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DOES HIGH INFLATION CONSTRAIN FISCAL POLICY AND LIMIT ECONOMIC GROWTH IN NIGERIA?

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Abstract

Inflation has been persistently rising in Nigeria over the years to the extent that fiscal activities tend to validate the old Keynesian postulation that inflation is fiscally determined. This study investigates whether inflation constrains fiscal policy and limits economic growth in Nigeria, and to project future inflation rates as well as the behavior of fiscal policy in the long run. The study employed the vector autoregressive model (VAR) model and the ordinary least square technique to examine the interaction effect of fiscal policy tools with inflation on economic growth. The study concluded that inflation is not fiscally determined, but constrains fiscal policy in Nigeria, which in turn restricts economic growth in Nigeria. Projections show that inflation will decline in the long run. The policy implications of these findings suggest that higher inflation rates will, first of all, reduce government revenue, thus widening the government deficit, and reducing government expenditure thereby, causing the Nigerian government to increase its debt burden. Reduction in expenditure during inflation hikes will make the Nigerian government to prioritize certain sectors of the economy over other important sectors thus, making government fiscal objectives unattainable

Keywords Inflation Fiscal Policy Economic Growth

JEL Classification E31, H3, F64, C4



1. Introduction

The specific goal of fiscal policy is to sustain economic growth. A growing literature shows that poor fiscal management, increased government expenditure, budget deficit, rising debts, etc., are partly or wholly responsible for high inflation, thus, validating the old-school Keynesian model. This model demonstrates that deficit spending increases aggregate demand, raising output and prices (Keynes, 1936). Contrarily, Friedman (1956) submitted that "inflation is always and everywhere a monetary phenomenon" and not a fiscal phenomenon, in line with an earlier argument presented by Fisher (1911). Their arguments repose on the fact that government spending, even deficit-financing only shuffles around resources and it does not mobilize additional resources; and since deficit spending doesn't boost aggregate demand, it doesn't cause inflation (Salter, 2022). However, the fiscal theory of price level has established a negative relationship between the value of government budget surpluses and price levels of goods and services (Cochran. 2001). Reinforcing this theory, Sargent and Wallace (1981) posit that the fiscal determinacy of the price levels is because the government is financing her increasing deficits by creating money (seigniorage), thus producing higher inflation.

Fiscal determinacy of the price level, on the other hand, is based on the idea that governments running persistent deficits will eventually have to finance those deficits by creating money (seigniorage) thus, producing higher inflation, especially when the GDP growth rate is below the interest rate (Sargent &Wallace, 1981).

Nigeria's deficit as a percentage of GDP has been increasing over the years. In 2018, it stood at 4.32%, increased to 4.69% in 2019, 5.66 in 2020, 6.04% in 2021 and to 6.44 in 2022 (Statista, 2022). This increase is due to an increase in government expenditure and by the last quarter of 2021 the Central Bank of Nigeria spent the sum of N58.618 billion to print 2.518 billion Naira notes (seigniorage) to fund government activities and service its rising debts (see, Ujah, 2021). This among other factors have caused inflation rates to increase from 11.40% in 2019 to 13.25% in 2020 to 16.95% in 2021 and to 21.34% in2022 (National Bureau of Statistics, 2023) forcing the CBN to increase the monetary policy rate with the main aim of curtailing these rising rates. The latest Global Economic Prospects Report (2022) shows that the World economy could slip into a period of stagflation due to global rising inflation leading to tighter financial conditions and limited fiscal policy space.

According to the World Bank, Nigeria is projected to have one of the highest inflation rates globally and the seventh highest among Sub-Saharan African countries in 2022 (see, Ndubuisi, 2022). This may constrain fiscal policies geared toward economic development in Nigeria.

Thus, the objective of this study was to find out whether inflation is fiscally determined, and if inflation constrains fiscal policy and limits economic growth in Nigeria. The study employed the vector autoregressive model (VAR). Secondly, the model was used to project the future inflation rates in Nigeria. Lastly, to ascertain whether inflation Constrain Fiscal Policy and Limits Economic Growth in Nigeria.

2. Literature Review

According to monetarists, "inflation is always and everywhere a monetary phenomenon" (Friedman, 1956). This notion is based on the Fisherian Theory (1911) which states that a change in price can be related to a change in the money supply. However, Keynesians to a greater extend contend that argue that inflation is fiscally determined when governments expand or contract their expenditure (see, Boyle, 2023). According to the fiscal theory of price levels, high inflation is often caused by the governments in the form of seigniorage (Cochrane, 2001) or by huge government deficits (Cochran, 2023).

Even though, no theory has succinctly demonstrated that inflation can determine the behavior of fiscal policy, a hand full of empirical studies have proven that there is either a unidirectional relationship between inflation and fiscal policy or a bidirectional relationship between the two terms using the Granger Causality test. For instance, Chinedu, et al (2008) and Ezirim, Muoghalu, & Elike (2008) established a bi-causal relationship between public expenditure growth and inflation in the United States of America; Similar findings were obtained by the magazine (2011) in Italy and unidirectional causality from inflation to public

expenditure in France. Dada and Abalaba (2013) showed that there exists а long-run unidirectional causality running from inflation to government spending in Nigeria. Apart from the causality test, Opler (1988) showed that inflation increased government expenditure share as a consequence of political pressure brought about by unsettled implicit social contracts in the U.S, using the ordinary least square approach. Recently, Olowofeso, Ankoma-Forkuo, Zirra, Falade, and Nsonwu (2020) confirmed that Nigeria's inflation increased government expenditure using a linear ARDL model and the Toda-Yamamoto causality test with structural breaks.

A variant of the above studies have established that most countries, particularly developing countries, face fiscal challenge due to the concurrent increase in inflation rates and widening budget deficit which may be attributed to low revenue generation (see, De Silva, 1977; Aghevli, 1977; Aghevli & Khan 1978; Haan & Zelhorst, 1990; Chaudhury & Parai, 1991; for Developing countries and Chaudhury & Ahmad, 1995). To crown it all, the findings of Thanh and Nigel (2021) reveal that the consequences of monetary policy and fiscal policy shocks become more serious if there is a rise in inflation trends. Their analysis, followed a simulated method of moment of the New-Keynesian model.

The empirical analysis of how inflation affects revenue is extensive. Sackey (1978); Alavirad (2003); Qadir, Tayyab, Nadeem Immervoll (2000);(2012);Samimi & Jamshidbaygi (2011); Samimi, et al. (2012); Tafti (2012); Zarif (2012); Amjad and Audi (2018) Nalyanya, Byaruhanga, Rutto. Simiyu (2020) etc., used different econometric methods for empirical analysis, but they have the same findings. Even though some authors focused on tax revenue. These studies find that inflation and revenue collection have a negative relationship.

3. Methodology

3.1 Conceptual Framework

This model indicates that government expenditure and government revenue are fiscal policy tools with the ultimate goal of influencing economic growth. An increase in the inflation rate will reduce government revenue hence, government expenditure. In a real economic sense, expenditure reduces as a result of a reduction in government revenue and widening deficit even though, the link is not investigated here.



3.2

Estimation Models

First, the time series data were the stationarity before estimation using the augmented Dickey-Fuller test (ADF test). ADF test: $\Delta X_t = a + bt + bt$

 $\rho X_{t-1} + \sum_{i=1}^{k} \Delta X_{t-i} + \mu_t$: ΔX_t is the first difference of the series *X*, *k* is the lag order, and *t* is time. The *ADF* unit root tests posit a null hypothesis $\beta = 0$ versus an alternative hypothesis $\beta < 0$, where the

ADF and *PP* statistics are compared with the observed Mackinnon critical values.

We employed the reduced form vector autoregressive (VAR) approach after ascertaining that the orders of integration of the variables are not cointegrated. Stock and Mark (2001) posit that the impulse response functions and the variance decompositions are better to report than the VAR regression because they give more understanding to the relationships of the intervening variables.

3.3 Model Specification

The VAR model of order p is:

$$Y_t = A(L)Y_{t-1} + U_t \tag{1}$$

Where Y_t is an (n x 1) vector of endogenous variables. Y_{t-1} is the corresponding lag term for each of the variables which are an (nxn) matrix of an autoregressive coefficient vector of i = 1, 2....k. U_t is an (nx1) vector of structural shocks with the variance-covariance matrix: $E(U_tU_t) = \rho\sigma^2$.

The estimated VAR model that consists of a vector of endogenous variables:

$$\begin{bmatrix} GOVEXPEND_t \\ GOVREV_t \\ GDP_t \\ INF_t \end{bmatrix} = A_1 \begin{bmatrix} GOVEXPEND_{t-1} \\ GDP_{t-1} \\ INF_{t-1} \end{bmatrix} + \dots + A_p \begin{bmatrix} GOVEXPEND_{t-p} \\ GOVREV_{t-p} \\ GDP_{t-p} \\ INF_{t-1} \end{bmatrix} + U_t$$
 2

Where GOVEXPEND is government expenditure; *GOVREV* is government revenue; *GDP* is the gross domestic product, *INF* is inflation rate. The estimated lag length was determined using the Akaike Information Criterion (AIC), Schwarz Criterion (SC), Sequential modified LR test statistic, Final prediction error (FPR), Hannan-Quinn (HQ) information criterion

Forecasting is one of the main objectives in the analysis of multivariate time series data. Forecasting in a VAR (p) model is similar to forecasting in a univariate AR (p) model. After the VAR estimation, we employed both the static and dynamic forecast and we chose the best after evaluation forecast evaluation and created scenarios to inform us about the behavior of GEVEXPEND and GOVREV in the future.

Then an ordinary least square approach was used to analyze the effect of INF on GOVEXP and GOVREV. The AR term included in equations 1 & 2 takes care of the serial correlation following the Cochran – Orcutt approach.

$$GDP_t = \alpha_0 + \alpha_1 d(GOVEXPEND)_t + \alpha_2 (GOVEXPEND * INF)_t + INF_t + AR(1) + \varepsilon_t$$
3

$$GDP_t = \alpha_0 + \alpha_1 d(GOVREV)_t + \alpha_2 (GOVREV * INF)_t + INF_t + AR(1) + \varepsilon_t$$
4

4. Presentation and Analysis of Results

4.1 Unit Root Test

The empirical analysis began with a prior investigation of stationary properties of the time series using the Augmented Dickey-Fuller (ADF) test. Results reported in Table 1 shows that government expenditure (GOVEXPEND) and

inflation (INF) are stationary at levels while government revenue (GOVREV) and GDP are stationary at first difference. Thus, the reducedform VAR model for the analyses is employed.

	Variable	Difference Augmented Dickey-Fuller				
		Levels	1 st With Intercept and Trend	Order of		
				Integration		
	GOVEXPEND	-7.720		I(0)		
	GOVREV	-0.6714	-8.3719	I(1)		
Table 1: Unit Root	GDP	-3.9021	-3.902	I(1)		
Test Results	INF	-4.1023		I(0)		
	Note: The ADF and I	PPT critical v	alue at 5% level is -3	553. The critical		

Note: The ADF and PPT critical value at 5% level is -3.553. The critical value is based on the Mckinnon criterion. The optimal lag is selected based on the Akaike Information Criterion (AIC). **I**(*) shows the level of integration. Source: Authors' calculation using Eviews

4.2 Impact of Fiscal Policy Instruments on Inflation Table 2 shows the optimal lag length of the estimated VAR model for model one. To ensure that the estimates from the reduced form VAR are

consistent, an appropriate lag order of 3 is used in the estimation based on the serial correlation test criteria reported in Table 3.

Table 2: VAR Lag Order Selection Criteria for Model 1 (INF GOVREV GOVEXP)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-28.56678	NA	0.001057	1.661409	1.790692	1.707407
1	88.33538	209.1933*	3.62e-06	-4.017651	-3.500519*	-3.833660*
2	98.12640	15.97483	3.51e-06	-4.059284	-3.154302	-3.737299
3	108.6946	15.57424	3.31e-06*	-4.141823*	-2.848992	-3.681844

* indicates lag order selected by the criterion. LR: sequential modified LR test statistic, FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion; HQ: Hannan-Quinn information criterion (each test at 5% level). Source: Authors' calculation using Eviews

The appropriate lag length of the estimated VAR model is selected based on the absence of serial correlation. Table 3 shows the serial correlation LM test which indicates that the estimated VAR

model at lag 3 is free from serial correlation because the p-value is greater than 0.05 thus, confirming the use of the above chosen lag length.

	Null	Null hypothesis: No serial correlation at lag h						
	Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.	
	1	21.08875	9	0.0123	2.646055	(9, 56.1)	0.0125	
Table 3: VAR	2	6.219786	9	0.7177	0.685661	(9, 56.1)	0.7186	
Residual Serial	3	3.514902	9	0.9404	0.378672	(9, 56.1)	0.9406	
Correlation LM	4	5.788659	9	0.7609	0.635793	(9, 56.1)	0.7617	

*Edgeworth expansion corrected likelihood ratio statistic.

Source: Authors' calculation using Eviews

4.3 Stability Test

The next important test that immediately follows the serial correlation LM-test, is the VAR stability test. Fig 1 shows that all the roots lie inside the circle, implying that the estimated VAR is stable. Hence all initial preliminary VAR diagnostics have been fulfilled which permits the study to proceed with further analyses. Inverse Roots of AR Characteristic Polynomial

1.5 Fig. 1: Stability 1.0 Test Graph 0.5 of Model 0.0 One -0.5 -1.0 -1.5 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5

4.4 Impulse Response Graph of Inflation to Fiscal Policy Instruments

Fig 2 shows the impulse response graphs of the variables within a forecast horizon of 12 periods. Extracted from the estimated VAR model one. The first graph shows that inflation responds to government revenue (GOVREV) positively only within the first three periods and assumes a negative trend till the end of the forecast horizon. Secondly, the next graph indicates that inflation responds positively to government expenditure (GOVEXP) only within the first three periods and declines gradually to zero at the end of the period. These two results indicate that inflation is not fiscally determined in Nigeria as hypothesized in the old Keynesian model (Keynes, 1936), the theory of price levels (Cochran, 2001), and Sargent

and Wallace's (1981) argument anchored on both theories. Hence, the assertion that "inflation is everywhere a monetary problem" according to Friedman (1956) may still be valid in the case of Nigeria.





Figure 2: Impulse Response graphs of Inflation Rate to Fiscal policy Tools

4.5 Forecasted Values of Inflation rates from 2021 to 2026

The estimated VAR model was used to forecast future inflation rates in Nigeria. Table 4 shows the different forecast criteria used for evaluating the forecast performance of the VAR model. All the test statistics are greater than zero and less than one except for the MAPE, indicating that inflation is better forecasted using the VAR model with the influence of GOVEXP and GOVREV as exogenous variables.

	Variable	Inc. obs.	RMSE	MAE	MAPE	Theil		
Table 4: Forecast	GOVEXP	2	0.005668	0.005285	0.130251	0.000700		
Evaluation	GOVREV	2	0.107862	0.107572	2.864491	0.014554		
Criteria	INF	2	0.076076	0.076052	6.093289	0.031316		
	RMSE: Root Mean Square Error; MAE: Mean Absolute Error; MAPE: Mean;							
	Absolute Percentage Error; Theil: Theil inequality coefficient							

Source: Authors' calculation using Eviews

Table 5 shows that the future values of the inflation rate approximate reality because the forecasted values from 2019 to 2021 are almost the same as the initial logged values of the same years. This validates the initial forecast criteria. The transformed forecasted values will increase to 17. 42% and 17.61% in 2022 and 2023 respectively and then decline into the future reaching 14.06% in 2026.

				Transformed	Transformed
			Forecasted	Forecasted	Forecasted
	Year	log(INF)	log(INF)	INF	INF
	2019	1.57	1.59	11.40	11.45
	2020	1.12	1.12	13.24	13.30
	2021	1.23	1.22	16.94	16.64
	2022		1.24		17.42
Table 5: Forecasted	2023		1.25		17.61
Inflation Rates	2024		1.19		15.63
using the VAR	2025		1.16		14.53
Model	2026		1.15		14.06

Source: Authors' computation using Eviews

Lag Selection Criteria and Serial Correlation Test for Model Two

Table 6 shows the optimal lag length of the estimated VAR model for model one. To ensure that the estimates from the reduced form VAR are

consistent, an appropriate lag order of 2 is used in the estimation based on the selection test criteria reported on Table 2.

Table 6:							
VAR Lag	Lag	LogL	LR	FPE	AIC	SC	HQ
Order	0	25.53951	NA	3.67e-06	-1.164298	-0.990144*	-1.102901
Selection	1	50.11245	42.50455*	2.32e-06	-1.627700	-0.756934	-1.320714*
Criteria for	2	67.05491	25.64264	2.28e-06	-1.678644	-0.111264	-1.126069
Model 4	3	87.15443	26.07505	1.99e-06*	-1.900239*	0.363753	-1.102076
	~						

Source: Authors' calculation using Eviews

* indicates lag order selected by the criterion. LR: sequential modified LR test statistic, FPE: Final prediction error, AIC: Akaike information criterion, SC: Schwarz information criterion HQ: Hannan-Quinn information criterion (each test at 5% level)

The appropriate lag length of the estimated VAR model is selected based on the absence of serial correlation shown on Table 7. The serial

correlation LM test indicates that the estimated VAR model at lag 2 is free from serial correlation because the p-value is greater than 0.05.

Table 7: VAR	Null	Null hypothesis: No serial correlation at lag h								
Residual Serial	Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.			
Correlation I M	1	32.33589	16	00046	1.97711	(16, 67.8)	0.0085			
Tests for model 2	2	17.91185	16	0.3291	1.146511	(16, 67.8)	0.3331			
Tests for model 3	3	23.83834	16	0.0931	1.590398	(16, 67.8)	0.0955			
	a		4					-		

Source: Authors' calculation using Eviews

4.6 Stability Test

The next important test that follows the serial correlation LM-test is the VAR stability test. Fig 3

shows that all the roots lie inside the circle implying the estimated VAR is stable. Hence all initial preliminary VAR diagnostics have been Inverse Roots of AR Characteristic Polynomial



fulfilled which permits the study to proceed with further analyses.

4.7 Impulse Response Graphs of GOVEP and GOVREV to INF

Fig 4 shows the impulse response graphs of the variables extracted from the estimated VAR model. The graphs show that government expenditure (GOVEXPEND) responds positively to innovations in the inflation rate in the initial vears and reaches a maximum just immediately after the second year and gradually declines to zero till the end of the period. This finding implies that a persistent increase in Nigeria's inflation rate also reduces the rate of government expenditure on different activities in Nigeria. Though arguments show that inflation is fiscally determined according to the old-school Keynesian model (see, Sargent & Wallace 1981 and Cochran, 2001) or better still inflation is always and everywhere a monetary phenomenon Friedman (1956), we can conjecture that inflation also redirects fiscal policy actions in Nigeria. This may be attributed to a decline in government revenue over the years, triggered by the poor exchange rate, etc., which are disincentives to investment, discourages foreign investment in Nigeria, etc. A recent study by Thanh (2021) shows that inflation trends produce monetary as well as fiscal policy shocks with severe consequences on recurrent spending in Vietnam, insinuating that high inflation rates pose negative effects on government spending. Hence, a policy shock or a reduction in government spending simply means that inflation hikes constrain fiscal policy design and its implementation, mostly in situations of low revenue generation. These two findings contradict an earlier finding by Opler (1988) for the U.S.A

and Alavirad (2003) who concluded that inflation has a positive effect on government expenditure due to improvements in the government revenue of the Islamic Republic of Iran.



4.8 Simulation Forecast

Haven established the relationship between inflation and government expenditure in Nigeria, we proceeded to simulate the model to forecast the behavior of GOVEXPEND as INF increases persistently using different scenarios. First, we perform a static forecast. The graphs in Fig 6 show the actual values of all the endogenous series in blue and the model forecast in green. Noticeably, the forecast at the start of the period is not bad but deteriorates significantly over time because the deterministic approach uses lag values of the endogenous variables instead of actual values. Hence this approach may not give a good prediction of GOVPEND as INF increases till the end of 2021. Therefore, we proceed to stochastic simulation, which allows us to add error bounds and confidence intervals and takes care of the uncertainties in the model.



Figure 5: Deterministic Forecast of GOVEPEND when INF increases persistently

4.9 Dynamic Forecast

The model in Fig 6 is good because the confidence bounds taking into consideration uncertainty shows that the actual and baseline values are closer than in the deterministic model and both lie within the confidence error bounds interval. Hence, this approach may give a good prediction of GOVPEND as INF increases till the end of 2021.



Figure 6: Dynamic Forecast of GOVEPEND when INF persistently increases

The two models are evaluated using the static solution which uses actual values to perform the forecast.



Figure 7: Model Evaluation Dynamic Forecast using Static Forecast with Error Bounds

We notice that the static solution considering the error bounds and uncertainties performs better than the dynamic solution both in terms of fit and the smaller standard error bounds. This is because the static is one period ahead forecast and uses actual values instead of forecasted lag values over the entire period. Finally, we proceeded to know the actual behavior of GOVEPEND with INF hike at different scenarios i.e. when INF increases by-25%, 50%, 75%, and 100% basis points. The graph in Fig 8 shows a persistent increase of INF at the different bases above. The graph of the new scenario is very close to the baseline of GOVEEXPEND and the two graphs are above the actual graph implying that, a persistent increase in INF will reduce future GOVEXND values in Nigeria.

4.10 Model Evaluation



Figure 8: Static Forecast of GOVEXPEND with Error Bounds when INF increases

Table 8: VAR Lag Order Selection Criteria of Model 2

Lag	LogL	LR	FPE	AIC	SC	HQ
0	25.53951	NA	3.67e-06	-1.164298	-0.990144*	-1.102901
1	50.11245	42.50455*	2.32e-06	-1.627700	-0.756934	-1.320714*
2	67.05491	25.64264	2.28e-06	-1.678644	-0.111264	-1.126069
3	87.15443	26.07505	1.99e-06*	-1.900239*	0.363753	-1.102076
	2 1 1	. г .				

Source: Authors' calculation using Eviews

Table 9: VAR Residual Serial Correlation LM Tests Null hypothesis: No serial correlation at lag h

Null hypo	ullesis. No serial c	oneration	i at lag li			
Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	16.02446	16	0.4513	1.014134	(16, 52.6)	0.04575
2	13.50922	16	0.6352	0.836365	(16, 52.6)	0.6404
3	19.01528	16	0.2679	1.235520	(16, 52.6)	0.2739
4	10.08655	16	0.8621	0.606207	(16, 52.6)	0.8645

Source: Authors' calculation using Eviews

4.12 Stability Test

The next important test that follows the serial correlation LM-test is the VAR stability test. Fig 9 shows that all the roots lie inside the circle implying the estimated VAR is stable. Hence all initial preliminary VAR diagnostics have been fulfilled which permits the study to proceed with further analyses.

Inverse Roots of AR Characteristic Polynomial



Figure 9: Stability Test Graph for Model 2

Tables 8 and 9 show that optimal lag of order of one is appropriate and free from serial correlation.

4.13 Impulse Response Graph of GOVREV to INF

Fig 10 shows the impulse response graphs of the variables extracted from the estimated VAR model. The graphs show government revenue (GOVREV) responds positively to innovations in inflation rate in initial years and reaches the second year, then assumes a negative behaviour in the 3rd year, then increases to the 4th year. After this, it declines in an undulating manner steadily till it peters out in the final year. The gradual decline in government revenue suggests that high inflation rates affect revenue generation in Nigeria. This result is consistent with that of Sackey (1981) for Trinidad and Tobago;

Nalyanya Byaruhanga, Rutto, Simiyu (2020) for Kenya. Amjad and Audi (2018) for Pakistan. Their justification of these findings according to these authors which may be similar to the Nigeria situation is that the macroeconomic environment does not guarantee favorable investment and experiences frequent shocks that stifle economic activities, hence making revenue generation difficult. Contrarily, the macroeconomic environment in some countries still offers incentives for some countries with high inflation rates to generate more revenue as established by Patoli, Tayyaba, and Nadeem (2012) in Pakistan; Akgül & Beser (2011) in Turkey.



Figure 3: Impulse Response Graph of GOVEXPEND to INF

4.14 Simulation Forecast

The graphs in Fig 11 show the deterministic forecast of GOVREV with respect to increase INF. The gap between the baseline and the actual values is a bit wide implying that the forecast deteriorates significantly over time, implying that, inflation may not forecast an increase in rev over the years. Thus, we proceed to stochastic simulation, which allows us to add error bounds and confidence



Figure 4: Deterministic Forecast of GOVREV when INF Increases Persistently.

4.15 Dynamic Forecast

Looking at the confidence bounds taking into consideration uncertainty, the model is not bad because the actual and baseline values are closer than in the deterministic model, and both lie within the confidence error bounds interval. Hence, this approach may give a good prediction of GOVPEND as INF increases till the end of 2021.



Figure 5: Stochastic Forecast using Static Forecast with Error Bounds

4.16 Model Evaluation

The two models are evaluated using the static solution which uses actual values to perform the forecast. Certainly, the static model with error bounds has improved both in terms of the fit and the standard error bounds cos the static is one period ahead forecast and uses actual instead of forecasted lag values over the forecast period.



Figure 6: Model Evaluation Dynamic Forecast using Static Forecast with Error Bounds

We notice that the static solution considering the error bounds and uncertainties performs better than the dynamic solution both in terms of fit and the smaller standard error bounds. Finally, we proceeded to know the actual behavior of GOVREV with INF hikes at different scenarios i.e. when INF increases by– 25%, 50%, 75%, and 100% basis points. The graph on Figs 12 shows a persistent increase of INF at the different bases above. The graph of the new scenario shows the actual values increase faster than the baseline and new scenario values. Hence, the GOVREV will rise with increases in INF rate in the long run and not in the short run in Nigeria.



Figure 7: Static Forecast of GOVREV with Error Bounds when INF increases persistently.

Owing to the fact INF has a negative on GOVEXPEN and GOVREV in Nigeria hence, constraining fiscal policy, we proceeded to ascertain their effect on economic growth (GDP). We carried out a regression model in which INF becomes an interactive variable with both GOVEXPEND and GOVREV as shown on Table 10. Results are robust for interpretation since the free from serial models are correlation heteroscedasticity and meet the normality test. Both results show that INF GOVEXPEND and GOVREV negatively, confirming the results of the impulse response graphs obtained earlier. The interaction between GOVEXPEND and INF that a percentage increase indicates in EXPENDINF will lead to a 2.11 % significant decrease in GDP, while REVINF shows an insignificant negative relationship between the two variables. However, a percent increase in both GOVEXPEND and GOVREV have positive relationships with GDP though insignificant. Thus, inflation constrains fiscal policy which in turn limits economic growth in Nigeria.

Dependent Varia	ble: D(GDP)	Method:	Dependent Variable: D	O(GDP) Metho	od: ARIMA –			
ARIMA – Maximu								
	Coefficient	t-test		Coefficient	t-test			
С	0.0188	2.121	С	0.0186	2.146			
D(GOVEXPEND)	0.051	0.176	D(GOVREV)	0.116	0.503			
EXPENDINF	-0.021	-2.149	REVINF	-0.00011	-0.8948			
INF(-1)	-0.011	-0.403	INF(-1)	-0.00012	-0.418			
AR(1)	0.549	3.184	AR(1)	0.542	3.625			
SIGMASQ	0.00029	3.882	SIGMASQ	0.00029	3.901			
R ² =0.68; DW=2.16	, inverted AR ro	ots = 0.55;	$R^2=0.28$; DW=2.17, inverted AR roots = 0.54;					
	10 5 4	00 D 1		-	1 400 D 1			

Table 10: Regression between GOVEXPEND and GDP; and between GOVREV and GDP

 R^2 =0.68; DW=2.16, inverted AR roots = 0.55; Breusch-Pagan-Godfrey test: F= 1.82, Pob= 0.163; JB test = 0.401, Prob = 0.818

Source: Authors' calculation using Eviews

5. Conclusion

The study investigated if inflation constrains fiscal policy and limits Economic Growth in Nigeria. First, we employed the vector autoregressive model (VAR) to capture the evolution of fiscal policy to hikes in inflation rates and projected future inflate rates. Secondly, the ordinary least squares regression was used with the inclusion of an interactive term with the policy variables to examine the effect of policy constraints on GDP. The study concluded that inflation is not fiscally determined but however, constrains fiscal policy in Nigeria, which in turn restricts economic growth in Nigeria. Projections show that inflation will decline in the long run.

6. Policy Implication

The policy implications of these findings suggest that higher inflation rates will, first of all, reduce government revenue. widening thus the government deficit, and reducing government expenditure thereby, causing the Nigerian government to increase its debt burden. Reduction in expenditure during inflation hikes will make the Nigerian government to prioritized certain sectors of the economy over other important sectors thus, making government fiscal objectives unattainable. The decline in the inflation rate will retrain the stress on fiscal policies thus, objectives in all sectors will be realized to a greater extent since its spending capacity will increase due to an increase in the value of the money.

We recommend that the government should reduce its taxes to encourage economic activities and attract more foreign investments or look for other means of increasing its revenue, maybe through R^2 =0.28; DW=2.17, inverted AR roots = 0.54; Breusch-Pagan-Godfrey test: F= 1.689, Pob= 0.187; JB test = 0.4506, Prob = 0.798

intense diversification of the economy. This will increase her revenue base and also increase expenditure thus, lessening the country's fiscal burden. Most importantly, the tax policy should be used as an adjustive mechanism to balance the prevailing macroeconomic environment each time the monetary policy rate (MPR) is increased or reduced, and vice versa.

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