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INTEREST RATE REFORMS, FINANCIAL DEEPENING, AND ECONOMIC DEVELOPMENT IN NIGERIA

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ABSTRACT

Actualizing economic development is the top priority for all the developing and emerging countries of the world. However, financial gap has been identified as the impeding factor limiting the actualization of economic development in most of the developing countries. Therefore, this study investigated the relationship between interest rate reforms, financial deepening, and economic development in Nigeria for the period of 38 years between 1981 and 2018. Secondary data on the variables considered in this study are ratio of credit to the private sector to gross domestic product, the ratio of the money supply to gross domestic product, market capitalization, total national savings ratio of GDP, sectoral allocation to all sectors, prime lending rate, interest rate, inflation rate and they were gathered from Statistical Bulletin of Central Bank of Nigeria, 2018 edition, and World Bank indicators for 38 years between 1981 and 2018. Data were analyzed with the use of descriptive statistics, ADF, Johansen Co-integration, and ECM. The OLS revealed that the relationship among credit to the private sector to GDP, market capitalization, and economic development were positive but the relationship between prime lending rate, inflation rate, total national savings ratio of GDP, and economic development were negative over the period of time. Also, the study's further proved that interest rate reforms do not Granger cause economic development within the period under review. Based on the findings, the study concluded that interest rate reforms and financial deepening significantly influenced economic development in Nigeria. Therefore, the study propose that monetary authorities should make sure that credits and financial instruments are properly managed and directs to the productive sector of the economy in order to fostering economic development objective.

KEYWORDS: Interest rate, Inflation Rate, Financial Deepening and Economic development.

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INTRODUCTION

In Nigeria, Central Bank is the authorized body charged with the responsibility of setting the level of interest rate at which credit will be made available to different sectors of the economy. Meanwhile, interest rate policy in Nigeria has witnessed changes in recent years as a result of reforms that could be traced to a regulated and unregulated era. In 1993, a new policy framework was introduced due to high volatility in the movement of interest rates in the country. In 1994, the government fixed interest rate at 13.5 percent which marked this period as the fixed interest rate regime. However, this regime was accompanied by too many hiccups as inefficient use of capital input and low credit availability which leads to inappropriate pricing of credit and deposit. This equally led to sharp dearth of loan able funds in the economy due to the preference of banks to invest their funds in fixed income rates and risk-free assets rather than lending below their average cost of fund. In 1996, the regime was switched to the flexible interest rate that ignores sectoral allocation and allows market forces to re-determine the interest rate back to equilibrium. Under this procedure, the regulator only sets the rules and allows the operators to play within the rules (Elumelu, 2002). Meanwhile, the changes in interest rate regimes were categorized under the financial sector reforms and development which was set to achieve efficiency in the financial sector and engender financial deepening to fast-track economic development (Ibrahim, 2012; Adeleye, 2018). Admittedly, the process of financial deepening often seeks to proactively strengthen the financial system, prevent financial crises, strengthen the stock market mechanism, and improve credit standards (Terhema, 2016). This connotes that deepening of finances is the process of enhancing the level of credits, improving financial instruments and develop financial market that is sufficient to boost economic growth and development. This helps to mobilize funds as savings from the surplus side of the economy and expands it to important sectors and improves investment purposes.

Despite the frequent changes in the financial structure, the development process in Nigeria is still faced with a mirage of challenges. This ranges from high-income inequality to poor educational standards, poor health conditions while the larger population dwells on low income. Some strand of the literature have attributed the inefficient supply of money, poor performance of the capital market, and lack of credit to private sectors to the slow pace of economic development in Nigeria. For instance, a cursory look at the available data on per capita income in Nigeria revealed that Nigeria has enjoyed a significant increase in GDPPC between 2005 and 2014. Consequently, the GDP Per Capita income starts showing a sharp decline till 2018. Ironically, one of the relevant questions that frequently demands for answer is how economic development is achieved in developed countries and, the factors responsible for it but the same have not been reflected in developing countries like Nigeria. Some previous studies attributed the decline to poor financial deepening, economic crises, and other macroeconomic instability. This economic crisis shakes up the financial sector and puts the real sector under funding pressure which limited their contribution towards a sustainable growth that is a prerequisite for economic development. Furthermore, the rise in the cost of funds such as interest rate and low credits extended to business remains the greatest challenges that adversely affect economic development.

Despite all the efforts and policies implemented such as financial sectors, educational and health sectors reforms, still economic development is far from being actualized in Nigeria. Till this

moment, the debates on the nexus between interest rate reforms, financial deepening, and economic development have received considerable attention in the literatures. Scholars have used different methods of estimation on various data of different countries to explain the nature of the relationship existed between interest rate reform, financial deepening and economic development. However, their results and conclusions differ from one study to another. For instance, Goldsmith, 1969; McKinnon and Shaw 1973; Obamuyi and Demehin, 2012; Odhiambo, 2014; Maiga, 2017, and Moyo and Lerouse, 2018, argued that a positive relationship exists between interest rate reforms, financial deepening, and economic development. However, some strands of literature, Bencivenga & Smith, 1991, Demirguc-Kunt & Detragiache, 1998; Fischer & Chenard, 1997; Jeanneney & Kpodar, 2004; Nzotta and Okereke, 2009; Udoka and Roland, 2012; Ifeanyi and John, 2016; Etale and Ayunku, 2016, argued that exist a negative and inverse relationship between interest rate reforms, financial deepening, and economic development. In addition, the causal directions among these variables remain a subject of interest to researchers. There is an existing argument that the finance-growth causality does not go from finance to growth, rather it goes from economic growth to finance. This means that as the economy improves comprehensively, it calls more robust and effective finance channels (Lanjawi, 2019). This inconclusive debate has spurred more concerns and triggers the question of whether, any relationship does exist among the trio of interest rate reform, financial deepening, and economic development. In the light of the above, this study investigated the relationship between interest rate reforms, financial deepening, and economic development in Nigeria over the extended period of 38 years between 1981 and 2018.

LITERATURE REVIEW

The factors linking interest rate, financial deepening, and economic development has long been documented in the previous literature. However, there are grey areas of disagreement among the study. Theoretically, the pioneer work on finance-growth theory such as McKinnon (1973) and Shaw (1973) hypotheses have explained the assumptions of the finance-growth. They opined that fiscal suppression deters growth of the economy badly. The study further empathized that financial restrictions should be removed and allow market forces to determine the interest rate to solve the problem of financial repressions. The finance-growth theory argued that interest rate determination through market forces creates competitive market equilibrium. It was equally opined that strong and effective capital and money market are compliments to the economic development and take a significant impact in the connection between finance and growth rather than a substitute. Fry, (1997), added that the crucial role of financial intermediation between savers and investors amplify savings and enhance the efficiency of investments.

In addition, the assumption of Schumpeter (1911) is that the financial institutions improve production capacity in the economy and hasten the process of economic development in the country. It was noted that the present of efficient financial system will boost the economic growth rate and achieve economic development in the long-run. The theory further provides supporting argument for the role of financial institution to improve and channeled credit facilities to the firms to acquire technological advancements to production purposes. It is the belief of the theory that proficient distribution of savings as capital to entrepreneurs boosts the economic growth. It is pertinent to review one of the most relevant economic development theories which is the Harrod-

Domar theory. The theory emphasized that savings and investments foster economic development in a given country. It was argued that savings is positively associated with growth but negatively related to the capital-output ratio. (Agarwal, 2017).

1. Empirical Review and Gap

Despite the huge empirical literature on the topic, the debate remains unanimous or inconclusive. The research conducted by Moyo and LeRoux (2018) in SADC countries between 1990 and 2015 using ARDL revealed the impact of interest rate adjustment on economic growth is positive. However, the study fails to establish causal relationship in the model adopted in the study. Also, Luka, Akila, Adzu, and Charles (2015) used OLS to investigate the link between economic growth and financial deepening. The study revealed that financial deepening have a long-run relationship with economic growth. The study by Akinboade & Kinfaek (2014) used OLS to carry the relationship among the financial deepening, Interest rate and economic development in Cameroon. It was revealed in the study that there is a negative connection between financial deepening and economic development within the period under review except GDP with positive connection but all variables contributes significantly to the growth of economy in Nigeria.

The research conducted by Odhiambo (2014) considered granger causality to analyse the connection linking to interest rate, financial deepening and economic growth in Tanzania. The study confirmed that the connection between the three variables is positive and significant in Tanzania. In addition, Hamdia, & Bedri (2013) test the long-run and short-run existence between financial deepening and economic growth in GCC countries. It was revealed in the research that there is a long-run and short-run connection between the factors and short-run causalities between causalities between financial deepening and economic growth.

METHODOLOGY

In this study, the use of ex post facto was employed as research design because of the data nature which is secondary data and was sourced from the Central Bank of Nigeria statistical Bulletin 2019. Secondary data on supply of money to GDP, credit to the private sector to GDP, market capitalization, total national saving to GDP, sectoral allocation of all sectors, interest rate, and the prime lending rate were considered for the analysis while Gross Domestic Product per capita and inflation rate were sourced from world Bank indicators. The sample size covered 38 years between 1981 and 2018.

1. Method of Data Analysis and Estimation Techniques

Descriptive analysis was carried out to show graphs that describe the variables. It also made use of some statistical tools like standard deviation, Jacque bera, skewness, kurtosis, probability, maximum, and minimum was used for the study's analysis. The econometric analysis includes the test of stationarity with the use of Augmented Dickey-Fuller test, and Co-integration test to reveal and investigate the long-run relationship between interest rate reforms, financial deepening, and economic development in Nigeria. The pair wise granger causality was employed to determine the causal direction between interest rate reforms and economic development. Unit root test was

considered as pre-estimated analysis to avoid spurious regression. Regression analysis was accepted to establish the influence and nature of the relationship that existed among those variables employed. Eview 0.9 software was adopted to analyze the collated data.

2. Model Specification

This study relied on the assumptions of Harrod-Domar's theory development and Solow's growth model. The theory of Harrod assumed that for the existence of economic development in a country, there must be savings and investments. The following equation was introduced;

$$g=s/k$$

Where;

g=Economic Development

S=savings ratio

K=capital output ratio or investment ratio.

We adapt the model by Luka, Akila, Charles, Robert (2015), which considered four explanatory variables in their investigation of financial deepening and economic development. In this current investigation, eight explanatory variables were adopted to capture the variables not included in the previous studies. Based on the assumptions above, the study specified the economic development model extensively by expanding the original equation and includes money supply ratio of GDP, credit to private sector ratio of GDP, market capitalization, the total national saving ratio of GDP, sectoral allocation to all sectors, prime lending rate, interest rate, and inflation rate.

$$GDPPC=f(MS/GDP,CPS/GDP,MCAP,TNS,SALC,INTR,PLR,INFL)-----Equ 1$$

In econometric form

$$GDPPC=\beta_0+ \beta_1MS/GDP+\beta_2CPS/GDP+ \beta_3MCAP+ \beta_4TNS/GDP+ \beta_5SALC+\beta_6INTR+\beta_7PLR + \beta_8INFL+ \mu) ---Equ 2$$

Where,

GDPPC= Gross Domestic Product Per Capital, MS/GDP= Money Supply to GDP ,CPS/GDP= Credit to Private Sectors to GDP ,MCAP= Market Capitalization, TNS= Total National Saving to GDP ,SAA= Sectoral Allocation to all Sector ,INTR= Interest Rate ,PLR= Prime Lending Rate INFL= Inflation Rate

β_0 = Coefficient of dependent variables

$\beta_1- \beta_8$ = Coefficient of independent variables

μ =Stochastic Error term

3. Apriori Expectation

Base on the economic theories and fundamental assumptions of previous literature, this study has a

benchmark for the expected results and behaviors of the variables employed. It is expected that money supply to GDP, credit to private sectors to GDP, market capitalization, total national savings to GDP, sectoral allocation to all sectors are expected to be positive while interest rate, prime lending rate, inflation rate are expected to negative.

$$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5 > \beta_6, \beta_7, \beta_8 < 1$$

RESULT, PRESENTATION AND ANALYSIS

Table 1: Descriptive Statistics

The analysis under this sub-sectional is the descriptive statistics of the variables that shows the mean value, median, standard deviation and Jarque-Bera.

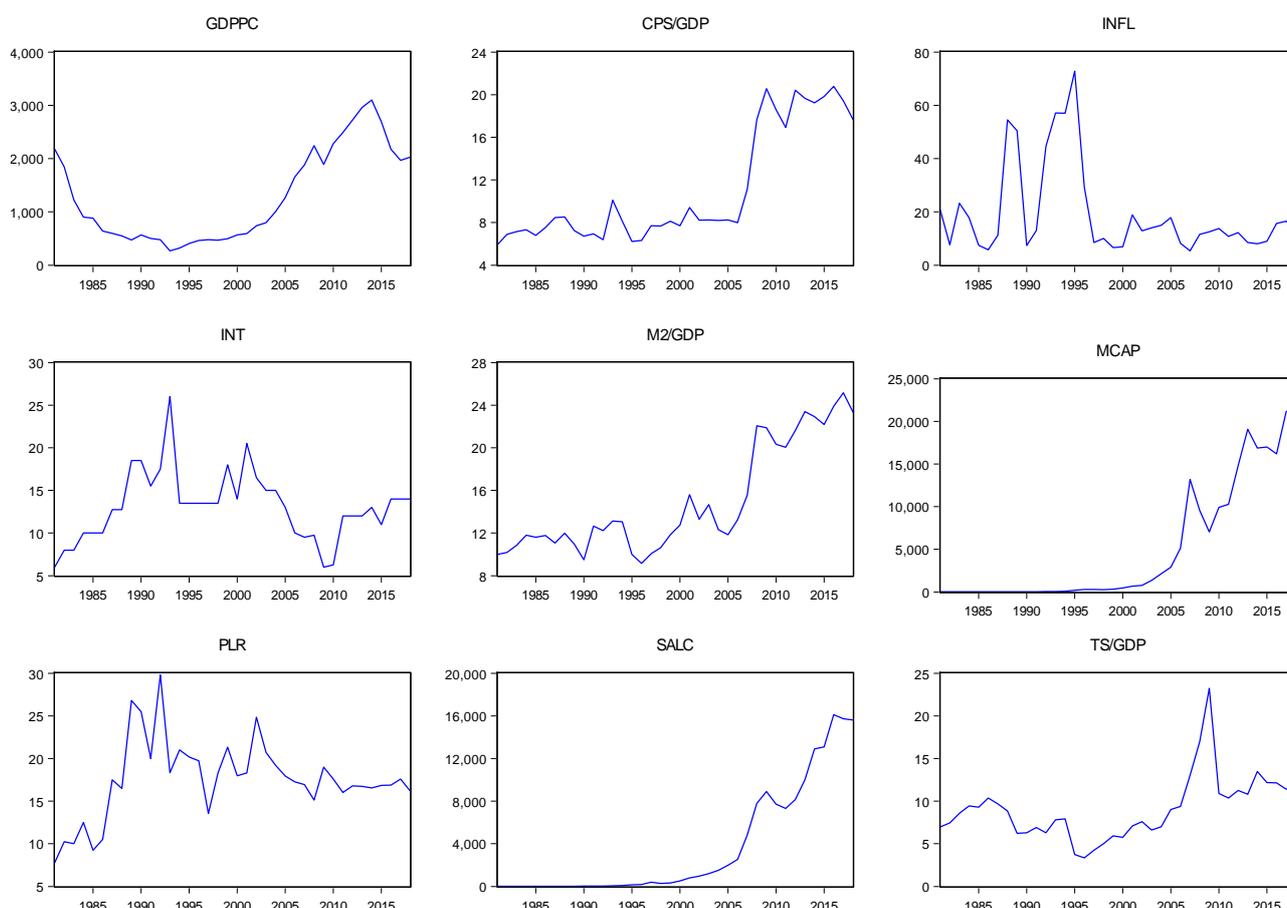
Variables	GDPPC	CPS/GDP	M2/GDP	MCAP	TS GDP	SALC	PLR	INT	INF
Mean	1291.524	11.05262	14.20250	5049.940	9.058315	3653.694	17.56437	13.06579	19.32377
Median	892.3679	8.209316	12.69308	386.1500	8.705203	446.9263	17.54000	13.25000	12.54718
Maximum	3222.694	20.77330	21.30726	21904.04	23.24536	16117.20	29.80000	26.00000	72.83550
Minimum	270.2240	5.917270	9.151674	5.000000	3.335644	8.582900	7.750000	6.000000	5.382224
Std. Dev.	889.7283	5.377672	3.931659	7235.740	3.757264	5265.281	4.630660	4.100381	17.25517
Jarque-Bera	4.016747	6.556586	4.440146	8.162669	36.67065	9.588459	0.978609	5.235529	24.56874
Probability	0.134207	0.0376936	.0108601	0.016885	0.000000	0.008277	0.613053	0.072966	0.000005
Observations	38	38	38	38	38	38	38	38	38

Table 4.1 here shows the summary figures of the data used in the econometric analysis of the study. The analysis shows the statistical distribution of the variables, the statistics adopted include the mean, maximum, minimum, and the analysis of the symmetric distribution of the variables. The mean value for gross domestic product per capita, credit to the private sector to GDP, money supply to GDP, market capitalization, total national savings to GDP, sectoral allocation to sectors, prime lending rate, interest rate, and inflation rate are 1291.5 billion, 11.5percent, 14.2percent, 5049.9billion, 9.05percent, 3653.69billion, 13.07percent and 19.32percent respectively. Furthermore, Skewness measures the degree of asymmetry of the series. Gross domestic product per capita, credit to the private sector to GDP, money supply to GDP, prime lending rate, and interest rate are symmetric around the mean and have a long right tail because they skewed at 0, however, market capitalization, sectoral allocation to all sectors and inflation rate do not symmetry around the mean because they skewed above 1. The kurtosis measures the peakness or flatness of the distribution of the series. Gross domestic product per capita, credit to the private sector to GDP, money supply to GDP, market capitalization were found to be platykurtic because there is a lower value than the sampled mean and the value is less than 3. Also, sectoral allocation to all sectors, total national savings to GDP, prime lending rate, interest rate, and inflation rate were found to be

mesokurtic and leptokurtic because the values are 3 and more than 3. Jarque-Bera measures the difference of the skewness and kurtosis of the series with those from a normal distribution. From the table above, credit to the private sector to GDP, market capitalization, total national savings to GDP, sectoral allocation to all sectors, interest rate, and inflation rate are not normally distributed since their p-value are less than 0.05 level of significance while gross domestic product per capita, money supply to GDP, and prime lending rate are normally distributed since the p-value is more than 0.05 level of significance.

Figure 1: Trend Analysis

The graph below shows the trend of the variables used in the study.



The figure indicates that the prosperity of the country has been a low level slightly from 2 billion in 1981 to 500 billion dollars in 1985 and linger for long before it picked up in 2006 to reach the all-time highest in 2014. The recession of 2015 has a serious implication as the figure dropped significantly in 2015, 2016, and 2018 to the tune of 1.9 billion dollars. Also, the above shows the trend of credit to private sector ratio of GDP, which indicates that the amount of credit available for private sectors in the early 1980s are very low compare to what it was in 2010 where it had the highest percentage. However, there is a huge drop in 2011 though picked up again but fluctuation between 2010 and 2018 could be a major cause of low productivity in the economy. The figure revealed that the effect of the money supply on gross domestic product has not been effective as there exists a very unstable period between 1981 and 2005. Although it attained an

unprecedented high in 2010, and 2015 but starts to decline in 2016, 2017, and 2018 respectively.

Market capitalization is calculated as Current Stock Price multiply by Shares Outstanding. It is used as a proxy for the development of the Nigerian capital market. The figure above is an indication that market capitalization remains very low after 25 years of establishing the Nigeria Stock Exchange market. The capital market experienced an increase in 2005 after a long stagnation from 1995 till 2014. Though there was a slight drop in 2008 but the consequences of the universal financial catastrophe on the capital market were much felt in the economy leading to a quantum fall in market capital as depicted. But the market has been doing well and contributing significantly to the economic growth as it continues to increase from 2015 till 2018.

Figure 4.1 further revealed that the amounts of commercial bank credit available to all sectors in the early minute. Shortly after the regulated period, the amount available to sectors began to increase as the commercial banks can negotiate the viable cost of funds with customers without restriction from the apex banks. Though, the sectoral allocation is fading out as indicated in 2015, 2016, and 2018 with the decline. In addition, the above figure shows that the ratio of total national savings towards gross domestic product has not been stabled over the years. It reached an all-time low in 1995 and reached all-time highest in 2009 and since then the figure has been oscillating around 11 percentages till date. From the figure above, it is indicated that the prime lending rate in Nigeria has been fluctuating over time due to inconsistencies in monetary policies. It rose the highest percentage in 1991 but dropped in 1994 and the situation has not been the same even shortly after the reforms. The rate has been fluctuated between 25percent and 15percent from 2015 to 2018 respectively.

The graph equally shows the level of inflationary rate in the country within the period under review. It was observed inflationary rate rose to an all-time high in 1995 as a result of bad government that affected all the prices of goods and services. The rest upon a critical situation of Udoji era in 1986 but the rate dropped significantly in 1997 and since then it has been fluctuating around two digits. Though, it dropped to a single digit in 2015 but rose to double digits during the 2016 recession and remains the same till 2018. The figure above further indicated the regime of interest rate reforms in Nigeria. It was observed that before 1985 the markets are regulated purposely to favor benchmark interest rates to favor some sectors of the economy such as manufacturing and agricultural sectors. The rate reaches its all-time highest in 1993 before it was fixed at 13.5 percent in 1993 till 1996 when monetary authorities deregulate and switched to a market determination period which is the flexible regime that allows banks to determine their rate. The rate dropped significantly in 2010 to about 4percent and rose again in 2011. The rate is around 13.5 percent, ranging from 2016 to 2018.

Table 2: Unit Root at Level

Method		Statistic	Prob**
ADF- Fisher Chi-square		22.2567	0.2208
ADF- Choi Z-stat		0.58013	0.7191
ADF test results			
Series	Prob.	Obs	
GDPPC	0.6635	37	
CPS-GDP	0.7908	37	
M2	0.7165	37	
MCAP	0.9891	37	
TS-GDP	0.1829	37	
SALC	0.9991	37	
PLR	0.1403	35	
INT	0.0271	37	
INF	0.0568	37	

In the table 2 above, it depicts the stationary of the variables employed in the model. It results show that all the variables are not stationary and unit root problem at level within the period.

Table 4. 3: Unit Root at First Difference

Method		Statistic	Prob
ADF- Fisher Chi-square		183.075	0.0000
ADF- Choi Z-stat		-11.6002	0.0000
Intermediate ADF test results UNTITLED			
Series	Prob.	Obs	
D(GDPPC)	0.0081	36	
D(CPS_GDP)	0.0003	36	
D(M2_GDP)	0.0000	36	
D(MCAP)	0.0000	36	

D(TS_GDP)	0.0000	36		
D(SALC)	0.0038	36		
D(PLR)	0.0000	36		
D(INT)	0.0000	0	8	36
D(INF)	0.0000	0	8	36

In the table 3 above, it shows that the significance level of The Augmented Dickey-Fuller stated that all the variables are free from unit root problem at first difference.

Table 4: Correlation Matrix

Variables	GDPPC	CPS/GDP	M2/GDP	MCAP	TS/GDP	SALC	PLR	INT	INF
GDPPC	1.000000	0.817467	0.757038	0.829597	0.643444	0.796602	-0.34627	-0.51186	-0.43619
CPS/GDP		1.000000	0.955240	0.896641	0.746717	0.931799	-0.07528	-0.22601	-0.2869
M2/GDP			1.000000	0.850430	0.768445	0.890286	-0.02436	-0.19835	-0.28723
MCAP				1.000000	0.591779	0.959816	-0.07171	-0.20258	-0.32242
TS/GDP					1.000000	0.649557	-0.20777	-0.4557	-0.31958
SALC						1.000000	-0.07763	-0.19959	-0.30094
PLR							1.000000	0.620536	0.338874
INT								1.000000	0.362963
INF									1.000000

The table 4 detailed that some variables strongly correlated such MCAP, CPS, and MS, though the result may violate the estimation techniques but there more variables that have lesser correlation.

Table 5: OLS Result

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	1561.414	505.2518	3.090367	0.0044
CPS_GDP	103.4437	51.65834	2.002458	0.0547
M2_GDP	-20.99678	59.44014	-0.353242	0.7265
MCAP	0.084503	0.032545	2.596530	0.0146

TS_GDP	-15.20309	31.76689	-0.478583	0.6358
SALC	-0.068653	0.052797	-1.300311	0.2037
PLR	-16.02342	18.18564	-0.881103	0.3855
INT	-61.05587	22.50785	-2.712647	0.0111
INF	-3.829860	4.216317	-0.908343	0.3712
R squared	0.851337	F-statistic		20.75907
Adjusted R-squared	0.810327	Prob (F-statistic)		0.000000
Durbin – Watson stat	0.979864			

The table 5 above depicts the fittest of the model to explain the connection between interest rate reforms, financial deepening and economic development. It was indicated that R² = 85%, which means that the model is good and rightly fitted for predictions as the level of errors are minimal. The adjusted R² = 81% complement the model fit by explaining that all the variables representing interest rate reforms and financial deepening are relatively good for the model to show the variations while 19% could be explained by the variables not captured in the model. However, the error terms have taken care of it.

The result of t-statistics indicates that credit to private sector ratio of GDP, market capitalization, and interest rate is statistically significant because the p-value is 0.0547, and 0.0011 are less than 0.05 level significance respectively, also, money supply to GDP is statistically insignificant, since the p-value 0.7265, is more than 0.05 level of significance. Total national savings and sectoral allocation to all sectors are statistically insignificant because their p-value of 0.06358 and 0.2037 is greater than 0.05 level of significance. Prime lending rate and inflation rate are statically insignificant because their p-value .0.3855 and 0.3712 are greater than 0.05 level of significance.

Coefficient of Variables

$$\text{GDPpc} = 1561.41 + 103.44437\text{CPS/GDP} - 20.99679\text{MS/GDP} + 0.084507\text{MCAP} - 15.20309\text{TS/GDP} - 0.068653\text{SALC} - 16.02342\text{PLR} - 61.05587\text{INT} - 3.889860\text{INF}$$

This means that every unit increase in the ratio of credit to private sector /GDP and market capitalization will increase GDPpc and MCAP by #103.44 and #0.084 million naira while the ratio supply of money /GDP depicts that every unit increase in MS/GDP, ratio of total savings/GDP, and Sectoral allocation will reduce GDPpc by #20.99, #15.20 and #0.068million, this could be as a result of adverse effect of money supply on price of the commodity in the long-run. In addition, a

unit increases prime lending rate, interest rate and inflation rate will reduce GDPpc by 16.02%, 61% and 3.88% respectively.

Table 6: Diagnostic Test

Diagnostic Test	F-Statistics	Prob.
Normality Test	2.684174	0.261300
Heteroscedacity Test	11.04102	0.2729
Autocorrelation Test	6.833624	0.0328
Corrected autocorrelation	1.201925	0.5483

The table 6 above briefly explains that all the components of diagnostics test to validate the results were desirable for reliability in the policy recommendations. The normality test revealed that variables were normally distributed and the model is free from serial autocorrelation after the dependent variables were lagged by one period into the independent variables in the study. The researcher furthers the analysis by removing the autocorrelation in the model.

Table 7: Johansen Cointegration Test

Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
Number of Cointegration Equation (s)	Eigenvalue	Statistic	Critical Value	Prob**
None *	0.935494	315.5755	197.3709	0.0000
At most 1 *	0.862291	216.8999	159.5297	0.0000
At most 2 *	0.744444	145.5259	125.6154	0.0017
At most 3 *	0.656570	96.41067	95.75366	0.0450

Source: Authors' Compilation from Eview 9

The Table 7, above revealed that there are 5 cointegrating equation in the model which depicts the existence of long-run relationship among the variables considered in the study. This

Table 8 : Normalizing Long-run relationship

Normalized cointegrating coefficients (standard error in parentheses)								
GDPPC	CPS_GDP	M2_GDP	MCAP	TS_GDP	SALC	PLR	INT	INFL
1.000000	-831.1525	413.1867	0.750432	-61.53922	-0.514214	-118.5871	112.9198	16.69757
	(75.1979)	(96.9782)	(0.07251)	(47.7856)	(0.09148)	(30.8918)	(42.1943)	(5.27419)

Source: Author's Compilation Eview 9

The interpretation of normalizing long-run relationship is differs from the conventional interpretation. Note the negative sign is interoperated as positive. The main connection to be identified is the one that occurs between interest rate, credit private sector, money supply, market capitalization, and total national savings to GDP. From the table above credit to private sector to GDP is elastic to GDPpc, meaning that in the long run a small change in CPS/GDP, TS/GDP will cause 831.1525 and 61.53922 increase in GDPpc respectively. Also, a unit change in M2/GDP, MCAP, INTR, and will cause a 413.1867, 0.750432, 112.9198 and 16.69 decrease in GDPpc.

Table 9: Error Correction Model(ECM)

Error Correction:	D(GDPPC)	D(CPS/GDP)	D(M2/GDP)	D(MCAP)	D(TS/GDP)	D(SALC)	D(PLR)	D(INT)	D(INFL)
CointEq1	-0.119820	0.000493	4.20E-05	-0.591041	0.001332	0.351173	-0.000115	-0.000147	-0.000590
Standard error	(0.01893)	(0.00025)	(0.00025)	(0.33116)	(0.00024)	(0.09568)	(0.00052)	(0.00043)	(0.00240)
t-statistics	[-6.33057]	[1.99597]	[0.16781]	[-1.78475]	[5.55821]	[3.67046]	[-0.22235]	[-0.34377]	[-0.24563]

Source: Authors' Compilation from Eview 9

The table 9 shows the error correction model result. The result above demonstrates that the coefficient of ECM is -0.119821, which means that the rate of change of any precedent divergence to short-run will be corrected at 11%

Table 10: System Equation For Ecm.

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)GDPPC(-1)	-0.119820	0.018927	-6.330571	0.0000
C(2)D(GDPPC(-1))	0.552498	0.100866	5.477524	0.0000
C(3)D(CPS_GDP(-1))	-86.31825	24.30333	-3.551705	0.0016
C(4)D(M2_GDP(-1))	12.32373	18.91626	0.651489	0.5207
C(5)D(MCAP(-1))	0.126620	0.017258	7.337038	0.0000
C(6)D(TS_GDP(-1))	0.019079	0.032709	0.583273	0.5649
C(7)D(SALC(-1))	55.48299	11.96791	4.635980	0.0001
C(8)D(PLR(-1))	-13.89140	5.972982	-2.325706	0.0284
C(9)D(INT(-1))	14.37400	6.980442	2.059182	0.0500
C(10)D(INFL(-1))	2.490191	1.515236	1.643434	0.1128
C(11)	-53.01782	28.41768	-1.865663	0.0739

Source: Authors' Compilation from Eview 9

Table 10 above, shows the system equation of ECM. In the long term, money supply to GDP is related to GDPpc positively but it's statistically insignificant. It was revealed in the study that market capitalization connected with GDPpc positively and the effect is statistically significant in the long run. Total national saving to GDP is positively related with GDPpc and statistically in the long run. Total national saving to GDP is positively related with GDPpc and at the 5% it was found to be significant. Sectoral allocation was established to be negatively related with GDPpc and statistically insignificant which is not in consistency with apriori anticipation. Additionally, revealed that prime lending rate is negatively related and was bringing into being to be statistically significance at 5 percent level of significance. Interest rate and inflation were established to be statistically insignificant at a 5percent level of significance but have a positive relationship with GDPpc, however, this is against the apriori expectation.

Table 4.14: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
CPS_GDP does not Granger Cause GDPPC	36	2.48153	0.1001
GDPPC does not Granger Cause CPS_GDP		9.07440	0.0008
M2_GDP does not Granger Cause GDPPC	36	2.13764	0.1350
GDPPC does not Granger Cause M2_GDP		5.06530	0.0125
MCAP does not Granger Cause GDPPC	36	3.74800	0.0348
GDPPC does not Granger Cause MCAP		0.53728	0.5897
SALC does not Granger Cause GDPPC	36	1.28958	0.2897
GDPPC does not Granger Cause SALC		6.30719	0.005
TS_GDP does not Granger Cause GDPPC	36	1.77589	0.1861
GDPPC does not Granger Cause TS_GDP		7.53943	0.0021
PLR does not Granger Cause GDPPC	36	0.41618	0.6632
GDPPC does not Granger Cause PLR		0.81333	0.4526
INT does not Granger Cause GDPPC	36	0.01588	0.9843
GDPPC does not Granger Cause INT		0.86988	0.429
INFL does not Granger Cause GDPPC	36	0.02296	0.9773
GDPPC does not Granger Cause INFL		1.31580	0.2828

Source: Author's Compilation from Eview 9

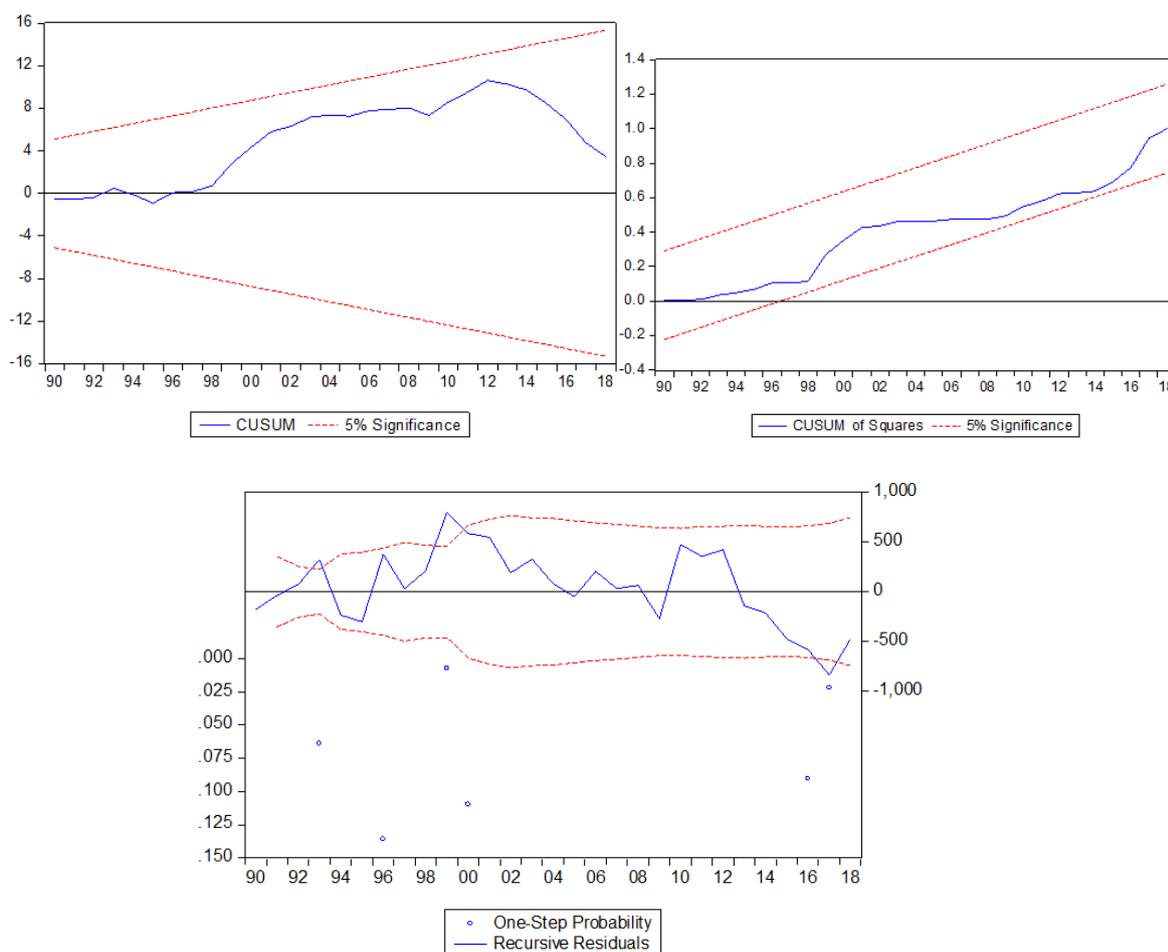
Table 4.13 revealed bi-directional causation between financial deepening (M2/GDP) and (GDPpc) in Nigeria. That is, financial deepening causes GDP growth rate, and real GDP caused financial

deepening, leading to the decline of the null hypothesis of no causation. There is one-directional causation between GDPpc and CPS/GDP, this means that credit to private to GDP does not granger cause GDPpc but causation runs from GPS/GDP. The result of the granger causality test revealed one-way causation between market capitalization (MCAP) and gross domestic product per capita. This implies that the MCAP granger causes GDPpc on one hand and but GDPpc does not granger cause MCAP. An increase in market capitalization is indicative of the level of development in the economy.

There is a uni-causation between gross domestic product per capita (GDPpc) and total national savings to GDP (TS/GDP). This means that GDPpc influences total national savings to GDP but total national savings to GDP does not influence GDPpc. SALC does not granger cause GDPpc, also, the null hypothesis of no causation is accepted while it rejected between GDPpc and SALC. Similarly, the null hypothesis of no causation between GDPpc and INT; GDPpc and PLR and GDPpc and INF are accepted. This means that Gross domestic product per capita does not influence rate, prime lending rate, and inflation rate, and vice versa.

STABILITY TEST

Figure 2



Stability Diagnostics (CUSUM of SQUARES)

The figure 2 above indicates the stability results and the study agreed base on the result that the outcomes of the analysis are stable for the estimations as the blue lines fell in between the two lines.

CONCLUSION AND RECOMMENDATION

Following the various reforms in Nigeria, the number of banks and other financial institutions has experienced synergy in different form to continually providing financial services to the masses. Regrettably, presence of weak and terminally distressed banks especially between 1990s and 2015 have accounted for the low level of financial deepening in Nigeria. This study investigated the relationship between interest rate reforms, financial deepening, and economic development in Nigeria between 1981 and 2018. Based on the OLS result, it is also evident that the ratio of money supply relative to GDP, sectoral allocation to all sectors, total national savings to GDP, prime lending rate, inflation rate, and interest rate negatively related to economic development in Nigerian while market capitalization and credit to private sectors ratio of GDP positively connected to economic development in Nigeria. The study further revealed that there is a long-run relationship among the variables employed for the study which necessitate the introduction of ECM. The ECM shows that the disequilibrium in the model is corrected and adjusted at 11% speed of adjustment. The causality test indicated that financial deepening is a significant factor that granger influences gross domestic product per capita in Nigeria while interest rate, prime lending, and inflation rate are not effectively influenced GDPpc in the country. Based on the analysis, it was revealed that despite the important role play out through financial sectors in the industry; the study concluded that the level of financial deepening in Nigeria has remained relatively low despite the various reforms and institutional changes put in place by the monetary authorities. Based on the findings, the study concluded that there exist a relationship between interest rate reforms, financial deepening and economic development in Nigeria. The study recommends that monetary authorities and all the stakeholders should ensure that private sector credits are channeled to the real sector of the economy to boost productivity, which could increase the level of employment in the country. Government should increase spending on programs such as health centers, education, and other social amenities to harness required knowledge and skills that will enhance economic development. Since there is a positive and significant relationship between interest rate reforms, financial deepening, and economic development, this study further recommends that the financial sector should be partially regulated to increase funding and finances towards productive sectors of the economy.

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