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Public Expenditure and Inflation Rates in Nigeria (1990-2022)

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ABSTRACT

This study examines the impact of public expenditure on the inflation rate in Nigeria from 1990 to 2022. The paper utilised aggregate annual time series data of the Nigerian economy. The data were analysed using unit root test, bound co-integration test and short-run error correction model test methods. The test for stationarity using Augmented Dickey-Fuller (ADF) showed that all the variables were stationary after first differencing, ie integrated of order (i). The Pesaran bound Co-integration employed to test for long-run equilibrium relationships among the variables indicates no association between PCS, PRS, MS, EXHR and INF. The short-run (parsimonious ECM) result reveals that public capital spending, public recurrent spending, money supply and exchange rate have a positive relationship with inflation in Nigeria. From the results, public expenditure affects the inflation rate in Nigeria in the short run. Based on these findings, the paper recommends, amongst others, that the government should reduce public expenditure variables in the short run to control inflationary pressures in the Nigerian Economy. Also, the government should increase public expenditure variables in the long run to boost productive areas and enhance growth and development in the Nigerian Economy.

Keywords: Inflation rate, capital spending, recurrent spending, exchange rate and money supply.

INTRODUCTION

Public expenditure is the expenses or costs that the government usually incurs to maintain itself as an institution, the economy and the society (Nwamuo, 2019). According to Chinwoke (2014), public expenditure is structured into two major categories, which make for easy accounting and efficient fiscal management. The two categories of public expenditure are recurrent and capital expenditure. Recurrent expenditures are expenditures that occur regularly throughout the year. They are made regularly if the functions of government will be maintained.

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They include regular salaries of all employees, money spent on the running of essential services or regular maintenance of infrastructural facilities and money spent on administration. Capital expenditures are all the expenditures on capital projects such as buildings, construction of roads, bridges and all permanent structures and assets. These usually involve large sum of money and form the basis of the physical development of a nation.

Public expenditure is used by government to stabilize the economy when there is imbalance resulting from economic problems such as inflation, recession, stagnation. According to Ezirim, Mudghalu, Elike (2010), the relationship between public expenditure and domestic price level has been theorized by Keynesian economists who believed in using fiscal policy to solve most economic problems such as inflation, stagnation and recession.

In Nigeria, the rate of inflation has increased continuously over the years. For instance, the inflation rate increased from 6.9% in 1982 to 23% in 1991. It also increased from 11.9% in 1998 to 13.9% in 2009 and increased further to 15.6% in 2021(C.B.N, 2022).

Evidence from records also showed that government expenditures also increased continuously within the given period. For instance, capital expenditure increased from ₦6.42 billion in 1982 to ₦28.34 billion in 1991, while recurrent expenditure increased from ₦5.51 billion in 1982 to ₦38.24 billion in 1991. The record also showed that capital expenditure increased from ₦309.02 billion in 1998 to ₦115.8 billion in 2009 and increased further to ₦2522.50 billion in 2021, while recurrent expenditure increased from ₦178.1 billion in 1998 to ₦2127.97 billion in 2009 and further increased to 7593.16 billion in 2021 (C.BN 2022). Empirical works do not have a uniform outcome on the effect of government spending on the rate of inflation.

Dikeogu (2018) concludes that both capital expenditures and recurrent expenditures have a negative relationship on inflation, while Olayungbo (2013), concludes that government capital spending has a negative effect on inflation, while recurrent spending has no effect on inflation but Egbulonu and Amadi (2016) conclude that there exist a positive relationship between government expenditure and inflation.

Given that there is no uniform outcome on the impact of government expenditure on inflation rate, the study therefore investigate the impact of public expenditure on inflation rate in Nigeria, for the period of 1990 to 2022. The rest of this paper includes literature review, methodology, results and discussion and then conclusion and recommendations.

EMPIRICAL REVIEW OF LITERATURE

The review of literature reveals that similar studies have been carried out on the relationship between public expenditure and inflation by scholars in both developing and developed countries. Some of these studies includes. Ozurumba (2012) examines the causal relationship between inflation and fiscal deficits in Nigeria from 1970 to 2009, using auto regressive distributed lag (ARDL) model and the granger availability tests. From his results of the ARDL

test, it was observed that there exist a significant negative correlation between growth in fiscal deficit and innovations in the rate of inflation which is in conformity with expectation. The study recommended that polices targeted at inflationary control in Nigeria may be most effective if they are targeted at reduction in fiscal deficits and by extension, government should support growth in the real sectors of the economy.

Medee and Nnebee (2012) examined fiscal deficits and inflation in Nigeria from 1980 to 2010 using the ordinary least square (OLS) technique of multiple regression for the study. The result showed that both inflation rates were rightly sign with fiscal deficits. Despite this theoretical congruence, inflation rates impacted on fiscal deficits while interest rate does not. To this extent, they suggested that there is need to reorder Nigeria's fiscal policy priorities based on sincerity to rebuild confidence in the economy.

Everton, Vincent and Wilson (2012) employed the vector error correction modeling technique to investigate the long term relationship between fiscal deficits and inflation for Nigeria. The empirical results show that there is a positive but insignificant relationship between fiscal deficits and inflation. The analysis of the Nigeria data also indicate a positive long-term relationship between money supply growth and inflation, suggesting therefore that money supply growth is pre-cyclical and tends to grow at a faster rate than the rate of inflation. Olayungbo (2013) examined the causal relationship between government spending and inflation in Nigeria for the period of 1970 to 2010. The study used Granger causality test and the vector Auto-regression (VAR) modeling techniques for the analysis. The study found that a uni-directional causality exists from government expenditure changes to inflation changes. The finding implies the inflationary pressure in Nigeria is state-dependent, ie, high inflation is caused by an increase in government spending.

Ogbonna (2014) investigated the effect of government size and development on the consumer price index in Nigeria for the period between 1981 and 2013. The study employed co-integration and vector error correction model (VEM) methods to analyze the data. The result indicates that long-run equilibrium relationship exists between the consumer price index and government size in Nigeria.

Ogbole and Momodu (2015) investigated the nature and extent of a causal relationship between government expenditure and inflation rate for a period of 42 years spanning from 1970 to 2011. The study employed the Johanson co-integrated test and Granger causality test analysis. The variables are stationary weakly and inversely correlated and show long-run relationship. However, they did not granger cause each other. Implying that there exists no causality between them. They recommended an appropriate fiscal monetary policy mix, redirecting government expenditure to productive channels in the economy and maintaining a strategic balance between capital and recurrent expenditure.

Ojarike, Ezie and Torka (2015) examined empirically the causal relationship existing between public expenditure growth and inflation in Nigeria from 1981 to 2012. The study employed econometric techniques of the Johanson co-integration test and the Granger causality

test. They found that the Johanson co-integration techniques indicated the presence of co-integration among the variables. It also found that there is no statistically discernible relationship between government expenditure growth and inflation in Nigeria.

Egbulonu and Wobilor (2016) examined the relationship between fiscal policy and the inflation rate in Nigeria from 1970 to 2013. The study used the co-integration, Granger causality test, Ordinary Least Square (OLS) regression and error correction mechanism (ECM) techniques to analyse the data. The results found a statistically insignificant positive relationship between government expenditure, government tax revenue and inflation in Nigeria, while government debt stock is positive and statistically significant. The study recommends that the government should implement viable fiscal policy and monetary policy mix as well as diversify the nation's economic base.

Mehraraa, Soufianib and Rezael (2016) examined the nonlinear relationship between inflation and government spending using quarterly data from 1990 to 2013 by using the smooth transition regression model. The study showed that in the regime of tight money or low growth of liquidity government expenditure is not inflationary. So fiscal policies could be used to control inflation and stimulate aggregated demand in a low regime. Also, in an easy money regime, monetary and fiscal discipline can be useful to reduce inflation.

Cynthia (2018) examines the effect of public spending on inflation in Nigeria from 1980 to 2017. The Auto Regressive Distributed Lag (ARDL) was used to analyze the relationship between public spending and inflation in Nigeria. The result shows that government capital spending impacts negatively inflation; government recurrent spending has a negative and insignificant impact on inflation. Also, money supply has both a positive and negative impact on inflation, while exchange rate has a positive and insignificant impact on inflation. Based on these findings it is recommended that the government needs to ensure appropriate channeling of its expenditure to infrastructural development to stimulate investment and production thereby stabilizing prices.

METHOD OF STUDY

Multiple regression analysis was used in the study. Time series data spanning from 1990 to 2022 was sourced from the Central Bank of Nigeria statistical bulletin.

Model Specification

To investigate the impact of public Expenditure on the inflation rate in Nigeria, the model for the study was specified thus:

INF = F (PCS, PRS, MS, EXHR) _____ (1)

Where:

INF = Inflation rate
PCS = Public capital spending
PRS = Public recurrent spending

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MS = Money supply
EXHR = Exchange rate

The model in its econometric linear form can be written as;

INF = β_0 + β_1 PCS + β_2 PRS + β_3 MS + β_4 EXHR + U _____ (2)

Where: β_0 = constant intercept
U = stochastic or random error terms
$\beta_1 - \beta_4$ = coefficients of associated variables.

The theoretical expectations about the signs of the coefficients of the parameters are as follows: $\beta_1 < 0$, β_2, β_3 and $\beta_4 > 0$

Since the data for the analysis is time series, the Augmented Dickey – fuller (ADF) unit root test was employed to ensure data stationarity and avoid the problem of spurious regression. A bound test was applied to determine the existence of a long-run equilibrium relationship among the variables.

RESULTS AND DISCUSSION

The empirical analysis of data in this paper was conducted in four phases. It begins with the unit root test and thereafter conducts the co-integration. Furthermore; short run analysis and diagnostic tests were also conducted.

Table 1: Univariate unit Root Result.

ADF RESULT				
Variable	Level	first difference	order of integration	Decision
In INF	-2.0684	-4.453 6		I(1)
				ss
	(-2.9639)	(-2.9677)		
In PCS	2.6513	4.9937	I(1)	ss
	(-2.9639)	(-3.5742)		
In PRS	1.7694	3.4719	I(1)	ss
	(-2.9918)	(-2.9918)		
In MS	5.0767		I(0)	ss
	(-2.9639)			
In EXHR	0.7600	-4.1099	I(1)	ss
	(-2.9677)	(-3.5742)		

Source: Author's computation from (E-view 12)

Table 1 reports the outcome of the unit root carried out. It shows that only money supply (MS) was stationary at level as the respective ADF statistics was greater than their corresponding

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critical value at 5%. Inflation (INF), public capital spending (PCS), public recurrent spending (PRS) and exchange rate (EXHR) only become stationary after differencing once. Conclusively the series are of mixed order of integration. With no two I(2), prompting the adoption of the single equation ARDL model proposed by pesaran, et al, (2001)

2: Bound Test Based on F - Statistics

Significance	I(0) Bound	I(I) Bound	statistics
10%	2.2	3.09	F-stats=3. 4788
5%	2.56	3.59	k = 4
2.5%	2.88	3.87	
1%	3.29	4.37	

Source: Author's Computation from (E-view 12).

Table 2 above captures the result of the bound test approach to long-run determination between the series of interest. As evidenced from table 2, the F-statistic (3.4788) is less than the upper bound value at 5% level of significance (3.59). In lieu of the above, we conclude that there exist no long-run relationship between Public Recurrent spending, public capital spending, money supply exchange rate and inflation rate. We hereby accept the null hypothesis of no long-run relation among the series in the model.

Table 3: short-run ARDL Model

Regressors	**Co-efficient**	**Std. error**	**T-stats**	**Prob.**
C	86.0764	26.8580	3.2048	0.0491
Δ(pcs)	0.00069	0.0111	0.0623	0.9542
Δ (pcs)-1	0.2390	0.0376	6.3543	0.0079
Δ (pRs)	0.0350	0.0065	5.3205	0.0130
Δ (pRs)-1	-0.1694	0.0253	-6.6769	0.0069
ΔMs	0.0022	0.00157	1.4069	0.2541
Δ (ms)-1	0.0160	0.00292	5.5056	0.0118
Δ (Exhr)	0.0106	0.00237	4.4824	0.0207
Ecm $_{t-1}$	-0.8842	0.2525	-7.4607	0.0050

R^2 = 0.8934
Adjusted R^2 = 0.6536
F – statistics = 2.2983
Prob.(F – stat.) = 0.0270

The table above provides the short-run ARDL model selected automatically using the Akaike Info Criterion (AIC). The outcome of the Error Correction Mechanism (ECM) test conducted and displayed in the table above revealed that the explanatory power was 0.89. This by

inference means that 89 percent variation in the dependent variable INF is brought about or accounted for by the independent variables (PCS, PRS, MS and EXHR) with the residual of II percent accounted for by variables not included in the model but was captured by the error term. As observed from the aforementioned table, Public Capital Spending (PCS) has a contemporaneous positive and insignificant impact on inflation in the current period. PCS was also reported to have a positive and significant impact on inflation during the lagged one period. Public recurrent spending (PRS) revealed a positive and negative impact on inflation during the study period in the current and lagged one period respectively but both were found to be statistically significant. The contemporaneous effect and Money Supply (MS) in the current period were found to positive impact on inflation, with its impact found to be insignificant. The probability value of the F – statistics given as 0.027 indicates that the model is statistically significant at a 5 percent level. The coefficient of the lagged error correction term (ECT) of -0.88 suggests that the convergence of the model to long-run equilibrium occurs at a speed of 88 percent, giving the speed of adjustment of the model to be 88 percent. This suggests that temporal adjustments will be corrected at a speed of 88 percent.

Table 4: Diagnostic Test.

Test/hypothesis Tested	Test Type	Test Stat.	Prob	Decision
Residual Normality (Residuals are normally Distributed)	Jarqve-Bera	0.798	0.6709	Accepted
Serial correlation (No serial correlation)	Breusch-Godfrey LM test	76.266	0.0807	Accepted
(Homoscedasticity exist)	Breusch-pagan-Godfrey	1.474	0.325	Accepted

Note: (Hypothesis is in null form). (E-view 12)

The table above gives the summary of diagnostic tests for the ADRL model. Based on the outcome of the tests presented above, the error term is normally distributed as the probability value of the Jarqve-bera test statistic exceeds the 0.05 level of significance. The outcome of the Breusch-Godfrey LM test shows the error terms are not serially correlated or the absence of autocorrelation as the probability value of the Lagrange multiplier (LM) test statistics is greater than the 5 percent level of significance. Also, the Breusch-pagan-Godfrey test disclosed that the residual has constant variance as we failed to reject the null hypothesis of homoscedasticity. The stability of the model was ascertained using the cumulative sum (cusum) and cumulative sum (cusum) of the squares stability test. The plot of both tests showed that the statistics are within the 5 percent critical bounds as shown in figures 1 and 2 suggesting that the estimated model is stable and no structure break exists.

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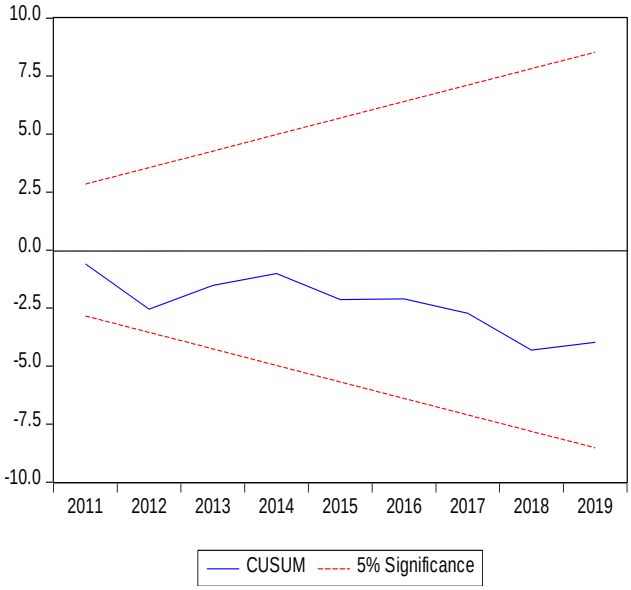

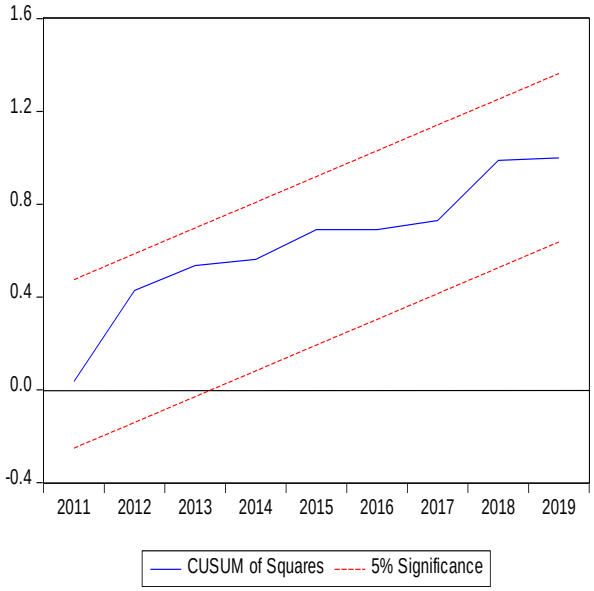

CONCLUSION AND RECOMMENDATIONS

This work appraises the impact of public expenditure on the inflation rate in Nigeria from 1990 to 2022. Inflation is a development indicator of an economy. Thus, the need to adopt a well-articulated policy is required to stem the problems of inflation in Nigeria. The study adopted

co-integration, Error correction model and diagnostic test on time series data from 1990 to 2022. The study regressed public expenditure proxied by public capital spending, public recurrent spending, money supply and exchange rate on inflation. The short-run result reveals that about 89 percent variation in the inflation rate is explained by public capital spending, public recurrent spending, money supply and exchange rate. This means that the four independent variables impact greatly on inflation rate in the short run. This is because the F-statistic at 0.027 are significant at a 5% percent level. The result also reveals that there is no long-run relationship between public expenditure and inflation rate as evidenced by the bound co-integrated test in table 2. Based on the above findings, the study recommends the following:

1. Government should reduce (decrease) public expenditure variables (ie PCS, PRS, MS and EXHR) in the short-run, to control aggregate demand and inflationary pressures in the Nigerian economy.
2. The government should increase public expenditure variables (ie PCS, PRS, MS and EXHR) in the long-run, to boost productive areas like infrastructure, education, healthcare and research to enhance growth and development in the Nigerian economy.

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