Association between Government Expenditures, Inflation and Interest Rate in Nigeria

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Abstract

The study analysed the relationship between government expenditure, economic growth, inflation and interest rate in Nigeria. The high inflation and interest rate with high government expenditure has been a problem for the Nigerian economy. Secondary data from 1986 to 2022 were collated from the Central Bank of Nigeria Statistical Bulletin and analyzed using multiple regression analysis. The results showed a positive relationship between inflation rate, government expenditure and Gross Domestic Product (GDP). This means that as inflation and government expenditure increased, real gross domestic product (GDP) would increase while there existed an inverse relationship between interest rate and gross domestic product (GDP), which implies that as interest rate increased, GDP would decrease. The test for the model fitness using adjusted R2 indicated the predictor values accounted for 95 per cent variations in the dependent variable (GDP). The study therefore recommended that monetary and fiscal authorities should regulate government expenditure by targeting a contractionary fiscal policy which decreases the amount of government expenditure in a bid to tackle inflationary trends. The government should aim at inflation targeting through a single-digit interest rate which could encourage the private sector to accumulate funds to be used to augment government efforts in regulating stability in the economy. Besides, even though the structural inflation facing the country did not have a very significant effect on the domestic economy concerning government expenditure and its impact on GDP, this should be resolved by dismantling all rigidities and bottlenecks such as the war against insecurities and herdsmen that have been distorting farming and agricultural output in Nigeria of late.

Keywords: Government expenditure, inflation, interest rate, gross domestic products (GDP) and Nigeria.

Introduction

The world economic depression of the 1930s where John Maynard Keynes proffered a solution which gave rise to bigger government participation in economic activities as opposed to small or no government intervention was history to young economists (Keynes (1936). The economic meltdown that started in 2007/2008 in the United States of America and spread across all the nations of the world (Nigeria inclusive) could also be a history to the younger generation. But COVID-19 and the present inflation situation in Nigeria have affirmed its reality on young economists, the younger generation. While COVID-19 seemed to have a cure, inflation in Nigeria seems to have no cure as it has been unleashing its burden on all and sundry, the infants not excluded, dragging high interest rates along with it and reducing the real income available for government expenditure. Thus, Duru (2011) saw inflation as a persistent increase in the general price of goods and services. It then led to the

astronomical rise in the prices of goods and services, thereby leading to a sustained rise in their price inflation. Inflation is the biggest robber of society without guns (Duru, 2011). It has robbed the future generation of cheaper baby food. While Friedman (1959) saw inflation as a tax without government legislation, the interest rate was seen as the cost of capital or the cost of borrowing, so to speak.

However, evidence abounds that the Nigerian economy has moved her public expenditure from a million Naira to a billion Naira and now to a trillion Naira. This could be seen from the budget outlay of the CBN (2022) bulletin. The analysis from Central Bank Nigeria (CBN) Statistical Bulletin 2022 showed that the government's total expenditure was N1356,65 billion in 2010, N1613.84 billion in 2014, N1724.97 billion in 2018, N1722.52 in 2019, N6908.46 in 2021 and N6847.53bn in 2022 CBN 2019 and, 2022). This indicated that government expenditure has been increasing over the years.

**Figure 1.1: Trend of Government Expenditure**
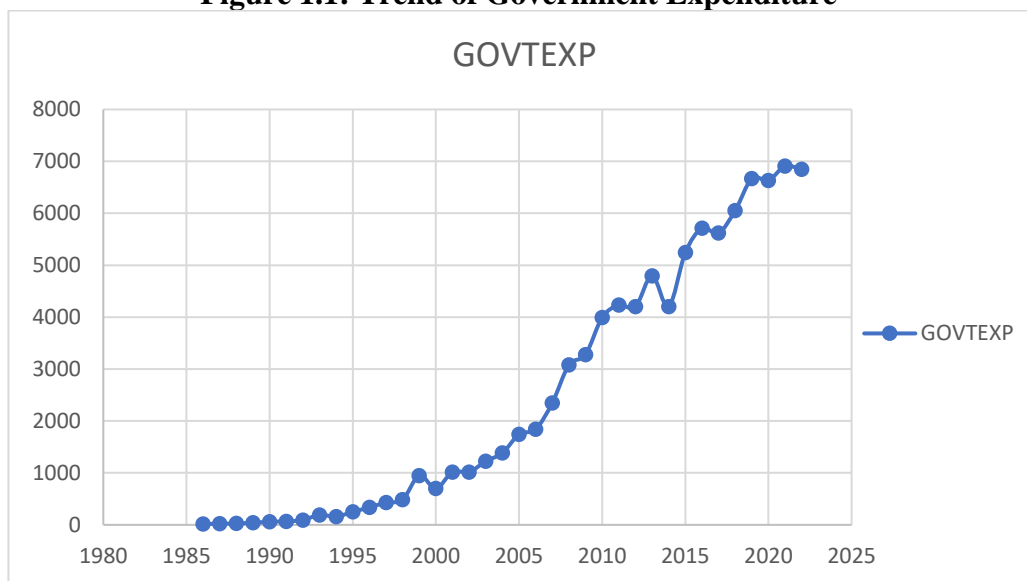
Source: Authors' Computations from CBN Statistical Bulletin (2022)

However, the government is not spending these huge sums of money for spending sake, rather they spend to achieve some macro-economic objectives that would positively impact the lives of its citizens such as price stability and reduction in unemployment, stability in interest rate among other macro-economic objectives. Available statistics show that both interest rate and inflation have been increasing as government expenditure is increasing (CBN, 2022)

While the inflation rate is also increasing and the government has not succeeded in achieving a single-digit inflation target over the period under review, total government expenditures were N3993.25 bn, 5619.44bn, N6053.08, N6670.36, N6908.46. and N6847.53bn

Inflation values were 13.74%, 14.2%, 18.1%, 23.1%, 11.4%, 17%, 12.1%, per cent, while interest rates were 22.51%, 27.27%, 30.69%, 28.16 %, 30.57%, 28.12i%, and 12.33 in 2010, 2016, 2017, 2018, 2019, 2021 and 2022, respectively, within the period under review.

Figure 1.3: Trend of Inflationary Rate and Interest Rate
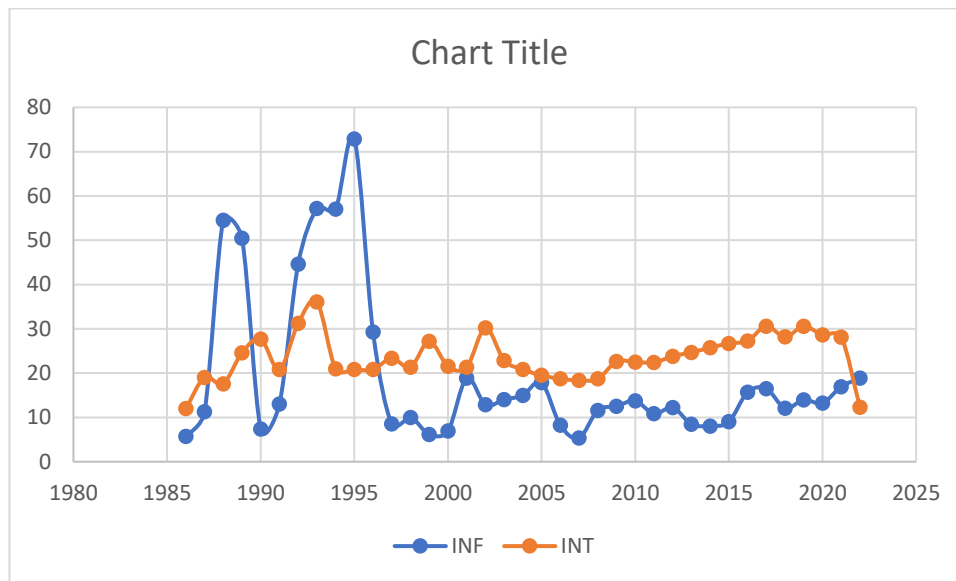
Source: Authors' Computation from Central Bank of Nigeria Statistical Bulletin (2022).

A critical analysis of these trend lines above shows that something was wrong either with how the government expanded the budget or with spending or policy implementation. From an economic point of view, as government expenditure is increasing, the trend line of inflation is supposed to decrease but from the trend line, the reverse was the case. As seen above, the rising government expenditure has not translated to meaningful stability in inflation and interest rates. From the trend line, interest rate and inflation seemed to move in the same direction. This situation has made Nigeria rank among the poorest countries in the world (World Bank Economic Indicator, 2022). In addition, many Nigerians have continued to wallow in abject poverty due to the high inflation rate while more than 50% live on less than US$2 per day with a low disposable income (World Bank Economic Indicator, 2022; Uremadu, 2006). Coupled with this, is the dilapidated infrastructure especially roads and power supply which has led to the collapse of many industries, increasing cost of production, low-profit margins and anti-social vices such as economic, social and technological underdeveloped and poverty. All these problems have combined to raise some doubts about the effectiveness of government expenditure as a tool for boosting the domestic economy.

The main objectives of the study are:
i. To ascertain the impact government expenditure on the growth of the domestic economy;
ii. To examine if there is a significant relationship between government expenditure and the inflationary rate in Nigeria; and
iii. To verify if there is a significant relationship between government expenditure and interest rate in Nigeria.

The following hypotheses were formulated to guide the study:
H_{01}: There is no significant relationship between government expenditure and gross domestic product in Nigeria.
H_{02}: There is no significant relationship between government expenditure and inflationary rate in Nigeria.
H_{03}: There is no significant relationship between government expenditure and interest rate in Nigeria.
Following this introduction, the next section presents the literature review via conceptual, theoretical and empirical reviews. Section 3 looks at the research methodology, which includes the research design, model specification, data collection, variables used and data analysis approach. Section 4

contains data presentation, results and discussion of findings. The last part delves into the conclusion, implications and policy relevance.

2.1 Conceptual Review of Literature
2.1.1 The Concept of Economic Growth and Government Expenditure

Economic growth has been defined as the process of a sustained rise in material output so that the physiological or material needs of man can be continually met as these needs arise. It is a process in which investments that improve the quality of existing physical and human resources, or of specific resources through invention, innovation, technological progress and managerial capacity have been and continue to be primary factors, (Nwosu, 2000).

Human development requires sustained improvement (economic growth) in the material conditions of living to fulfil physiological needs, the role of accumulation in the process of augmentation of productive factors through educational, scientific and technological processes and expansion of productive capacity and medium, and high-income employment become important (Udoms, & Atakpa, 2021). The expansion of productive capacity and high-income employment take us to the issue of the condition index which comprises unemployment and inflation. This is the reason that any work on economic growth and development that does not emphasize investment, employment and inflation directly or indirectly, remains an incomplete work. Government expenditures comprised of all expenses made by the government both recurrent and capital expenditures of both the federal, state and local government. Because of the small role of private investment/expenditure in helping to bring the needed human development in developing a country, government expenditure becomes a critical factor and there is no development model in a developing country that will not bring in government expenditure in its framework (Duru, 2024; Duru, 2011)

However, Musgrave et al. (1999) observed that governments are involved in providing social infrastructure, and other investments. The investment is seen to be important in increasing productivity and speeding up economic growth and human development.

2.1.2 The Concept of Inflation

Inflation is a persistent increase in the general price of goods and services over some time. It then means that not a few goods and services but that for the majority of goods and services, there is a sustained rise in their prices. Inflation can be caused by demand-pull inflation which is caused when aggregate demand is greater than the aggregate supply of goods and services, and cost-push inflation as a result of an increase in the cost of production.

Interest rate, on the other hand, is seen as the cost of capital or cost of borrowing. It is the rental payment for the use of credit by borrowers and the return for parting with liquidity by lenders. According to Duru et al. (2015), everything about monetary policy lies in its ability to influence the interest rate and investment pattern and its multiplier effect on the economy. Duru el tal. (2015) observed the following as factors determining the rate of interest: the investment demand, the level of saving, the demand for money, the quantity of money in circulation, inflationary expectation, accumulation of capital, technical knowledge, duration of repayment, the price of an income-producing asset, change in federal government deficit, the influence of central bank on monetary authorities among other variables.

Conceptually, the present study would be pursued with a view that with proper inflation targeting moderate interest rate adjustments on a downward trajectory and adequate government spending on capital expenditures, all would combine to lead to the growth of the national economy (Blanchard, 2009, Asekunowo,2016, and Jaumotte and Morsey, 2012). Hence, the study is carried out to ascertain or confirm this conceptual framework understanding as to its truth or falsehood as articulated for the envisaged perspective in view, right from the onset of the study.

2.2 Theoretical Review
i.   Musgrave Theory of Public Expenditure Growth
This theory was propounded by Musgrave. He was of the view that at low levels of per capita income, demand for public services tends to be very low, this is so that such income would be devoted to satisfying the primary needs and that when per capita income starts to rise above these levels of low income, the demand for services supplied by the public sector such as health, education and transport would start to rise, thereby forcing the government to increase expenditure on them. He observed that at the high levels of per capita income, typical of developed economics, the rate of public sector growth tends to fall as the more basic wants are then satisfied (Nnamocha, 2001).

ii.   The Wagner's Law/Theory of Increasing State Activities
Wagner's law is a principle named after the German economist Adolph Wagner (1835-1917). Wagner advanced his law of rising public expenditures by analysing trends in the growth of public expenditure and the size of the public sector. According to Nnamocha (2001), Wagner's law expressed the view that public expenditure increased faster than the national output. Wagner's theory thus emphasized the increasing state activities that exert that government expenditure increases faster than national output. Wagner's law postulates that:
(a) The extension of the functions of the state leads to an increase in public expenditure on administration and regulation of the economy;
(b) The development of modern industrial society would give rise to increasing political pressure for social progress and call for increased allowances for social consideration in the conduct of industry.
(c) The rise in public expenditure will be more than proportional increase in the national income (income elastic wants) and would thus result in a relative expanse regarding public expenditures as an exogenous factor which could be utilized as a policy instrument to promote economic growth (Nobi, 1979). From the Keynesian thought, public expenditure can contribute positively to economic growth. Hence, an increase in government consumption is likely to lead to an increase in employment, profitability and investment through multiplier effects on aggregate demand. As a result, government expenditure augments the aggregate demand, which provokes an increased output depending on expenditure multipliers.

2.3. The Keynesian Approach to Demand-Pull Inflation
The Keynesian approach to demand-pull inflation is based on the argument that the multiplier is relatively stable, and changes in income could be predicted from changes in investment (Keynes, 1936). Therefore, as long as there are unemployed resources in the economy, an increase in investment expenditure would lead to an increase in employment, income and output. So once full employment is reached and bottlenecks appear, further increases in expenditure would lead to excess demand and increases in prices. Because inflation is a creature of excess demand, there is no serious price level distortion until full employment is reached.

2.3.1 Cost-Push Theory of Inflation
Cost-push theory of inflation occurs where the costs of factor services or inputs into the production process rise independently of the level of demand for the goods or services in question (Nobi, 1936). Cost-push inflation is caused by wage increases enforced by unions and profit increases by employers. The basic cause of cost-push inflation is the rise in money wages more rapidly than the productivity of labour. An increase in the price of domestically produced or imported raw materials may also lead to cost-push inflation. Since raw materials are used as inputs by the manufacturers of finished goods, they enter into the cost of production. Thus, a continuous rise in the price of raw materials tends to set off a cost-push-wage spiral.

   Cost-push inflation is also caused by profit-push inflation. Oligopolies and monopolist firms raise the prices of their products to offset the rise in labour and production costs to earn higher

profits. This increases the rate of inflation in an economy. The labour unions on their part demand increased wages and salaries without ensuring a corresponding increase in productivity. The employers on their part, pass on this increase in cost to customers by raising prices of their products depending on the elasticity of their products.

2.3.2 Structuralist Theory of Inflation

The structural theory of inflation has been put forward to explain the unique cause of inflation in developing countries, especially in Africa and Latin America. The structural theory of inflation states that inflation in developing countries is caused by obstacles in production or distribution systems such as food shortage, input imbalance, foreign exchange, insecurity, infrastructure bottlenecks, and social and political constraints (Duru 2011).

It has been argued by the proponents of the Structuralist theory of inflation that the economies of the developing countries of Latin America and India (Nigeria inclusive) are structurally underdeveloped as well as highly fragmented due to the existence of market imperfections and structural rigidities of various types. The result of this structural imbalance and rigidities is that whereas, in some sectors of these developing countries, we find a shortage of supply relative to demand, in others, underutilization of resources and excess capacity exists due to lack of demand.

2.3.3 Theories of Interest Rates

The interest rate is the price of a loan. It represents the amount that borrowers pay for loans and the amount that lenders receive on their savings. Because a high interest rate makes borrowing more expensive, the quantity of loanable funds demanded falls as the interest rate rises. Similarly, because a high interest rate makes saving more attractive, the quantity of loanable funds supplied rises as the interest rate rises. This theory is according to, Thomson (2004). In other words, the demand curve for loanable funds slopes downward, and the supply curve for loanable funds slopes upward.

1. The Classical Theory of Interest. According to the classical theory, the rate of interest is determined by the supply of capital. The supply of capital is governed by time preference and the demand for capital by the expected productivity of capital. Both time preference and productivity of capita depend upon waiting, saving or thrift (Jhingan, 1999).

2. The Loanable Funds Theory of Interest. The neo-classical or loanable funds theory explains the determination of interest in terms of the demand and supply of loanable funds or credit. According to this theory, the rate of interest is the price of credit which is determined by the demand and supply of loanable funds (Jhingan, 1999).

3. Keynes's Liquidity Preference Theory of Interest: Keynes (1936) defines the rate of interest as the reward not hoarding but the reward for parting with liquidity for a specified period. It is not the price which brings into equilibrium the demand for resources to invest with the readiness to abstain from consumption. It is the price which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash. In other words, the rate of interest, in the Keynesian sense, is determined by the demand for and the supply of money.

4. Modern Theory of Interest: We have seen above that no single theory of interest rate is adequate and determinate. An adequate theory to be determinate must take into consideration both the real and monetary factors that influence the interest rate. Hicks (1974) has utilized the Keynesian tools in a method of presentation which shows that productivity, thrift, liquidity preference and money supply are all necessary elements in a comprehensive and determinate interest theory. According to Hansen(1970), "An equilibrium condition is reached when the desired volume of cash balances equals the quantity of money; when the marginal efficiency of capital is equal to the rate of interest; and when the volume of investment is equal to the rate equal to the normal or desired volume of saving" These factors are inter-related, thus, in the modern theory of interest, saving, investment, liquidity preference and quantity of money are integrated at various levels of income for a synthesis

of the loanable funds theory with liquidity preference theory (Jhingan, 1999).

2.3.4 Empirical Review of Literature

Villella &Juan-Jacobo (2022) evaluated the relationship between public expenditure for education and human capital on economic growth in Honduras from 1990 to 2020, using the instrumental variables (IV) method, which incorporated the components of public spending on education and human capital, in addition to a set of control variables. The time series were extracted from the World Bank online databases. The results showed that there was no correlation between public expenditure for education and economic growth. The results were suggestive that human capital was not contributing to economic growth, confirming that human capital accumulation was not fully developed.

Oke et al. (2022), established the nexus between economic growth, government expenditure, and debt in Nigeria. They used data on gross domestic product, total government recurrent expenditure, total government capital expenditures, and total public debt from 1981 to 2020 with VAR pairwise Granger causality analysis. The finding of their VAR test showed a substantial positive link between government capital and recurrent spending and public debt in the Nigerian economy. The Wald test result demonstrated that there was a unidirectional causal relationship between state debt in Nigeria and both capital and recurrent expenditures.

Onwuka (2022), analyzed budget deficit, inflation and economic growth in Nigeria. The taxonomy established by Wagner and Keynes on the effect of government expenditure on economic growth has continued to generate a series of empirical studies but so far, they observed that no consensus had been achieved on the exact nexus between deficit financing and economic growth and when interacting with inflation variable. They contributed to this debate by using the disaggregated Vector Autoregression (VAR) approach to investigate the impact of deficit financing on economic growth with inflation as an interaction variable. Their analysis found, amongst others, that overall deficit financing had a positive and significant impact on economic growth when financed through external sources but had a deleterious effect when financed through domestic sources.

Toriola (2022) examined the relationship between monetary inflation and fiscal spending in Nigeria using time series data from 1981 to 2016. They employed the ordinary Least Squares (LS) technique in their estimation. The findings indicated that government capital spending exerted a significant negative effect on monetary inflation in Nigeria and that money supply exerted a significant positive effect on monetary inflation in Nigeria. However, government recurrent spending exerted no effect on monetary inflation in Nigeria.

Umeh et al. (2022) examined the impact of government expenditure on economic growth in Nigeria from 1981 to 2019. The data used included real GDP proxy for economic growth, government capital expenditure, government recurrent expenditure, government education expenditure, government agriculture expenditure, government health expenditure and government expenditure. The methods of data analysis were the Error Correction Model and Granger Causality Test. The following were the major findings of the study: government expenditure had a 24 per cent positive and insignificant impact on economic growth in Nigeria. They concluded that a per cent increase in government capital expenditure resulted in an 8 per cent insignificant increase in economic growth in Nigeria. The result also found that interest rate has not been favourable to GDP and as a result, the productive sector was discouraged from deficit spending which had affected output growth. The growth in fiscal spending implied that government fiscal spending had not reached a level that it could stimulate the growth of the economy and that a reduction in interest rate could augment government efforts to spur economic growth.

Toriola (2022) examined the relationship between monetary inflation and fiscal spending in Nigeria using a time series technique and made inflation function of government recurrent expenditure, government capital expenditure and interest rate. The findings of the research indicated that government capital spending exerted a significant negative effect on monetary inflation in Nigeria, and

money supply exerted a significant positive effect on monetary inflation in Nigeria. However, government recurrent spending exerted no effect on monetary inflation in Nigeria. The result suggested that inflation did not grow with the growth in fiscal spending a result which implied that government fiscal spending had not reached a level that it could stimulate inflation and that, inflation was indeed a monetary phenomenon in the country.

Chinedu et al. (2018) ascertained the impact of the sectorial spread of government expenditure on the inflation rate in Nigeria from 1980 and concluded that there was a positive impact of the sectorial spread of government expenditure on the inflation rate in Nigeria. Three variables on sectorial Government expenditure among five sectorial Government expenditure variables had a long-run relationship with real GDP. That study's conclusion confirmed Wagner's law that increases in economic growth were achieved as a result of increases in Government expenditure. The study confirmed that government expenditure on agriculture and defense had a statistically significant effect on economic performance in Nigeria, while government expenditure on transportation and communication, health and education were not statistically significant.

3.0   Research Methodology
3.1   Sources of Data
The study has been focused on the relationship between government expenditures, domestic inflation, interest rate and economic growth of Nigeria within the period 1986-2022 studied. The data for the study were collect from secondary sources through the Central Bank of Nigeria statistical bulletin (various issues), World Bank data, Knoema.com. statistic.

3.2   Model Specification
The model for the present study is based on Wagner's theory of increasing State activities which asserts that government expenditure increases faster than national output and the structural theory of inflation that inflation in developing countries is caused by obstacles in production and or distribution systems such as food shortage, input imbalance, foreign exchange, infrastructure bottlenecks, social and political constraints. Thus, the model tried to modify the Cobb-Douglas production function as the economy's overall production function within the context of an endogenous model thus, $Yt = f (Kt, g1t, g2t)$

Modifying Okonkwo, Ojima, Echeta, Duru, Akamike and Charles's 2023 model and putting in a functional relationship form, we have:

Gross domestic product is a function of government expenditure;

The inflation rate is a function of government expenditure.

Introducing other explanatory variables based on these underlying theories, which the study anchored on, that is, the theoretical frameworks of Wagner, Keynes and Structuralist.

RGDP is a function of (Government Expenditure, Inflation and interest rate)

Putting the model in simultaneous equation form, it is transformed thus:

$GDP = b_{40} + b_{41}GEX + b_{42}IFRD + b_{43}INT + b_{44}UMP + b_{45}INF + U_3$ „ eqn1

Where:

GEX   = Government Expenditure in year t
INT   = interest rate, , in year t
INF   = inflation in year t;
GDP   = Gross Domestic Product
U_t = error term
t   = time t
$\beta_1 - \beta_5$ = Parameters to be estimated or slope
β_0 $_=$ Intercept.

However, the study carried preliminary of all the variables, to know the dynamic interrelationship between the variables in the system.

3.3 Definitions and Classification of Relevant Variables in the Model

GDP = **Gross Domestic Product**: This is the sum of output a country produces on the domestic soil, that is, the market value of all the goods and services produced by Nigerians and foreigners in a given year, usually one year.

INT = **Interest Rate**: This is the cost of capital because for production to take place, the fund has to rise and for the fund to rise, there is a cost attached to it, and for SMEs to be in business, they must cover the average weighted costs of capital which is proxied by the interest rate in this model. The interest rate used here should be the interest rate on borrowing.

GEP = **Government expenditure**: This is the total expense made by the government, both capital and recurrent.

3.4 Apriori Expectations

This involves examining whether the signs and the magnitude of the estimated parameters as imposed by economic theory are satisfied. The *apriori* expectation of the explanatory variables of the above model with respect to the dependent variable is given by their respective parameters for the model and equations are as follows:

Equ 3: GDP = b_{40}+ b_{41}GEX +b_{43}INT + b_{45}INF +U_3 „ eqn1

Here, the coefficient of b41 is expected positive because an increase in expenditure in government capital expenditure is expected to boost output which is the gross domestic product, while the signs of B43, B45 are supposed to be negative as inflation and interest rate increase, they will have a negative output of that nation.

4.0 Data Presentation, Analysis, Interpretation, Results and Discussion
4.1 Data Presentation

Table 4.1: Table of Gross Domestic Product, Inflation Rate, Interest Rate, Unemployment Rate Government Expenditure (1986-2022)

Year	Gross Domestic Product ₦ billion	Inflation Rate, %	Interest Rate, %	Government Expenditure ₦ billion
1986	202.44	5.72	12.00	16.22
1987	249.44	11.29	19.00	22.02
1988	320.33	54.51	17.60	27.75
1989	419.2	50.47	24.60	41.03
1990	499.68	7.36	27.70	60.27
1991	596.04	13.01	20.80	66.58
1992	909.8	44.59	31.20	92.8
1993	1,259.07	57.17	36.09	191.23
1994	1,762.81	57.03	21.00	160.89
1995	2,895.20	72.84	20.79	248.77
1996	3,779.13	29.27	20.86	337.42

1997	4,111.64	8.53	23.32	428.22
1998	4,588.99	10	21.34	487.11
1999	5,307.36	6.18	27.19	947.69
2000	6,897.48	6.93	21.55	701.05
2001	8,134.14	18.87	21.34	1,018.00
2002	11,332.25	12.88	30.19	1,018.18
2003	13,301.56	14.03	22.88	1,225.99
2004	17,321.30	15	20.82	1,384.00
2005	22,269.98	17.86	19.49	1,743.20
2006	28,662.47	8.23	18.70	1,842.59
2007	32,995.38	5.39	18.36	2,348.59
2008	39,157.88	11.58	18.70	3,078.25
2009	44,285.56	12.54	22.62	3,280.77
2010	54,612.26	13.74	22.51	3,993.25
2011	62,980.40	10.83	22.42	4,233.06
2012	71,713.94	12.22	23.79	4,199.99
2013	80,092.56	8.5	24.69	4,797.45
2014	89,043.62	8.05	25.74	4,200.70
2015	94,144.96	9.01	26.71	5,241.62
2016	102,575.42	15.7	27.29	5,711.46
2017	114,899.25	16.5	30.60	5,619.44
2018	129,086.91	12.1	28.16	6,053.08
2019	145,639.14	13.96	30.57	6,670.35
2020	154,252.32	13.25	28.64	6,633.11
2021	176,075.50	16.95	28.12	6,908.46
2022	170,617.16	18.84	12.33	6,847.53

Source: Compiled by the authors from CBN statistical Bulletin (2022)

Table 4.1 reflects the time series of the various variables: Gross domestic product, inflation rate, unemployment rate, and government expenditure in ₦billion (1986-2022)

The data on government expenditure showed a steady increase from ₦16.22billion in 1986 to ₦ 22.02 billion in 1987, then increased to 27.75 and 41.03 in 1988 and 1989, respectively. Government expenditure increased again to N1225.99, N1384 and N71743.2 in 2003, 2004 and 2005, respectively. It increased to N4233.06 in the year 2011 but decreased to N4199.99 in 2012. It moved to N4797.45 in 2013 but declined again to N42900.70 in 2014, then moved to its peak in 2021 recording ₦6908.46 billion. While gross domestic product was N202.44 in 1986, it increased steadily to N909.8 in 1992, then increased to N1259.2 in 1993, increased again to N 2895.2 in 1994 and continued to increase to N13301.56 in 2003 and also increased to N17321.3 in 2004. It moved to N39157.88 in 2008, increased slightly to N44285.56 in 2009 and increased slightly to N62980.4 in 2011 and in 2012, then increased to N80092.56, N89043.62, N94144.96 in 2013,2014 and 2015 respectively, while in 2018 its value rose to N 129,086.91 and continued to rise over the years to N176,075.50 in 2021 and came down slightly to N170617.16 in 2022.

The interest rate was 10.3% in 1986, it increased to 26.8% in 1989, increased to 29.8% in 1992 but decreased to 21% in 1994, remained stable up to 2001 and then increased to 30.19% in 2002,

decreased to 20.82% in 2004 but remained stable up to 2018, 28.16 and 36.57 in 2019, then to 28.84% in 2020. Its values were 28.12% and 12.33% in the years 2021, and 2022 respectively.

The discomfort index proxied by a combination of inflation and unemployment; the inflation component was 5.7% in 1946 and increased to 50.47 in 1989 (though with a slight drop from its 1988 figure of 24.47%); immediately after the introduction of the structural adjustment program(SAP), it is decreased to 7.36% in 1990, increased to 44.56% in 1992, skyrocketed to all-time high to 72.84% in 1995 and decreased more than half of its original size 17.86 in the year 2015; decreased steadily to 9.01% in 2015, then increased again to 15.7% in 2016 and continued in its increasing form to 13.96%, 16.95% and 18.84% in 2019, 2021 and 2022, respectively.

These data were subjected to unit root tests, this was followed by tests for long-term relationships among these variables using the Johansen co-integration tests to the tests for causality using Granger Causality tests.

4.2 Interpretation and Analysis of Data

Dependent Variable: GDP
Method: Least Squares
Date: 04/28/24   Time: 20:14
Sample: 1986 2022
Included observations: 37

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12449.02	9971.188	-1.248500	0.2206
INF	247.8739	133.4765	1.857061	0.0722
INT	-118.8496	432.0391	-0.275090	0.7850
GEX	22.66341	0.967388	23.42743	0.0000

R-squared	0.951954	Mean dependent var	45864.66
Adjusted R-squared	0.947587	S.D. dependent var	55198.19
S.E. of regression	12637.07	Akaike info criterion	21.82846
Sum squared resid	5.27E+09	Schwarz criterion	22.00262
Log likelihood	-399.8265	Hannan-Quinn criter.	21.88986
F-statistic	217.9488	Durbin-Watson stat	0.481227
Prob(F-statistic)	0.000000		

Source: Compiled by the authors (2022) using *Significant at 1% level of significant
** significant at 10% level of significance.
E-View version 10
Adjusted R-square =0.9519
F-statistic = 217.9488
$T_{tab} = t_{0.025}, 33 = 1.96$
$F_{tab} = F_{0.05}, 3, 33 = 2.84$

The regression equation is
$GDP = b_0 + b_1 INF + b_2 INT + b_3 GEX + U$
$GDP = -12449.02 + 247.8739 INF - 118.8496 INT + 22.66341 GEX$

The result showed that there was a positive relationship between inflation rate, government expenditure and gross domestic product. This meant that as inflation and government expenditure increased, real gross domestic product would increase, while there existed an inverse relationship between interest rate and gross domestic product which implied that as interest rate increased, GDP would decrease. The sign of GEX is in line with *apriori* expectation because increases in GEX all things being equal would cause an increase in investment which increases GDP.

Test for goodness of fit using Adjusted R-Square

Adjusted R-square = 0.95

The result showed that the independent variables included in the model accounted for 95% of variations in the dependent variable. The unexplained variation is taken care of by the error term represented in the model by the error term (e_t)

Test for the Individual significance using t test

Government capital Expenditure (GEX)

H_0: There is no significant relationship between GEX and GDP

H_A: There is a significant relationship between GEX and GDP

t_{cal} = 23.42743

t_{tab} = 1.96

Decision Rule

Since t calculated is greater than t tabulated, we accept the null hypothesis and reject the alternative hypothesis and conclude that GEX does significantly affect GDP.

Inflation rate (INF)

HO_2: Inflation rate does not impact significantly on GDP

HA_2: Inflation rate impacts significantly on GDP

t_{cal} = 1.857061

t_{tab} = 1.96

Decision Rule

Since $t_{cal} < t_{tab}$, we accept the null hypothesis and reject the alternative hypothesis and conclude that Inflation rate does not impact significantly on GDP

Interest Rate (INT)

HO_3: Interest Rate does not impact significantly on GDP

HA_3: Interest Rate impacts significantly on RGDP

t_{cal} = -0.275090

t_{tab} = 1.96

Decision Rule

Since $t_{cal} < t_{tab}$, we accept the null hypothesis and reject the alternative and conclude that interest rate does not impact significantly on GDP

Test for Joint Significant using Analysis of Variance (ANOVA)

H0: there is no significant relationship between GEX, INF, INT and GDP

HA: At least one of the variables of GEX, INF, INT affect GDP

F-cal. = 217.9488

F tab 0.05,3,33. = 2.84

Decision Rule

Since F calculated is greater than F calculated, we reject the null hypothesis and accept the alternative hypothesis and conclude that GEX, INF, INT jointly affect GDP

Discussion of Findings

The study investigated the relationship between government expenditure, inflation and interest rate in Nigeria. The results showed that there was a positive relationship between inflation rate, government expenditure and gross domestic product. This meant that as inflation and government expenditure increased, the real gross domestic product would increasd, while there existed an inverse relationship between interest rate and gross domestic product which implied that as interest rate increased, GDP would decrease. The sign of GEX was in line with *apriori* expectation because increases in GEX, all things being equal, would cause an increase in investment which increased the GDP. This also agreed with the work of Chinedu et al. (2018), while Toriola et al. (2022) concluded that government recurrent spending exerted no effect on interest rates in Nigeria. The result of this present study suggested that interest rates had not been favourable to GDP and as a result, the productive sector was discouraged from deficit spending which affected output growth. The growth in fiscal spending implied that government fiscal spending had not reached a level that could stimulate the growth of the economy and that a reduction in interest rate could augment government efforts to spur economic growth.

5.0   Summary of Findings, Conclusions and Policy Recommendations
5.1   Summary of Findings

The following have been established from the findings of this study:

1. The government expenditure had a positive and significant effect on economic growth. It then means that if government expenditure is increased in the country, it would raise the gross domestic product (GDP) of Nigeria.
2. The domestic inflation rate had a positive and significant effect on the economic growth of Nigeria. It meant that inflationary pressure never negatively distorted the growth of the national economy.
3. Interest rates had a negative and insignificant effect on GDP growth, meaning that a rise in interest rates has never disturbed the growth of the domestic economy due to the enormous investment opportunities that abound in the country.

5.2 Conclusions

The study analysed the relationship between government expenditure, economic growth, inflation and interest rate in Nigeria. The inter-relationship among these variables was confirmed in the Granger causality analysis. The result showed that there was a positive relationship between inflation rate, government expenditure and gross domestic product. This meant that as inflation and government expenditure increased, real gross domestic product would increase, while there existed an inverse relationship between interest rate and gross domestic product which implied that as interest rate increases, GDP would decrease.

Therefore, it is concluded that government expenditure in Nigeria has been on an increasing trajectory, but this has not correspondingly led to an increased output in the economy, rather it has fueled inflation and crowded out private investments.

The study also found similar joint effects of GDP growth, inflation, and interest rates on government expenditure in Nigeria. The overall conclusion from the study is that government expenditure is not responsive to changes in the inflation rate and interest rate in Nigeria. There is therefore the need to study the movements of these macro-economic variables to set the economy on a positive path to sustainable growth in the future.

5.3   Recommendations

In line with the analyses, findings of research and the conclusions drawn, the study makes the following recommendations:

ii) The causal relationship among the variables meant that there was an inter-relationship between government expenditure, inflation and interest rate. Thus, the government should effectively coordinate expenditure to the productive sector by encouraging investment in long-term infrastructural development that would help to reduce the cost of production in Nigeria.

iii) The government should aim at inflation targeting that aims at a single-digit interest rate which would encourage the private sector to accumulate funds and augment government efforts in regulating stability in the economy.

iv) The significant effect of government expenditure on the economy of Nigeria should be sustained by ensuring that expenditures are channeled towards productive sectors of the economy. Actual expenditure should match real expenditure by way of ensuring accountability in the public accounts management system.

v) The monetary and fiscal authorities should regulate government expenditure by targeting a contractionary fiscal policy which would decrease the amount of expenditure to tackle inflationary trends.

5.4   Contribution to Knowledge

This includes the following:
1. Government Capital Expenditure has contributed to the growth of the Nigerian economy.
2. That rise in interest rate did not affect the growth of the Nigerian economy because investment opportunities abound in the country.
3. Domestic inflationary pressures had not negatively affected the growth of the Nigerian economy. The plausible reason for this positive moderate significant showing of inflation rate on Nigerian economy was due to abundant investment opportunities and large markets for products and services in the country. The markets are yet to be fully exploited.

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