

2 **ABSTRACT**

3 **Abstract**

4 *This study sought to examine the impact of interest rate on the Nigeria's economy during the pre and post*  
5 *Regulation periods (1986 – 2013).It also investigated the joint influence of Inflation, Investment, Exchange Rate,*  
6 *Money Supply and Monetary Policy Rate individually on the Gross domestic Product which was used a proxy for*  
7 *output as well as the causality between all the factors combined and gross domestic product. Ex post facto method*  
8 *was adopted In order to test the hypothesis, the researcher adopted Augmented Dickey Fuller, ARDL, Bound Test*  
9 *and Error Correction Model. The result showed that no significant relationship exists between Gross Domestic*  
10 *Product and Investment, Exchange Rate and Money Supply while still affirming that a significant relationship exist*  
11 *between Gross Domestic Product, Monetary Policy Rate and inflation. The eye of the authorities should be on*  
12 *Inflation at all times, Prudent management of our Oil earnings, adequate savings (Foreign Reserve) and investments*  
13 *as these will help stabilize the fluctuating exchange rate with its consequent influence on interest rate and economic*  
14 *growth.*

15 **Keywords:** *interest rate management, exchange rate, monetary policy rate, inflation, gross domestic product,*  
16 *Investments, Money Supply*

17  
18 **1. INTRODUCTION**

19 Interest rate facilitates the flow of funds from lenders to borrowers. It is the cost of borrowing, and shows  
20 what a borrower pays to the lender for the use of money. Interest rate aids the flow of credit in the  
21 economy and helps financial entities such as corporate organization, banks, mutual funds and insurance  
22 companies carry out their intermediation role. In other words, the economic activity in any economy, to a  
23 large extent, is influenced by interest rate. Interest rate affects the demand for and allocation of available  
24 loanable funds. It also affects the level of consumption, and the level and pattern of investment. (CBN  
25 2016)

26 Interest rate is important because it can affect the lives of people, the government, business firms,  
27 entrepreneurs, foreign investors, the financial sector, the household and also to a large extent determines  
28 the level of investment and the economic growth in an economy. The frequent changes (upward  
29 especially) in the rate of interest charged by different banks and non-bank financial institutions have  
30 retarded capital formation, investment and even economic growth in Nigeria.

31  
32 That is why Fuller (1990) opined that interest rate is the factor reward or earning of capital. Interest rate is  
33 also seen as the payment for the use of money. Fuller added that “this source of finance will only be  
34 available if other people are willing to forgo current consumption and provide a pool of financial  
35 resources from which loans can be advanced. This supply of fund will only be forthcoming if those  
36 supplying it receive some reward for sacrificing their current consumption...” to sacrifice current  
37 consumption implies a form of savings for investment.  
38

39 Interest rates, like other prices, perform a rationing function by allocating limited supply of credit among  
40 the many competing demands on it. Thus, it is an important instrument for monetary policy. For this  
41 reason, Nigeria has adopted two major interest rates regimes which include the low and fixed interest  
42 rates regime between 1960 and 1986. In these regimes, interest rates were administratively determined.  
43 But in 1987, Nigeria had a dynamic interest rates regime during which partial deregulation of interest  
44 rates started, market forces were allowed to interplay in addition to the management decision of interest  
45 rates. This continued till 2006 when it was fully deregulated. Under these arrangements, efforts were  
46 made in mobilizing savings for the purpose of channeling it into investment and other productive  
47 activities in order to attain high economic growth.

48  
49 The end result is that almost four decades of policy somersault especially at an interest rate and exchange  
50 rate management, the Nigerian economy has not benefited immensely from the processes (Onagowora,  
51 2007).

52 In August 1987, the Central Bank of Nigeria (CBN) liberalized the interest rate regime and adopted the  
53 policy of fixing only its Minimum Rediscount Rate (MRR). This was however modified in 1989, when  
54 the Central Bank of Nigeria (CBN) issued further directives on the required spreads between deposit and  
55 lending rates (Ojodu H; 2012).

56  
57 Partial deregulation was restored in 1992 when financial institutions were required to only maintain a  
58 specified spread between their average cost of funds and maximum lending rates. The removal of the  
59 maximum lending rate ceiling in 1993 by the Central Bank of Nigeria (CBN) saw interest rates rising to  
60 unprecedented levels in sympathy with rising inflation rate which rendered banks' high lending rates  
61 negative in real terms. Interest rates in 1993 were volatile and rose to unprecedented levels.

62 The behavior of interest rates was traceable to a number of factors including: i). The high rate of domestic  
63 inflation arising from the huge fiscal deficit of Federal Government which was financed mainly by  
64 Central Bank; ii). The undue discretion which the deregulation of interest rates conferred on key market  
65 players in pricing their funds as well as the arbitraging activities of market speculators; and iii). The use  
66 of stabilization securities and the system of allocation of foreign exchange both induced the sterilization  
67 of large funds at the CBN. There was major objective to keep the supply of money just within the  
68 required level needed for the target economic growth rate in a particular year. The policy of interest rate  
69 deregulation was retained in 1997, and developments since the beginning of the year show relative  
70 stability in the rates. Indeed, contrary to expectations, interest rates had fallen. Deposit rates on savings  
71 account at commercial banks declined from an average of 10.1 percent in December 1996 to 7.5 percent  
72 in March and further to 5.9 percent at the end of April 1997. Similarly, 3-month deposit rates declined  
73 from 12.3 percent in December 1996 to 7.3 percent in April 1997. During the fiscal year 2000, monetary,

74 and other financial sector policies were also designed to maintain internal and external balance. The  
75 primary objective was to maintain the inflation rate at single digit. In order to achieve this objective, the  
76 monetary program focused on curtailing excess liquidity in the banking system and enhancing the  
77 viability of the external sector as well as the stability of the financial system. Other important objectives  
78 included enhanced growth of the economy and reduction in unemployment. The performance of the  
79 financial sector in 2000 indicated that deposit and lending rates fluctuated downwards due to liquidity  
80 overhang in the banking system and the reduction in MRR from 18.0 to 14.0, cash reserve ratio, from  
81 12.0 to 10.0 percent, and liquidity ratio from 40.0 to 35.0 percent.

82  
83 The Central Bank of Nigeria (CBN) may choose to roll out an improvement in the Minimum Rediscount  
84 Rate (MRR) now Monetary Policy Rate (MPR). A choice by the CBN to change the MPR influences the  
85 business sector loan in various ways. At the point when the Bank makes a declaration on the MPR which  
86 influence the desires of individuals and monetary specialists about the future heading of the economy.  
87 Such choices influence the costs of budgetary resources (like shares) and the conversion scale of the naira  
88 to different monetary forms and in addition the capacity of individuals and financial operators to spare  
89 and burn through cash. Factors such as Inflation, Fiscal Deficit, Exchange rate, Money supply, Risk and  
90 even government's monetary stance/Policy affect interest rates. However, interest rates play a pivotal role  
91 in influencing economic activities in any economy.  
92

93 Additionally, the adjustment in interest rate could create an aberrant impact on the costs of products and  
94 administrations which rival merchandise that are locally delivered or those products and administrations  
95 that utilized imported crude materials. Again, an adjustment in interest rate has impact on the segment of  
96 the general value level of those merchandise that are foreign and this influence every single monetary  
97 operator in the nation. Interest rate level is affected by movement in price level or inflation rate, fiscal  
98 policy stance, and intermediation cost (cost of funds), how deep and developed financial markets are,  
99 level of risks and uncertainty, among other factors.

100 Interest rates are regarded as "high" or "low" relative to some economic fundamentals, namely:

101 The level of inflation rate; The degree of uncertainty and risks economic agents face; and How developed  
102 and deep financial markets are; The structure of the banking system—how competitive it is; The cost of  
103 funds to the banks including deposit rates; The demand for credit by government when it runs deficit and  
104 whether it competes with the private sector.

105  
106 There are conflicting and competing views about what constitutes an appropriate interest rate depending  
107 on whose perspective—savers or lenders/borrowers. Generally, interest rates are prices and must be right

108 and attractive to: Reward depositors and encourage long-term savings as well as reward lenders; Long-  
109 term savings can only occur when inflation is tamed;

### 110 **Statement of the Problem**

111 The high cost of capital is suspected to be one of the factors militating against the growth of the Nigerian  
112 economy; this development according to critics has had negative impacts on the economy. No wonder  
113 successive administrations have intervened in the determination of the level and cost of funds; that is  
114 interest rate. The frequent changes in the rate of interest charged by different banks and non-bank  
115 financial institutions and worse still the private lenders is suspected to have made capital formation,  
116 investment and even economic growth really difficult

117 Critics have alleged that it has no doubt frustrated the efforts of the investors willing to invest in the  
118 economy as well as contributed in reducing the margin of profit expected in business deals.  
119 Inconsistencies in implementing this monetary policy Instrument is assumed to have had its toll; for  
120 instance, there has been this complaint that while the rates paid to customers on savings, Current and  
121 Deposit accounts have been so low, the charges for borrowing i. e. interest on loans have been high.

122 What is unclear, however, is whether there is a strong response in saving as a result of the rising interest  
123 rates or fixed interest rates. There appears to be a consensus among researchers on the relationship  
124 between interest rate and savings.

125 Empirical evidence from developing countries is however at variance with theorized relationship and  
126 when there exists any relationship, they are ambiguous and insignificant. However, the question there still  
127 exist unanswered questions such as, to what extent does interest rate affect savings? What impact does it  
128 have on investment and even economic growth?

129 The not too encouraging performance of the economy especially the private sector spreads through both  
130 the controlled and liberalized regimes. This study is therefore hoped to unravel which of the regimes  
131 contributed more or less to Nigeria's economic growth under the same circumstances.

132 Furthermore, the economy is still and essentially bedeviled by large size and inefficient public sector, low  
133 rates of savings and investment, persistent large budget deficits, and inconsistent macroeconomic  
134 environment (Eze, 2010).

135 All these have hampered the growth of the economy and Nigerians still remain expectant for brighter days  
136 ahead that improvements in the exchange rate and interest rate management could make a difference to  
137 the economic growth efforts (Jelilov, Gylych; Kachallah Ibrahim, Fatima; Onder, Evren, 2016)

### 143 **Objectives of the Study**

144  
145

146 The aim of the study was to know the effect of Interest rate Management on the Nigerian economy 1986 – 2018

147 Other specific objectives were:

- 148
- 149 a) To find out the inter-relationships among the variables interest rates, investment, Money Supply,  
150 Monetary Policy Rate, Exchange Rate and Economic Growth in pre and post regulation periods  
151 in Nigeria
- 152 b) To ascertain how interest rate has affected economic growth in pre and post regulation periods  
153 Nigeria.

#### 154 **Research questions**

- 155 a) What are the inter-relationships between Interest Rates, Investments, Money Supply, Monetary  
156 Policy Rates, Exchange Rates and Economic Development in pre and post Regulation periods in  
157 Nigeria?
- 158 b) To what Extent has Interest Rates affected Economic Development in pre and post regulation  
159 periods in Nigeria?

#### 160 **Statements of Hypotheses**

161 To capture the objectives of the study, the following hypotheses were formulated:

162 **H<sub>01</sub>:** There is no significant relationship between Interest Rate, Investments, Inflation, Money Supply,  
163 Monetary Policy Rate, Exchange Rate and Gross Domestic Product in Nigeria.

164

165 **H<sub>02</sub>:** Interest rate has not affected the Gross Domestic product in Nigeria.

166

167 The rest of the paper is divided into four sections. Section two has literature review, three contains  
168 methodology with four housing the empirical results while five concludes.

169

## 170 **2. REVIEW OF RELATED LITERATURES**

### 171 **Conceptual Framework**

172 Emekekwe (2016) differentiated between the rediscount rate; the rate at which the Central Bank  
173 discounts bills from Commercial Banks stating that the Prime rate is the lowest rate of interest charged by  
174 the nation's leading Banks on business loans to the most important and reliable business borrowers. He  
175 added that Banks determine the rate at which they charge their customers by adding a premium on the  
176 prime rate to adjust it for the borrower's riskiness. Fixed and floating interest rates were differentiated as  
177 meaning that it is fixed when the rate of interest is determined as a set increment above the prime rate and  
178 remains static until maturity while floating interest rate occurs when the increment above the rate is  
179 initially established and the rate of interest is allowed to float or vary above the prime as the prime rate  
180 varies until maturity.

181 Same interest rate can be paid at maturity , in installments or in advance and each method used leads to  
182 different effective costs for the loan, that quiving up maintaining, or reducing the effective cost/N; this is  
183 called the time dimension of the loan. Another consideration he said is on the method of calculation of  
184 interest; whether on the entire principal or on reducing balance.

185  
186 Interest rates play a crucial role in the efficient allocation of resources aimed at facilitating the growth and  
187 development of an economy and as a demand management technique for achieving both internal and  
188 external balance with specific attention for deposit mobilization and credit creation for enhanced  
189 economic development (Ebiringa, 2012).

190  
191 Though many expansionary monetary policies have been implemented, the inflationary pressure increased  
192 and forced the CBN to raise interest rate (CBN, 2013). As a result, the interest rate raised became  
193 controversial; in this study, we will try to figure the effects of interest rate on the economic growth in  
194 Nigeria. The study will examine the impact of interest rate as one of the main variables that affects  
195 economic growth in

196 The Monetary Policy Committee (MPC) of the Central Bank of Nigeria (CBN) on 5th June 2007  
197 reviewed the major macroeconomic development and the implementation of fiscal, monetary and  
198 exchange rate policies in the first five months of 2007, as well as the challenges for the rest of the year.  
199 The MPC noted with satisfaction the macroeconomic performances (CBN; 2009).

200 Anyanwu (1993) stated that interest rate management in Nigeria and its economic impact refers to the  
201 totality of steps and procedures planned and utilized by central bank of Nigeria to decide, maintain or  
202 bolster the level of interest rates in an economy in ways that it will induce the accomplishment of the  
203 satiated macroeconomic aims and objectives.

204 However, the observed facts of exchange rate and interest rate management on macroeconomic variables  
205 that would culminate into economic growth are sluggish and not impressive let alone being sustainable  
206 (Obansa *et al.*, 2010).

207  
208 What Nigeria gains from International trade and domestic investment is not consistent with the reform put  
209 in place expected to attain robust results. Accessing of funds for investment is still a challenge with  
210 lending rate being very high compared to the deposit rate in the economy (Oweoye, 2007).

211  
212 The indirect monetary instruments aimed at the economic growth of Nigeria. According to the Central  
213 Bank of Nigeria's Annual Report and Statement of Accounts for the year ended 31st December, 2007,

214 monetary policy alone did not automatically result in the development. The Nigerian economy appeared  
215 to improve in 2000 as the real GDP growth rate rose to 3.8 per cent compared with 2.8 per cent in 1999  
216 and 1.8 percent in 1998 (Charles, 2010).

217

218 Several factors determine the interest rate on loans, Anyanwaokoro (2008) outlined the following:

219 Characteristics of the loan (Type, amount and maturity of the loan), Supply and Demand for Credits,  
220 Attitude towards future expectations, Degree of Credit risk, Borrowers habit and custom and  
221 Macroeconomic factors( Competition, Interest Rates ceiling, Inflation).

222 Interest rate can be viewed as changing through many dimensions.

223 Okoro (1987) observed that the principal dimensions are time, space quality of loans and majority of  
224 loans. Other factors being marketability, size of loans, redemption terms, legality, tax statues, class of  
225 debtor and class of creditor.

226 Otiti (1988) has this to say “Discount rate influences the interest rate structure in the Nigeria economy  
227 thereby providing a situation where the monetary authorities could control the monetary base thereby  
228 influencing the operations of banks’

229 Hansen (1975) observed that the amount of interest to be paid on a loan depends on;

- 230 a. The character of the borrower
- 231 b. The expenses the lender incurs in making the loan
- 232 c. The prevailing rate of pure interest.

233 Orisakwe (1988) observed that the demand for funds exceeds the supply during boom period. He  
234 attributed the condition to the profit potentials available in the economy which is supposed to be matched  
235 with increase in demand for funds in order to take advantages of the profit potentials. The increase in the  
236 demand for funds consequently lends to an increase in the rate of interest. During a period of depression,  
237 the level of interest rate falls as a result of slump in business activities. Under depression, expected  
238 returns may not be adequate to offset the cost of capital. Inflation is another critical factor that affects  
239 interest rates.

240 Nduka (1998) observed that inflation disease shows many symptoms not the least of which is a trend  
241 towards higher interest rate as lenders demand higher returns, and borrowers more willingly put up to  
242 higher interest charges.

243 Obilor (1988) observed that the nominal interest rate is a straight towards money rate, whereas the real  
244 rate of interest is the nominal rate adjusted for the expected rate of inflation, if the inflationary rate is  
245 expected to exceed the level of the nominal rate of interest during the period of the loan, the real rate to  
246 the lender becomes negative.

### 247 **Interest Rates Deregulation**

248 Interest rate deregulation is a financial term used to refer the circumstance where by the forces of demand  
249 and supply is permitted to decide the estimation of financing costs as opposed to its worth being regulated  
250 specifically by fiscal powers. Interest rate deregulation is seen as a deviation from budgetary restraint. It  
251 has been supported by numerous financial specialists that interest rate deregulation upgrades reserve  
252 funds, support venture and thus improve monetary development.

253 The Financial Liberalization Theory set forth by Mckinnon (1973) and Shaw (1973) proposes that  
254 financial liberalization in developing economies would trigger higher funds, particularly monetary reserve  
255 funds, build credit supply, empower speculation and consequently support financial development. Their  
256 claim is that regulation of interest rate lead to low real interest rate and at times negative which causes  
257 unacceptable growth in the developing countries

258  
259 As indicated by Jhingan (2003), if there is an increment in interest rate, venture is at low level and when  
260 interest rate falls, speculation will rise. Hence, there is urgent need to promote interest rate regime. A  
261 similar view was held by Anyanwaokoro (2008) , who stated that a reduction in interest rate encourages  
262 bank lending and increases the liquidity in the economy; the reverse being the case when interest is  
263 increased.

264 Nwankwo (1989) trusted that interest rate deregulation will prompt more effective distribution of  
265 budgetary allocation assets. His position is in accordance with the contentions of Mckinnon (1973) and  
266 Shaw (1973).

267  
268 Abiodun (1988), then holds that deregulation of interest rate resemble a two-fold edged sword, which will  
269 either empower or deface the economy. He declared that the deregulation of interest rate will prompt an  
270 expansion in interest rate, which will build investment funds. Be that as it may, he opined that high cost  
271 of getting might realize cost-push inflation as borrowers of assets will pass the high cost of acquiring to  
272 the clients by pushing up costs.

273  
274 Ojo (1988) and Ani (1988) are both of the conclusions that interest rate deregulation would damage the  
275 Nigerian economy. In their different papers, they imperfect the deregulation exercise, asserting it would  
276 demoralize investors and consequently financial development, by pushing interest rate high.

277 Ojo and Ani's position are upheld by Soyinbo and Olayiwola (2000) and Akpan (2004) who all pointed  
278 out the low positive effect of deposit rate on financial development after interest rate liberalization in  
279 Nigeria. These opposite feelings about the adequacy of the deregulation exercise in Nigeria raises the  
280 issue of the viability of the deregulation exercise. There is mainly, the requirement for a thorough  
281 assessment of the part of interest rate deregulation in advancing financial development in Nigeria through  
282 funds and venture.

### 283 **Management of Interest Rate in Nigeria: Control Period (Before -1986)**

284 Interest rate management refers to the totality of steps and processes designed and used by the monetary  
285 authorities (the CBN) to determine, sustain or support the level of interest rates in an economy in ways  
286 that engender the achievement of the stated macroeconomic goals of price and exchange rate stability,  
287 rapid and sustainable employment, and generating growth.

288 Interest rate management also entails anticipating the financial markets and developing appropriate policy  
289 measures to impact the markets using known monetary tools.

290 It needs to also ensure that rates do not fall to levels where the liquidity trap ensnares the economy.  
291 (Liquidity trap - the level of interest rate below' which further reductions will not impact on the level of  
292 economic activities/national income).

293 Some of the tools employed by the Apex bank in managing interest rates in Nigeria include: Regular  
294 Open Market Operations, adjustments in the following key ratios; Cash Reserve Ratio, Rediscount ratio,  
295 Liquidity ratio, regular examination of the documents/activities of deposit money banks and the  
296 publishing/monitoring of Prudential guidelines

297  
298 According to Anyinwaokoro (2008), interest rate deregulation began in 1988,; before then, the rates were  
299 fixed by the Central Bank.

300 The two major regimes of interest rate management in Nigeria are the period of Fixed and floating  
301 Interest Rates popularly referred to as period of Control and that of Liberalization. The period of  
302 control/Regulation was characterized as described below:

303 **Use of Administrative Fiat :** This involves direct approach (controls) of determining interest rates. It  
304 entails the administrative fixing of Lending and other bank charges by CBN with Periodic adjustments  
305 based on policy decisions. Funds allocation and Credit expansions are strictly under the control of  
306 monetary authorities. It was practiced during the pre-Structural Adjustment Programme era mainly to  
307 stimulate investment to promote orderly growth of the financial market, reduce inflation and lessen the  
308 burden of domestic debt servicing on government.

309 They added that the techniques had both positive and negative outcomes; it promotes stability and creates  
310 a high level of credibility. Negatively, Capital input is insufficiently used due to inappropriate pricing of  
311 Credit and Deposits. Loan able assets are on short supply since banks want to put their assets in treasury  
312 charges that are loaned underneath their normal expense of assets; capital development is at very low  
313 level.

314 In the words of Soludo (2008), the Fixed Exchange regime was characterized by the following: It was  
315 operated preceding 1986, under it, interest rate were settled at the management level by the CBN and it  
316 was likewise proposed to get socially ideal asset portion, to advance systematic development in the  
317 financial sector, to encourage stream of credit to the favored segments agribusiness, production, and so  
318 on.

### 319 **Deregulation (Free Market) Period (Post - 1986)**

320 Okereke, et al (2009), observed that this involves indirect approach in determining interest rate. Market  
321 forces determine the operations. Regulatory authorities only set the rules and allowed operators to play  
322 according to and within the rules. Monetary Policy Rate, called Minimum Rediscount Rate before  
323 December 2006 which is CBN's nominal anchor of interest rate play significant role in influencing the  
324 cost and availability of credit in the economy.

325 They further added that the determination of interest rates using indirect techniques is characterized by  
326 regular Open Market Operations. It increase the use of money market instruments like CBN Certificate,  
327 National Savings Certificate, adjustment of key Ratios like Cash Reserve Ratio, Liquidity Ratio and so  
328 on. During the liberalize regime, where market powers are at play, low inflation comprise the key target  
329 while interest rate turn into the principle approach instrument leaving costs to conform to guarantee value  
330 dependability.

331 According to Akanye (1986), every year, the CBN would fix ranges within which both the deposit and  
332 lending rates were to be maintained. It was therefore as a result of deregulation that the government  
333 allowed the forces of demand and supply in the money market to determine the rates of interest that will  
334 be charged. The CBN brief N0. 98/04 noted that it was in 1996 interest rate were completely deregulated  
335 giving the banks opportunity to decide the structure of loan costs in discussion with their clients.  
336 Observers of financial market trends were of the view that interest rates rose to unprecedented rates  
337 immediately after deregulation.

338 Ogwuma (1993) alleged that the rapid upward movement in the interest rates was not favourable to  
339 production and growth. In an attempt to economize on a resource that was getting increasingly expensive,

340 many firms refrained from borrowing from banks while the bulk of those who borrowed made losses or  
341 profits that could not support production initiative.

342 Soludo (2008) equally noted that: Following liberalization of interest rates in 1986 with the adoption of  
343 SAP, the level of interest rates has been market-determined, interest rates have risen relative to repressed  
344 regime era, inflation rate moderated significantly (lowest) since then, particularly during 1998-2006,  
345 except for the aberration between 1993- 1998, the period of “guided deregulation”.

346 Real interest rate became generally positive since liberalization. In a liberalized environment, a choice  
347 must be made with regard to the main objective and instrument of monetary policy.

348 Under a liberalized regime, where market forces are at play, low inflation constitutes the *key objective*  
349 while interest rates become the main *policy instrument* leaving prices to adjust to ensure price stability. o

350 Hardly any two customers are charged the same lending rate.

351

352 Regarding the impact of interest rates on Nigeria’s economy after deregulation, CBN (1997) stated that  
353 the performance of the manufacturing sectors and sub-sector was below expectation in 1987. Anticipated  
354 growth in the sub-sector in 1997 was hindered by a number of factors which include high cost of  
355 production, traceable largely to high but relatively stable exchange and lending rates.

## 356 **The Relationships between GDP, Exchange Rate, Money supply and Inflation**

### 357 **Inflation & GDP (Output)**

358 Gross domestic product and inflation are both viewed as imperative in economic variables. It is broadly  
359 understood that there is a relationship between the two. In effect, when government takes decisions on  
360 inflation and GDP, the result frequently cannot be ensured. Investigation of the relationship amongst  
361 Gross Domestic Product and inflation is best started by building up a comprehension of each term  
362 separately. GDP is an acronym for total national output, which is the estimation of a country's  
363 merchandise and administrations amid a predetermined period. This is by and large viewed as a vital  
364 maker of an economy's wellbeing. Inflation is defined as a situation where normal cost levels increases. In  
365 effect, cash has less purchasing power. As an oversimplified case, imagine that a nation's financial unit is  
366 known as a Naira and every Naira buys a measure of rice and a cut of meat. At the point when people go  
367 to the business sector one day, they find that getting a measure of rice and pieces of meat will cost two  
368 naira. In this occasion, inflation has taken place.

369 When costs are pushed up according to belief system, individuals are fighting for a constrained supply of  
370 items. This implies an expansion of GDP, should equal the level of price. Everybody does not concur that  
371 this relationship is total. Gross domestic product and inflation are regularly connected with each other on

372 the grounds that government and apex banks frequently by taking into account the figures and they  
373 endeavor to control them. On the off chance that an economy is not developing or is not developing  
374 sufficiently quickly, a national bank may bring down loan costs to make obtaining more alluring. The  
375 rationale behind this is it will empower spending, which will prompt an ascent in GDP. The disadvantage  
376 of this move is that, as indicated by numerous mainstream views, it will likewise incite expansion.

### 377 **Output (GDP) and Exchange Rates**

378 The relationship between Exchange Rates and Economic Growth is mainly expressed as a percentage. A  
379 portion of theories in exchange rate determinations, for example, the monetary policy is a way to deal  
380 with exchange rates, anticipate that higher development rates in an economy will bring about  
381 appreciation in country's currency. The circumstance outlines the relationship between say percent  
382 change in the Naira –dollar conversion standard and development rates in Nigeria's real Gross Domestic  
383 Product. One important issue on exchange rate is that it is more volatile than GDP. Regarding the normal  
384 relationship between changes in the exchange rate and monetary development, a few periods, for  
385 example, in the mid - 1970s, show valuation for the Naira when development rates are higher and show  
386 deterioration of the Naira when the development rates are lower. These affiliations are steady with the  
387 forecasts of the hypothesis of Monetary Approach to Balance of Payments (or the MBOP).

### 388 **Money supply and Output(GDP)**

389  
390  
391 Supply of money is the measure of cash that is accessible to the economy anytime. Money supply could  
392 be characterized both in restricted and in wide terms. Money supply consists of money available for use  
393 and demand deposit, while a more extensive meaning would incorporate parities in other demand deposit  
394 accounts. But In Nigeria, M1 narrow comprises of the availability of money in circulation and demand  
395 deposit while M2 the broad money represent narrow money in addition with savings and foreign currency  
396 deposit. Money supply can exert a lot of influence on productivity, but consideration has to be given to;  
397 the level of inflation, the Cash Reserve Requirement and the liquidity Ratio.

### 398 399 **GDP and Interest Rate**

400  
401 Real interest rate is nominal rate adjusted to inflation and real GDP is how much goods you can buy  
402 actually (nominal adjusted to inflation). When interest rate decreases it gives incentive to companies to  
403 invest in business leading to increase in investment component which increases gross domestic  
404 product. The general principle is that the gross domestic product growth rate is higher for small  
405 estimations of interest rate and also respectively for higher value of investment. In contrary, small  
406 development rate relates to higher estimations of financing cost and in respect to small estimations of rate

407 of investment. In reality, besides inflation must be viewed as together with other macroeconomic  
408 variables. In such way, we might consider a dynamic model of conditions including changes in inflation.  
409 Further, the model, showing complex flow, could supply answer for assessment regular rate of interest  
410 and other key parameters for macroeconomic choices.

#### 411 **Theoretical Framework**

#### 412 **Theories of Interest rate**

#### 413 **Market Segmentation or Hedging Pressure Theory**

414 The desires Theory accept that on the total, loan specialists and borrowers are aloof between long haul  
415 and transient speculations aside from any normal yield differentials between the sorts of securities.

#### 416 **The Time Preference Theory**

417 The time inclination hypothesis is connected with Irving fisher who characterized enthusiasm as a "record  
418 of the group's inclination for a dollar of present over a dollar of future salary." Time inclination is the  
419 inclination that individuals have for present wage over future pay of an equivalent sum and break even  
420 with assurance.

#### 421 **The Classical Theory or Savings –Investment Theory**

422 The reserve funds –investment hypothesis of premium is otherwise called the traditional hypothesis of  
423 premium. In this hypothesis, financing cost is said to be controlled by the association between the interest  
424 for credits (capital) and the supply of loanable assets.

#### 425 **The Neo-Classical or Loanable Funds Theory of Interest**

426 As a consequence of disappointment with the traditional sparing –investment hypothesis, the loanable  
427 assets hypothesis was produced by Robertson (1938) in his loanable assets hypothesis of financing cost,  
428 Robertson expressed that the rate of premium is controlled by the convergence of the interest timetable  
429 for loanable assets with supply-plan.

#### 430 **The Keynesian Liquidity Preference Theory**

431 According to Keynes (1936) he recognized the hypothetical validity of the loanable capital theory but  
432 pointed out that the extension of the theory to savings-investment equality was fallacy .He argued that it is  
433 not necessarily true that all savings will be directly invested or placed in the bond market, so that the  
434 equilibrium is not necessarily  $I = S$

#### 435 **Modern Theory of Interest**

436 We have seen over that no single hypothesis of loan cost is satisfactory and determinate. A sufficient  
437 hypothesis to be determinate must mull over both the genuine financial elements that impact the loan cost.  
438 Hicks has used the Keynesian apparatuses in a strategy for presentation which demonstrates that  
439 profitability, thrift, liquidity inclination and cash Supply are all vital components in a far reaching and  
440 determinate premium hypothesis. Thus in the modern theory of interest, saving, investment, liquidity  
441 preference and the quantity of money are integrated at various levels of income for a synthesis of the  
442 loanable funds theory with the liquidity preference theory.

### 443 **Theories of Economic Growth**

#### 444 **Classical Theory**

445 The classical theory of economic growth was a combination of economic work done by Adam Smith,  
446 David Ricardo, and Robert Malthus in the eighteenth and nineteenth centuries. The theory states that  
447 every economy has a steady state GDP. Any deviation off of that steady state is temporary and will  
448 eventually return. This is based on the concept that when there is a growth in GDP, population will  
449 increase.

450 The Harrod-Domar growth theory, an off shoot of the classical theory is based on the work by these two  
451 authors. They developed their models independently, but the assumptions and results are, nevertheless,  
452 basically the same.

#### 453 **Neo- Classical Theory of Economic Growth**

454 Two economists, T.W. Swan and Robert Solow, made important contributions to economic growth theory  
455 in developing what is now known as the Solow-Swan growth model. The theory focuses on three factors  
456 that impact economic growth: labor, capital, and technology, or more specifically, technological  
457 advances. The output per worker (growth per unit of labor) increases with the output per capital (growth  
458 per unit of capital) ,but at a decreasing rate.

#### 459 **Empirical Review**

460 The relationship between interest rate management and economic growth has been a subject of discourse  
461 among modern financial researchers. This relationship has fortified a considerable measure of  
462 experimental investigation. For this reason, a well-known study is the MacKinnon-Shaw financial  
463 intermediation hypothesis.  
464

465 According to MacKinnon (1973) and Shaw (1973), using OLS, positive relations exist between saving  
466 and interest rate. Interest rate is an important economic price, this is because its diverse role in the  
467 economy, and it has a fundamental implication for the economy. Interest rate increase savings when cost

468 of capital and availability of credit are influenced if interest rate is administratively determined, it is  
469 known as fixed interest rate and floating if determined by market forces.

470  
471 Ostry and Reinhart (1995) measured the interest rate sensitivity of household saving using the inter-  
472 temporal Elasticity of Substitution (IES) in consumption. The IES measures how easily households can  
473 substitute future consumption for current consumption subject to a resources constraint. They used IES  
474 for household in different income levels (low-income, middle-income, upper-income, high-income) in  
475 developing countries. The result showed that a 1% point rise in the real interest rate should elicit a rise in  
476 saving of only two-tenths of percentage point for the poorest countries in the sample. On the contrary, the  
477 rise in the savings rate because of a comparative change in the genuine loan cost in light of a comparable  
478 change in the genuine financing cost is around 66% of a rate point for the wealthiest nations  
479 contemplated. They upheld the adage that reserve funds rate and its affectability to loan cost changes is a  
480 rising capacity of wage, but instead noticed that its impact will be likely lesser in low-pay nations.

481  
482 Ndukwe (1991) noticed that the bank stores expanded generously amid the period of loan fee variability.  
483 This portrays the deregulation of saving money operation in Nigeria. Using information for the periods  
484 1984 to 1988 and OLS, he observed that reserve funds through bank stores have been exceptionally  
485 receptive to 1988.

486 Kendall (2000) used two Stage Least Squares (2SLS) and different procedures of econometric  
487 investigation in his study. Drawing from the McKinnon-Shaw model, he assessed the theory "an ascent in  
488 the normal real store loan cost prompts an expanded investment funds salary proportion." Using the  
489 proportion of gross domestic to GDP as the subordinate variable and five different variables, he found  
490 that the coefficient of the premium variables is of the right sign and critical, giving backing to the  
491 McKinnon-Shaw speculation.

492  
493 Obamuyi (2009) looked at the relationship between interest rate and fiscal improvement in the regulation  
494 and deregulation period in Nigeria. His discoveries were that there existed a long run relationship between  
495 interest rate and monetary development and that the deregulation of interest rate in Nigeria may not  
496 ideally accomplish its objective, if those different components which contrarily influence interest in the  
497 nation are not handled.

498  
499 Eregha (2010) investigated the relationship between financing cost and interest in Nigeria somewhere  
500 around 1970 and 2002. He discovered that varieties in interest rate played a negative and huge part in  
501 speculation choice in the economy and interest for credit likewise has negative and huge impact on  
502 financing cost varieties in both the short-run and long-run.  
503

504 Akintoye and Olowalaju (2008), in their work titled "Streamlining Macro Economic Speculation choices  
505 lesson from Nigeria" uncovered that low interest have compelled business choices in Nigeria. This  
506 disclosure does not bolster Eregha (2010) whose study demonstrated an opposite relationship between  
507 interest rate and speculation rate in Nigeria.  
508

### 509 3. METHODOLOGY

#### 510 Data and Design

511 The researcher adopted ex-post facto research design. The purpose was to examine interest Rate management and  
512 Nigerian economy between 1986 and 2013. It involves an investigation and analysis of apriori relationship between  
513 Interest Rate management and Economic Growth (GDP).

514 The use of secondary data was adopted to compute and present results in a tabular form. It also enabled the  
515 measurement of the dependent and independent variables. In this work econometric method of data analysis was  
516 adopted. Also since in time series, data are highly trended econometric methods may be of immense value for  
517 predicting the Interest Rate Management and Nigerian Economy between 1986 and 2013.

518 The data required for this study will include annual time series on GDP (This serves as proxy for collective growth  
519 of all sectors of the economy), Monetary Policy Rate, Money Supply, Inflation, Investment and Exchange Rate  
520 between 1986 and 2013. Estimation procedures of unit root test, Johansen co-integration, error correction model and  
521 Granger causality was deployed in this study.

#### 522 Model Specification

523 The model specification in this work will be carried out within a time series data analysis framework. The model  
524 specifies that the Gross domestic product (Proxy) as a function of investment, inflation, money supply, monetary  
525 policy rate and exchange rate

526 Using econometric model, the model can be presented as:

$$527 \text{GDP} = f(\text{INVT}, \text{INFL}, \text{MS}, \text{MPR}, \text{EXR}) \dots\dots\dots (1)$$

528 The variables are defined as follows:

- 529 • GDP – Gross Domestic Product
- 530 • INVT – Investment
- 531 • INFL – Inflation
- 532 • MS - Money Supply
- 533 • MPR - Monetary Policy Rate
- 534 • EXR - Exchange Rate

535 The model can be restated mathematically as:

$$536 \text{GDP} = \alpha_0 + \beta_1 \text{LOG}(\text{INVT})_t + \beta_2 \text{LOG}(\text{INFL})_t + \beta_3 \text{LOG}(\text{MS})_t + \beta_4 \text{LOG}(\text{MPR})_t + \beta_5 \text{LOG}(\text{EXR})_t + \mu \dots\dots\dots(2)$$

537  $B_1, b_2, \dots b_5$  are coefficients of the parameter estimate

538 The apriori expectation is  $b_1, b_3 \& b_5 > 0$  while  $b_2 \& b_4 < 0$

539  $\alpha_0$  = Intercept

540  $\mu$  = Stochastic or error term

#### 541 **Techniques of Data Analysis**

542 The analytic framework of the study follows the Autoregressive Distributed Lag (ARDL) model. The use  
543 of this technique is based on the properties of the estimators, which are efficiency and consistency  
544 unbiasedness. In addition, it tolerates variables with mixed orders of integration or varied stationarity  
545 properties. E-view 10 was used to analyze the data and the empirical evaluation of the model based on the  
546 software package result at 5% level of significance.

547 Relevant joint statistics were employed to decide the goodness of the model. These included the  
548 coefficient of determination ( $R^2$ ) and adjusted  $R^2$ , the F test, and the Durbin-Watson test for  
549 autocorrelation.

550 In order to determine if the time series data is stationary or non-stationary, the widely used Augmented  
551 Dickey – Fuller (ADF) test (Dickey and Fuller (1979) were employed.

552 The Pseudo t-value associated with  $\beta_0$  and  $\delta_0$  are the ADF and PP statistics. The null hypothesis of non-  
553 cointegration is rejected, if the estimated ADF and PP statistics are found to be greater than its critical  
554 value at 1 or 5 or 10 percent level of significance.

555 The second stage of our analyses include the determination of the long run cointegrating relationship and speed of  
556 adjustment of the Gross Domestic Product and the influencing variables. The Bound Test as proposed by Pesaran,  
557 Smith and Shin(2001) is used for the purposes of measuring the cointegrating relationship, the Error correction  
558 representation is used to measure the adjustment of Gross Domestic Product to the speed and dynamics of the  
559 exogenous variables.

560 In carrying out the bound test, as prescribed by Pesaran and Shin (2001) in the ARDL framework, critical values  
561 using lower and the upper bound were chosen. I(1) for the upper band and I(0) for the lower band.

562

#### 563 **Decision Rules for the Bound Tests**

<i>State</i>	<i>Remark</i>
F-stat > upper bound	A cointegrating relationship exists
F-stat < lower and upper bound	No cointegrating relationship exists
F-stat within the lower and upper bound	Results is inconclusive

564

565 Once the existence of cointegration in the specified models has been established, error correction representations  
 566 and long run coefficients are estimated following the form specified in the equations below:

$$\Delta LGDP_t = \pi_p + \sum_{i=1}^k \delta_{ip} \Delta LGDP_{t-i} + \sum_{i=1}^{k1} \tau_{ip} \Delta INVT_{t-i} + \sum_{i=1}^{k2} \theta_{ip} \Delta INF_{t-i} + \sum_{i=1}^{k3} \sigma_{ip} \Delta LMS_{t-i} + \sum_{i=1}^{k4} \delta_{ip} \Delta MPR_{t-i} + \sum_{i=1}^{k4} \delta_{ip} \Delta EXR_{t-i} + \omega_{1p} LGDP_{t-1} + \omega_{2p} INVT_{t-1} + \omega_{3p} LINF_{t-1} + \omega_{4p} LMS_{t-1} + \omega_{5p} MPR_{t-1} + \omega_{6p} EXR_{t-1} + \xi_{1t} \quad eq. 11$$

567 **SECTION IV: DATA PRESENTATION, ANALYSIS & DISCUSSION OF FINDINGS**

568 **Stationarity Properties of the Series**

569 The unit root characteristics of the series are presented in table 1 below:

570 **4.1.2 Analysis of ADF Results**

571 To eliminate possible occurrences of spurious regression results, the Augmented Dickey Fuller test is applied.

572 **Table 1 ADF Statistical Results**

Variables	Critical values at 5%	ADF Stat at Level	ADF Stat at Differenced	Order of integration
GDP	-1.953858	-3.077414		I(0)
INVT	-1.953858	-0.625351	-4.523074	I(1)
INF	-1.953858	-1.558406	-3.442516	I(1)
MS	-1.958088	-0.738395	-5.515162	I(1)
MPR	-1.955020	-0.219443	-5.941690	I(1)
EXR	-1.953858	1.219722	-4.364759	I(1)

573 *Source: Authors' Computation.*

574  
 575 From the ADF result tabulated above, all the variables fail to reject the null hypothesis of non-stationary at levels  
 576 except gross domestic product which proved to be stationary at level; however, at the first differencing, all the  
 577 variables proved to be stationary and as such leads to the rejection of null hypothesis of non-stationary at first  
 578 differencing. This provides a sufficient justification for the adoption of the ARDL because it accommodates  
 579 variables with varied stationarity properties as it is the case in this study.

580

581

582

583 **ARDL ESTIMATES**

584 The results of the baseline ARDL are presented in Table 2 below:

**Table 2: ARDL Estimates**

Dependent Variable: GDPGROWTHRATE  
 Method: ARDL  
 Selected Model: ARDL(1, 2, 2, 3, 0, 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
----------	-------------	------------	-------------	--------

GDPGROWTHRATE(-1)	-0.078853	0.201713	-0.390915	0.7022
INF	-0.362887	0.151193	-2.400149	0.0321
INF(-1)	0.375800	0.148177	2.536159	0.0248
INF(-2)	-0.242742	0.110168	-2.203377	0.0462
INVGD	-0.325178	0.653359	-0.497701	0.6270
INVGD(-1)	0.791380	0.717996	1.102206	0.2904
INVGD(-2)	-1.209726	0.647375	-1.868663	0.0844
MPR	0.575399	0.498764	1.153650	0.2694
MPR(-1)	0.053295	0.454538	0.117250	0.9085
MPR(-2)	-1.603822	0.655345	2.447294	0.0294
MPR(-3)	-0.548278	0.477360	-1.148562	0.2714
MS	-0.048992	0.086610	-0.565661	0.5813
XR	-0.114027	0.078508	-1.452437	0.1701
XR(-1)	0.133407	0.110296	1.209535	0.2480
XR(-2)	-0.123604	0.115236	-1.072615	0.3030
XR(-3)	0.147259	0.083268	1.768495	0.1004
C	-6.747049	15.17643	-0.444574	0.6639
R-squared	0.640467			
F-statistic	2.447374	Durbin-Watson stat	2.124085	
Prob(F-statistic)	0.013460			

585 From the result, it can be seen that there is a goodness of fit as the 64% R-squared suggests.  
586 More so, the F-stat with the associated probability value also shows that the overall model is  
587 statistically significant. The Durbin Watson Stat also shows that the baseline results are void of  
588 autocorrelated residuals.  
589

### 590 **Discussion on the Hypotheses**

591 It is evident from the results that a significant relationship exists between inflation and economic  
592 growth as well as Monetary Policy Rate and Economic Growth. While the relationship between  
593 economic growth and inflation is negatively significant while Economic Growth is also a  
594 negatively significant function of Monetary Policy Rate.

595 A look at the second hypothesis makes us conclude that interest rate proxied by the monetary  
596 policy negatively and significantly affects Economic Growth.

### 599 **Cointegration and Error Correction Model**

600 Table 3 shows the bound test for cointegration for the model. The F-stat is greater than the upper  
601 band as shown hence cointegration is found for the model.

#### *Table 3: Bound Test Results*

*Dependent Variable: D(GDPGROWTHRATE)*

*Selected Model: ARDL(1, 2, 2, 3, 0, 3)*

*F-Bounds Test*

*Null Hypothesis: No levels relationship*

Test Statistic	Value	Signif.	I(0)	I(1)
<i>Asymptotic: n=1000</i>				
F-statistic	5.336453	10%	2.26	3.35
K	5	5%	2.62	3.79
		2.5%	2.96	4.18
		1%	3.41	4.68
<i>Finite Sample: n=30</i>				
Actual Sample Size	30			
		10%	2.578	3.858
		5%	3.125	4.608
		1%	4.537	6.37

602 **Source: Authors' Computation**

### 603 Error Correction Representation

604 Having detected cointegrating relationships in the models, we next present the error correction of  
605 the models. This is aimed at confirming adjustment to shocks and dynamics of the dependent  
606 variables to disequilibrium caused by the explanatory variables. Our results as reported in the  
607 show that the error correction term is rightly signed (negatively significant).

**Table 4: ARDL Error Correction Regression**

Dependent Variable: D(GDPGROWTHRATE)

Selected Model: ARDL(1, 2, 2, 3, 0, 3)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-3.575015	1.219581	-2.931348	0.0117
D(INF)	-0.374172	0.081790	-4.574806	0.0005
D(INF(-1))	0.244375	0.067220	3.635464	0.0030
D(INVGDP(-1))	1.162790	0.448057	2.595180	0.0222
D(MPR(-1))	-1.076749	0.382294	-2.816544	0.0146
D(XR(-2))	-0.145267	0.061139	-2.376010	0.0336
CointEq(-1)*	-0.709513	0.161515	-6.683657	0.0000

**Source: Authors' Computation**

608  
609 The speed of adjustment is about 70%. This indicates that economic growth tends to adjustment  
610 to the shocks and dynamics of the explanatory variables at the rate of 70%. It takes about a year  
611 and a quarter for any deviation from short run equilibrium to be restored in the long run. The  
612 adjustment speed is reasonable and realistic since it is less than 100%.

### 613 5. Conclusion

614 All in all, the study could demonstrate that interest rate management has a negative effect on  
615 economic growth in Nigeria. This is consistent with the generally established relations between

616 interest rate deregulation and these variables, as introduced by the Mckinnon–Shaw money  
617 related freedom theory.

618 From the findings of study, it was observed that there is a significant relationship between  
619 interest rate management and gross domestic product which is in conformity with the economic  
620 expectation.

621 Since economist are of the opinion, that investable funds for economic development can largely  
622 be sourced through the banking system, high monetary policy rate retard the economic growth in  
623 Nigeria; after critical consideration of the effect of inflation.

624 From the discussion of findings, the following recommendations are necessary:

- 625 • Provision of adequate security and other infrastructure in the banking sub-sector will  
626 engender savings culture on the citizenry, this will minimize leakages and naturally  
627 increase liquidity making loan able funds available at an affordable rate.  
628
- 629 • Enforcing accountability especially in the financial sector will even encourage people to  
630 save for longer periods thereby guaranteeing liquidity in the economy at all times.  
631
- 632 • Competition should be encouraged among the providers of loan able funds; this in the  
633 long-run will bring interest rate down.  
634
- 635 • Inflation should be put at a reasonable level that will encourage no negative real interest  
636 rate thereby making credit affordable to investors and as such, boost the output level of  
637 goods and services.  
638
- 639 • Corruption needs to be brought to its knees as well as improve our energy generation and  
640 consumption; this will help a great deal in stabilizing the exchange rate of the naira.
- 641 • CBN should continue with the interest subsidy on agriculture as this is capable of  
642 increasing Foreign Exchange earnings through export of Agricultural products.  
643
- 644 • The Bank will undertake a careful review of the liquidity ratio, Cash Reserve ratio to  
645 enable Deposit Money banks have available more fund to loan out to their customers

646

- 647 • A careful review of the NDIC premium should also be undertaken in a bid to reduce cost  
648 of funds to Deposit money banks

649 The findings of this study has contributed to existing knowledge as it has empirically and  
650 scientifically revealed a strong link between interest rate management and economic growth in  
651 Nigeria. The study contributes to the existing body of knowledge as it helps to fill up all  
652 loopholes arising from other research works. Also, the findings of this study will aid an effective  
653 and efficient financing decision of projects by banks and other financial institutions in Nigeria. It  
654 will guide analysts, consultants, other professionals, leaders and even the entire populace  
655 especially as it relates to the effects of Interest Rates and its effect on Productivity.

656 It is important to equally state here that further research work could be carried out on the effect  
657 of interest rate on the Nigerian Economy using Fiscal Deficit as an additional variable and  
658 testing separately for the pre and post deregulation periods. Furthermore, this further work can  
659 apply other econometric tools to achieve its objectives. To this extent therefore this research  
660 work is suggesting the use of correlation analysis or discriminate analysis. All these will enable  
661 other researchers to evaluate the extent of the impact of interest rate on Productivity in Nigeria.

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UNDER PEER REVIEW