examine the implications of interest rate for savings and investment in Nigeria. It used data obtained from the Central Bank of Nigeria (CBN). Data were analyzed using Pearson's Correlation Coefficient and regression. Evidence showed interest rate as a poor determinant of savings and investment indicating that bank loans are mostly not used for productive purposes. Therefore, bank loans should be channeled to productive investments if interest is to play its catalytic role in the Nigerian economy.

Keywords: Savings, Investment, Credit, Economic Development, Deregulation.

1. Introduction

Interest rate 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. By either impacting on the cost of capital or influencing the availability of credit, by increasing savings, it is known to determine the level of investment in an economy.

As the positive relationship between investment and economic development is well established, it therefore becomes expedient for any economy that wishes to grow to pay proper attention to changes in interest rate. Nigeria being a country in dire need of development cannot overlook the important role interest rate could play in this direction.

This paper, drawing from the foregoing, aims at examining the impact of interest rate on the Nigeria economy. The objective would be achieved by analytically examining the theorized relationships to see if they hold in Nigeria.

To achieve this objective which this paper has set for itself, the next section examines the concept and theoretical underpinnings of interest rate, the third section describes the method to be adopted in data analysis. In the fourth section data is analyzed using correlation and regression. The paper is concluded in the fifth section.

2. Theoretical Overview

Interest can be defined as the return or yield on equity or opportunity cost of deferring current consumption into the future (Uchendu, 1993:35). This definition clearly shows that interest is a concept which can mean different things depending from the perspective it is viewed. Interest rate can therefore be seen as a nebulous concept, a position affirmed by the availability of different types of this rate. Some of which are; savings rate, discount rate, lending rate and Treasury bill rate.

Apart from this, interest rate can also be categorized as nominal or real. This categorization credited to Irvin Fisher tries to accommodate the moderating influence of inflation on interest rate. Nominal interest rate is the observed rate of interest incorporating monetary effects while real interest rate is arrived at by considering the implications of inflation on nominal interest rate (Uchendu, 1993:35; Essia, 2005; 82).

The importance of interest rate is hinged on its equilibrating influence on supply and demand in the financial sector. Colander (2001:649) and Ojo (1993; 10) confirmed this by saying that the channeling of savings into financial assets and the willingness of individuals to incur financial liabilities is strongly influenced by interest rates on those financial assets and liabilities.

The developmental role of interest rate is possible because of the interlocking linkage existing between the financial and real sectors of economies. It is therefore through this linkage that the effect of interest rate on the financial sector is transmitted to the real sector. For instance, the lending rate which translates into the cost of capital has direct implications for investment. High lending rate discourages investment borrowing and vice versa. Savings rates, on the other hand, when high encourages savings which ultimately translates into increased availability of loanable funds. The snag here is that the high savings rate is also bound to translate into high lending rates with attendant negative consequences on investment (Chizea, 1993:6).

A detailed consideration of relationships between economic variables, which this paper focuses on, reveals that savings is an offshoot of unconsumed disposable income. 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 this interest rate will lead to increased savings and hence a positive relationship. It is this view that must have encouraged the Nigerian authorities to abandon administratively fixed interest rates for market determined ones. In the words of Ahmed (2003), deregulated interest rate is believed to be critical for both economic stabilization and development.

The implication of Ahmed's position above covers the relationship between interest rate and investment. In this case, it has been established that high lending rates discourage borrowing for investment and vice versa (Lawal, 1982:251; Anyanwu and Oaikhenan, 1995:35). Since economists hold that investment plays a fundamental role in capital formation, and hence on economy's growth and developments, it becomes obvious that lending rates through perceived influence on investment plays a developmental role. That is, a decrease in lending rate is theorized to cause investment borrowing to rise which leads to increased capital formation and eventually to economic growth (Onoh, 2007).

The link between savings and investment is no less important as the level of savings in an economy also plays a role in the determination of investment levels. This is why monetary authorities in their pursuit of monetary policies try to influence level of savings and availability of credit by directly, in the case of administratively fixed rates or indirectly during deregulated era, influencing the rate of interest (Ogwuma, 1996:5; Ojo, 1993:288).

To achieve the desired level of interest rate, the Central Bank of Nigeria (CBN) adopts various monetary policy tools, key among which is the Monetary Policy Rate (MPR). This rate, which until 2006 was known as the Minimum Rediscount rate (MRR), is the rate at which the CBN is willing to rediscount first class bills of exchange before maturity (Onoh 2007:117). He further opined that by raising or lowering this rate the CBN is able to influence market cost of funds. If the CBN increases MPR, banks' lending rates are expected to increase with it, showing a positive relationship. In recent past, the need to possess certain class of assets as collateral to assess the CBN's discount window was dispensed with due to global crisis (BusinessDay, 2009).

3. Research Methodology

In the next stage the statistical analysis of the relationship between interest rate and various economic variables is carried out. The essence of this is to review practically if the theorized relationship between interest rate and these variables hold true in the Nigerian case. This goal will be achieved by testing the following hypotheses using the specified models.

Model I

- Hypothesis to be tested

H₀: Savings does not depend on interest rate

H₁: Savings depends on interest rate

Model Specification:

Savings = f(interest on savings)

Savings = $a + b_1SR + e$

Where:

a = Y intercept
 b_1 = Effect of interest on savings
SR = Interest rate on savings
e = random error

Model II

- Hypothesis to be tested

H₀: Investment level does not depend on lending rate

H₁: Investment level depends on lending rate

Model Specification:

Investment = f(lending rate)

Investment = $a + b_1LR + e$

Where:

a = Y intercept
 b_1 = Effect of lending rate on investment
LR = Lending rate
e = Random error

Model III

- Hypothesis to be tested

H₀: Level of Investment does not depend on level of savings

H₁: Investment level depends on level of savings

Model specification:

Investment = f(savings)

Investment = $a + b_1SA + e$

Where:

a = Y intercept
 b_1 = Effect of savings on investment
SA = Savings
e = Random error

Model IV

- Hypothesis to be tested

H₀: Lending rate does not depend on Monetary Policy Rate

H₁: Lending rate depends on Monetary Policy Rate

Model Specification:

PLR = f(MPR)

PLR = $a + b_1MPR + e$

Where:

PLR = Prime Lending Rate

MPR = Monetary Policy Rate

Model V

- Hypothesis to be tested

H₀: Economic growth does not depend on availability of credit, savings and investment

H₁: Economic growth depends on availability of credit, savings and investment

Model specification:

GDP = f(credit, savings, investment)

Investment = $a + b_1Cr + b_2Sa + b_3In + e$

Where:

GDP = Gross Domestic Product

a = Y intercept

$b_1 b_2 b_3$ = Effect of independent variables on GDP

Cr = Credit

Sa = Savings

In = Investment

Model VI

- Hypothesis to be tested

H₀: Economic growth is not a function of interest rate

H₁: Economic growth is a function of interest rate

Model Specification:

GDP = f(savings rate, lending rate, MPR, Treasury bill rate)

GDP = $a + b_1SR + b_2LR + b_3MPR + b_4TBR + e$

Where:

GDP = Gross Domestic Product

a = Y intercept

$b_1 b_2 b_3 b_4$ = Effects of interest rates on GDP

SR = Savings rate

LR = Lending rate

MPR = Monetary Policy Rate

TBR = Treasury Bills Rate

Secondary data are used to estimate the above models. The data used were obtained from CBN Statistical Bulletin, details of which are presented as appendix i-v. Data were analyzed using Pearson's Correlation Coefficient and regression aided by SPSS software.

4. Data Analysis and Interpretation

Regression result I

From SPSS the model obtained:

$$\begin{aligned} \text{Savings} &= f(\text{interest on savings}) \\ &= a + b_1\text{SR} + e \\ &= 114810.1 - 6335.34b_1 + e \\ \text{t value} &= 3.385 \quad (1.716) \\ \text{p value} &= 0.002 \quad 0.95 \\ \text{Beta} &= -0.282 \end{aligned}$$

Degree of

$$\text{freedom} = 34$$

Coefficient of determination (R^2) = 8%

* Tested Hypothesis

H_0 : Savings does not depend on interest rate

H_1 : Savings depends on interest rate

Summary of Result

The result reveals that savings is negatively correlated to interest rate. Though the negative correlation of .282 is weak, it still does not corroborate the theoretical stand that interest on savings is a determinant of savings. The poor coefficient of variation of 8% further confirms that interest rate plays an almost insignificant role in savings determination that is other unspecified factors contribute 92% in this regard.

Regression Result II

$$\begin{aligned} \text{Investment} &= f(\text{lending rate}) \\ &= a + b_1\text{LR} + e \\ &= 22258.6 - 6382.11b_1 + e \\ \text{t value} &= (0.417) \quad 2.018 \\ \text{p value} &= 0.679 \quad 0.052 \\ \text{Beta} &= 0.327 \end{aligned}$$

Degree of

$$\text{freedom} = 34$$

Coefficient of determination (R^2) = 10.7%

* Tested Hypothesis

H_0 : Investment does not depend on lending rate

H_1 : Investment depends on lending rate

Summary of Result

This result also showed a tendency which is runs counter to theoretical stipulations. It shows a weak positive relationship of .327 and a coefficient of determination of 10.7%.

Regression result III

$$\begin{aligned} \text{Investment} &= f(\text{savings}) \\ &= a + b_1\text{SA} + e \\ &= -1676.6 + 1.152b_1 + e \\ \text{t value} &= (0.097) \quad 8.370 \end{aligned}$$

p value = 0.923 0.00
 Beta = 0.82

Degree of
 freedom = 34

Coefficient of determination (R^2) = 67.3%

* Tested Hypothesis

H_0 : Investment level does not depend on savings level

H_1 : Investment level depends on savings level

SPSS Model: Investment = -1676.6 + 1.152 b_1 + e

Summary of Result

The model derived from SPSS shows that a unit change in savings will lead to a 1.152 units change in investment. The correlation result of .821 is positive and significant. This is further confirmed by the coefficient of determination of 67.3% which indicates that savings determines 67.3% changes in investment. It is therefore no surprise that the .923 level of significance which is greater than t of -.097 implies that H_0 should be rejected and H_1 – investment is dependent on savings level accepted.

Regression result IV

PLR = f(MPR)
 = a + b_1 MPR + e
 = -6.83 + 1.349 b_1 + e

t value = (0.009) 2.283

p value = 0.993 0.00

Beta = 0.97

Degree of
 freedom = 34

coefficient of determination (R^2) = 93.9%

* Tested Hypothesis

H_0 : lending rate does not depend on MPR

H_1 : lending rate depends on MPR

SPSS model: PLR = -6.83 + 1.349 b_1 + e

Summary of Result

The result shows a high positive correlation of .969 between primary lending rate and monetary policy rate. A high coefficient of determination (R^2) of 93.7% was also recorded. This shows that MPR is good predictor of prime lending rate (PLR). From the model we can infer that a unit change in MPR will cause a 1.349 units change in PLR. As .973 significance level exceeds the table 't' of -0.009 we reject the null hypothesis and accept the alternative that lending rate depends on MPR.

Regression result V

GDP = f(credit, savings, investment)
 Investment = a + b_1 Cr + b_2 Sa + b_3 ln + e
 = 274731 - 0.235 b_1 + 1.826 b_2 - 0.102 b_3 + e
 t value = 18.571 (1.774) 2.889 (1.024)
 p value = 0.000 0.091 0.009 0.317
 Beta = (1.282) 2.287 (0.186)

Pearson's

Correlation = 0.84 0.87 0.68

Degree of

freedom = 21

Coefficient of determination (R^2) = 79.3%

* Tested Hypothesis

H₀: economic growth does not depend on availability of credit, savings and investment

H₁: economic growth depends on availability of credit, savings and investment

SPSS model: $GDP = 274731.6 - 0.235b_1 + 1.82b_2 - 0.102b_3 + e$

Summary of Result

This shows a high positive correlation of .84, .872 and .677 between GDP and credit, savings and investment respectively. A good fit of 79.3% is portrayed by the coefficient of determination. At 0.05 levels of significance the result shows that credit and investment with significance levels of 0.091 and 0.317 are significant while savings with 0.009 is insignificant.

Regression result VI

GDP = f(savings rate, lending rate, MPR, Treasury bill rate)

GDP = a + b₁SR + b₂LR + b₃MPR + b₄TBR + e
 = 231294.4 - 14389.1b₁ + 19044.0b₂ + 23834.1b₃ - 32263.7b₄ + e

t value = 3.917 (4.456) 2.452 1.541 (1.622)

p value = 0.001 0.00 0.024 0.139 0.053

Beta = (0.72) 1.331 1.047 (1.622)

Pearson's

Correlation = (0.371) 0.413 0.472 0.400

Degree of

freedom = 20

Coefficient of determination (R^2) = 66.3%

* Tested Hypothesis

H₀: economic growth is not a function of interest rate

H₁: economic growth is a function of interest rate

SPSS model: $GDP = 231294.4 - 14389.1b_1 + 19044.03b_2 + 23834.09b_3 - 32263.7b_4 + e$

Summary of Result

Pearson's correlation showed a weak negative relationship between GDP and interest rate on savings and a not too strong positive relationship of .413, .472 and .400 between it and prime lending rate, monetary policy rate respectively. The coefficient of determination showed a good fit of 66.3%.

5. Major Findings and Policy Implications

The inability of interest rates, (savings rate and lending rates) to respectively predict savings and investment was one of the major findings of the study. In the case of savings rate, it suggests that other factors such as lack of confidence in the banking system, low income and preference for cash may be of greater influence. That investment is not lending rate driven is very surprising also, but in an economy where most of the lending is not for productive purposes, this can be understood. As these funds are not used for productive purposes and since their repayments sources are guaranteed (salaries in the case of civil servants) the rate of interest fizzles out into inconsequentiality. This shows that our banks concentrate in short term consumer lending without bothering to finance the productive sector.

Investment and savings are seen to be highly positively correlated just as lending rate and MPR. This implies that policies aimed at encouraging savings will rub off positively on investment. The PLR/MPR relationship confirms that MPR can be effective monetary policy tool as an increase or decrease in it will cause lending rates to increase or decrease and hence produce the desired impact on investment. Since it has been established that interest rate through its equilibrating effect on the financial market, moderates activities including investment in the real sector, the importance role interest rate development cannot therefore be over emphasized. This is why an economy like Nigerian's in dire need of development must conscientiously implement interest rate policy that will encourage investment while not discouraging savings.

The result also shows that credit, savings and investment are strong determinants of economic growth. As the nation works towards attaining vision 2020 goals it is instructive that these variable are boosted.

References

- Ahmed, A. (2003) Trends in Profitability of Banks in Nigeria: Before and During Interest Rate Deregulation a Comparative Analysis *NDIC Quarterly*, 12, September, 59-83.
- Anyanwu, J. C. and Oaikhenan, H. E. (1995) *Modern Macroeconomics: Theory and Applications in Nigeria*. Onitsha: Joanee Educational Publishers Ltd.
- BusinessDay (2009) "Outrage as CBN Lends to some Banks at 11%" Wednesday 18, February.
- CBN (2005) Statistical Bulletin
- Chizea, B. (1993) Interest Rates, Exchange Rates and Inflation. *The Nigerian Banker* Oct-Dec. 6-11.
- Colander D. C (2001) *Economics*. Boston McGraw Hill Irwin.
- Essia, U. (2005) *Macro Economic Theory*. Calabar:Saesprint (Nig) Co.
- Lawal, S. A. (1982) *Economics for Nigeria*, New York: Macmillan Publishing Company.
- Ogwuma, P. A. (1996) The Control of Monetary and Banking System by Central bank of Nigeria *CBN Bullion*, 20(2), April/June, 2-10.
- Ojo, M. O. (1993) Monetary Policy Instruments in Nigeria: Their Changing Nature and Implications *The Nigerian banker*, April-June, 6-8.
- Oke, B. A. (1993) An Overview of the Shift from Direct to Indirect Approach to Monetary and Credit Control in Nigeria *CBN Economic and Financial review* 31(4), 286-320.
- Olusoji, M. O. (2003) Determinants of Private Savings in Nigeria: An Error Correction Approach. *NDIC Quarterly*, 13 September, 85-96.
- Onoh, J. K. (2007) *Dimensions of Nigeria's Monetary Policies – Domestic and External*. Aba:Astra Meridan Publishers.
- Uchendu, O. (1993) Interest rate Policy, Savings and Investment in Nigeria. *CBN Quaterly Review* 31(1), 34-52.

Appendix I

Minimum Rediscount Rate, Prime Lending rate, Treasury Bill Rate, Savings Rate and Deposit rate 1970-2005

YEAR	MRR	PLR	TBR	SR	DR
1970	4.5	7	4	3	3
1971	4.5	7	4	3	4
1972	4.5	7	4	3	4
1973	4.5	7	4	3	4
1974	4.5	7	4	3	4
1975	4.5	6	4.5	4	4
1976	3.5	6	2.5	4	3.25
1977	4	6	3	4	3.25
1978	5	7	4	4	4.25
1979	5	7.5	4	5	5.5
1980	6	7.5	5	6	6.5
1981	6	7.75	5	6	6.5
1982	8	10.25	7	7.5	8
1983	8	10	7	7.5	8
1984	10	12.5	8.5	9.5	10
1985	10	9.25	8.5	9.5	10
1986	10	10.25	8.5	9.5	10
1987	12.75	17.5	11.75	14	15.8
1988	12.75	16.5	11.75	14.5	14.3
1989	18.5	26.8	17.5	16.4	21.2
1990	18.5	25.5	17.5	18.8	23
1991	14.5	20.01	15	14.29	20.1
1992	17.5	29.8	21	16.1	20.5
1993	26	36.09	26.9	16.6	28.02
1994	13.5	21	12.5	13.5	15
1995	13.5	20.18	12.5	12.61	14.27
1996	13.5	19.74	12.25	11.69	13.55
1997	13.5	13.54	12.95	5.49	7.43
1998	14.31	18.29	17	5.33	10.09
1999	18	21.32	12	5.29	14.3
2000	13.5	17.98	12.95	5.49	10.44
2001	14.31	18.29	18.88	5.08	10.09
2002	19	24.4	15.02	4.15	15.89
2003	15.75	20.48	14.21	4.44	11.15
2004	15	19.15	10.83	3.75	11.72
2005	13	17.78		3.32	6.13

Source: CBN Statistical Bulletin 2005

MRR = Minimum Rediscount Rate
 PLR = Prime Lending Rate
 TBR = Treasury Bill Rate
 SR = Savings Rate
 DR = Deposit Rate

Appendix II

Savings, Investments and Credit Statistics 1970-2005

YEAR	SAVINGS	INVESTMENTS	CREDIT
1970	207	533.8	351.4
1971	211.4	324.9	502
1972	255.9	418.5	619.5
1973	357.8	424.4	735.5
1974	686.5	778.3	938.1
1975	1051.1	832	1537.3
1976	1270	1391.1	2122.6
1977	1325	2016.5	3074.7
1978	1526	1573.5	4109.8
1979	2418.3	2628.4	4618.7
1980	3573.7	344.8	6379.2
1981	3816.8	2350.2	8604.8
1982	4517	3406.9	10277
1983	5203.6	5730.4	11100
1984	6030	9237.8	11503.4
1985	3699.9	10875.8	12170.3
1986	4270.2	5223.3	15701.5
1987	5206.7	8712.6	17531.9
1988	7122.7	7565.2	20044.9
1989	9237.8	4606.4	22221.2
1990	13013.5	10067.8	26083.9
1991	19395.3	7453.5	31762.4
1992	26071.1	6767	41810
1993	37054.8	31192	48056
1994	49601.1	40444	92624
1995	62135	22695	141146
1996	68776.9	49751	169242
1997	85264.1	42861.5	230600
1998	101373.5	52993.8	272895.5
1999	128365.8	193412.9	353081.1
2000	154406	285294.4	508302.2
2001	217576.8	192731.8	796164.8
2002	244821.7	435601	954628.8
2003	313204.4	434299	1210033
2004	359471.5	677957.4	1519243
2005	401986.8	88382.1	1899346

Source: CBN Statistical Bulletin 2005

Appendix III

Nigeria's GDP at Constant Basic Prices 1981-2005

YEAR	GDP
1981	251052.3
1982	246726.6
1983	230380.8
1984	227254.7
1985	253013.3
1986	257784.4
1987	255997
1988	275409.6
1989	295090.8
1990	472648.7
1991	328644.5
1992	337228.6
1993	342540.5
1994	345228.5
1995	352646.2
1996	367218.1
1997	377830.8
1998	388468.1
1999	393107.2
2000	412332
2001	431783.2
2002	451785.7
2003	495007.2
2004	528576
2005	562043.7

Source: CBN Statistical Bulletin 2005

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