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Effectiveness of Fiscal and Economic Policy in Monitoring Inflation in Nigeria

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Abstract
This study investigates the effectiveness of monetary and fiscal policies in controlling inflation in Nigeria from 1993 to 2023. Using co-integration and error correction methods on yearly time series data, the study reveals several key findings. The unit root test indicates that only inflation (INF) is stationary at levels, while money supply (MS), taxation (TAX), and government expenditures (GEX) are stationary at first difference. The results show that an increase in the money supply and government expenditures lead to a rise in the inflation rate, whereas higher taxation reduces it. Based on these findings, the study concludes that MS, TAX, and GEX significantly impact on inflation in Nigeria. The study recommends that policymakers should better manage the money supply to reduce the inflation rate by decreasing the amount of money in the economy. Increasing the tax rates on individuals and companies, especially during periods of high inflation, can lower the amount of spendable money among citizens, thereby reducing inflation. Lastly, the government should control its expenditures to decrease the total amount of money in circulation, effectively reducing the country's inflation rate.

Keywords: Policy, Taxation, Monetary, Inflation, Expenditure.

1.0 Introduction

One of any government's primary macroeconomic objectives is to maintain stable domestic prices in order to avoid the adverse effects of inflation or deflation and the uncertainty that accompanies price volatility (Voskanyan, 2022). The purchasing power of a country's currency declines relative to other currencies when the government fails to meet this objective and prices continue to rise (Cooper, 2019). Although, according to Ali et al. (2023), inflationary pressure is a universal issue, affecting every economy. Daniel et al. (2021). argue that while high inflation harms economic performance, zero inflation can cause economic stagnation, as seen in the concept of a non-accelerating unemployment inflation rate. Therefore, to address inflation, modern governments implement laws and measures aimed at maintaining price stability. However, there is debate among economists about whether inflation is a monetary or non-monetary phenomenon. Many scholars view inflation as a monetary issue, occurring when the money supply grows faster than economic output, a perspective supported by monetarists who link base money creation to inflation (Ozekhome, 2017; Idris and Bakar, 2017; Duodu et al., 2022).

Nigeria faces significant inflation challenges, exacerbating poverty and redistributing income and wealth unevenly. Since the 1970s, inflation rates have steadily risen, stagnating the country's real GDP (Amusa, 2022). The late 1970s and mid-1980s saw severe economic pressures due to expansionary fiscal policies, further worsened by bank deposits from the government sector, which inflated free reserves and overall price levels. The overvaluation of the naira made imports cheaper than domestic goods, increasing import demand and intensifying inflationary pressures (Abina, 2023). Despite various fiscal policy measures, Nigeria's inflation problem persists, with fiscal spending rising without a corresponding increase in revenue, worsening fiscal sustainability, high deficit rates, and significant inflationary pressure. Despite various fiscal policy measures, Nigeria's inflation problem persists, driven by rising government spending without a corresponding increase in revenue, resulting in widening fiscal deficits. Between 2020 and 2023, Nigeria's fiscal deficit grew from NGN 6.15 trillion to NGN 10.8 trillion, while inflation surged from 12.56% to 22.79%, indicating significant inflationary pressures (Sanusi et al., 2023).

Additionally, the debt servicing-to-revenue ratio reached about 83% in 2023, further exacerbating fiscal sustainability challenges and limiting the effectiveness of policy interventions (Olusegun, 2023).

Central banks traditionally use monetary policy as their primary tool to maintain price stability, even though fiscal policy can reduce inflationary pressure. Despite the numerous policy tools developed by monetary authorities to combat inflation, their success remains debatable, as many countries, particularly emerging ones, continue to struggle with inflation. Nigeria's inflation has exacerbated poverty and economic stagnation since the 1970s, driven by expansionary fiscal policies and the overvaluation of the naira, which increased import demand and inflationary pressure. Despite various fiscal measures, inflation persists, with rising fiscal spending outpacing revenue growth, worsening fiscal sustainability, and increasing inflationary pressure. This ongoing challenge underscores the need for effective monetary and fiscal policies to achieve low and stable inflation and foster economic development. Therefore, this study is aimed at examining the effects of monetary and fiscal policy in controlling inflation rate in Nigeria.

The federal government's expansionary fiscal policies, including the transfer of government sector deposits to banks and the overvaluation of the naira, exacerbated inflation by making imports cheaper than local products. Despite various fiscal measures by the Nigerian government to combat inflation, the issue persists, and the goal of maintaining low, single-digit inflation remains unmet (Williams, 2021; Alrawashdeh et al., 2022). Therefore, this study focuses on the impact of monetary and fiscal policies, particularly taxation, on managing inflation in Nigeria, addressing a gap in existing research. Previous studies have examined the relationship between inflation and variables such as money supply, exchange rate, interest rate, oil price, GDP, and government activities. Findings indicate that while money supply significantly affects monetary inflation, government capital spending has a negative impact, and recurring government expenditure has little effect on inflation. These studies suggest that inflation in Nigeria is primarily a monetary phenomenon. However, none have evaluated the role of taxation in controlling inflation, which this research aims to investigate (Amassoma et al., 2018; Adodo et al., 2018; Adaramola & Dada, 2020).

2.0 Literature Review and Hypotheses Development

Emovon et al. (2024) investigate the moderating effect of vertical agency crises on the relationship between corporate governance mechanisms and financial performance in Nigerian consumer goods firms from 2013 to 2022. The study employs a descriptive and ex-post facto research design, mixed-effect multi-level regression analysis, and moderated regression analysis techniques. The findings reveal that among corporate governance mechanisms, only board ownership has a statistically significant relationship with financial performance, while board size, board independence, and board gender diversity do not. Furthermore, vertical agency crises have a negligible moderating effect on the relationship between board independence and financial performance, but significantly positively affect the relationship between board gender diversity and financial performance.

Based on Emovon et al. (2024), I hypothesise that while vertical agency crises may not universally affect the relationship between corporate governance mechanisms and financial performance, specific elements such as board diversity can benefit from enhanced governance structures. Thus, improving diversity-related governance practices may yield better financial outcomes for firms, particularly when mitigating the complexities introduced by vertical agency crises.

Nadabo et al. (2024) examine the relationship between financial development and income inequality in Nigeria from 1986 to 2022, testing the existence of a Financial Kuznets curve (FKC). Using datasets from the World Bank and IMF, along with advanced econometric techniques like ARDL bounds testing and the Toda-Yamamoto causality test, the study finds evidence of an inverted U-shaped relationship between financial development and income inequality. This supports the FKC hypothesis, suggesting that financial development initially increases inequality, but after a certain threshold, it reduces it. The study also finds unidirectional causality from financial development to income inequality, highlighting the need for targeted policies to mitigate adverse effects. By accounting for structural breaks, the research offers valuable insights into the finance-inequality debate in Nigeria.

Oto and Wayas (2024) empirically examine the relationship between value-added tax (VAT) and economic growth in Nigeria from 2003 to 2022 using time series data from the Central Bank of Nigeria (CBN). The study analyses VAT revenue in relation to total federal government revenue (TR), total expenditure (TE), and gross domestic product (GDP) using simple regression and descriptive statistical methods. The findings indicate that VAT revenue significantly influences TR, TE, and GDP, with a strong positive correlation between VAT revenue and TE. However, the study observes that the contribution of VAT to TE is not directly associated with specific government expenditures like health, education, or salaries. As a result, the authors recommend creating a Value Added Tax Fund (VATFund) to allocate a portion of VAT revenue to essential sectors such as agriculture, power, or health, following the model of the Tertiary Education Trust Fund (TETFund).

The findings revealed a direct correlation between money supply and inflation rate, indicating that an increase in money supply leads to a corresponding rise in inflation. This discovery aligns with Ogunjinmi's (2022) study, which confirmed that an expansion in money supply positively impacts the inflation rate in Nigeria. Similarly, Toriola et al. (2022) found a substantial and positive relationship between money supply and monetary inflation in Nigeria. The study also indicated a direct association between government expenditure and inflation rate, suggesting that an increase in government spending leads to a corresponding rise in inflation. However, contrary to this finding, research by Atan and Effiong (2021) suggests that government expenditure in Nigeria does not result in inflationary effects. Additionally, Toriola et al. (2022) discovered that government capital investment in Nigeria has a significant negative impact on monetary inflation.

3.0 Methodology

The population employed for this study can be traced back to the availability of data on Central bank (CBN) statistics and World Bank (WB) data. The population of the study is made up of from 1960 when monetary and fiscal policies was adopted in Nigeria till 2023. The study considered data from CBN statistics and WB data which covers the period of 30 years from 1993-2023. The study uses Random sampling technique to capture the effect of monetary policy and fiscal policy in controlling inflation in Nigeria.

Method of Data Analysis and Model Specification

In this study, dynamic analytic methods were used to examine how data that has been collected throughout time has changed. Data from time series are estimated in the study. The unit root test will determine if the variables are steady at certain levels, and if they are, the ordinary least square approach will be used as the estimate method in this study (OLS). The auto-regressive distributed lag (ADRL) method will be used in the study if the unit root test shows that the variables are stable at both their levels and the starting difference. To evaluate the correlation between the variables, Pesaran et al. (2001)

developed the ARDL approach. Some reasons are given for using this tactic: The first ARDL may be used to non-stationary time series as well as time series with heterogeneous integration orders. There is no null hypothesis, or co-integration, between the variables (H0). The ARDL Bound test was performed to evaluate if there was a long-term connection between the variables.

Model specification is the process through which the variables to be utilized in a model are selected. In order to determine how independent variables, affect independent factors, economists utilize model specifications. This variable's research was modified from Ogunjinmi (2022). In this study, three financial variables—money supply, tax administration, and government spending—were employed as independent variables to reflect monetary policy and fiscal policy as shown in the table below:

Variable	Source
Money supply (MS)	Central Bank of Nigeria (CBN),
Tax administration (TA)	Federal Inland Revenue Service (FIRS),
Government Spending (GS)	Central Bank of Nigeria (CBN)

The model used in the study is as follows:

$$TAX\ t = \beta 0 + \beta 1 MS\ t + \beta 2 TA\ t + \beta 3 GOVTEXP\ t + ut \quad \ldots\ldots (1)$$

Where,
$\beta 0$ = Constant
$\beta 1 - \beta 3$ = coefficients of the independent variable
TA= Tax administration
GOVTEXTP= Government expenditure
TAX t = coefficient of dependent variable
T= Time period
ut = Error term.

4.0 Results and Discussion

The estimations carried out to examine the effect of financial intermediation on inclusive growth in Nigeria using descriptive statistics, interpretation of data, and discussion of findings and the results of the main estimation used in this analysis (i.e, ARDL estimation technique), is as shown below:

Table 1: Descriptive Statistics

	INF	MS	GEX	TAX
Mean	18.949	8126.415	2494.307	431.756
Median	12.877	1269.322	1017.997	84.478
Maximum	72.835	40318.29	12164.15	2547.840
Minimum	5.388	14.471	9.637	1.381
Std. Dev.	16.659	11875.70	3189.896	610.789
Skewness	1.854	1.363	1.407	1.6189
Kurtosis	5.307	3.560	4.206	5.223
Jarque-Bera	32.581	13.231	16.003	26.347
Probability	0.000	0.001	0.0003	0.000002
Sum	776.911	333183.0	102266.6	17701.98
Sum Sq. Dev.	11101.36	5.64E+09	4.07E+08	14922569
Observations	41	41	41	41

Table 1 above presents the descriptive statistics for the study. The table indicates that the inflation rate (INF) has a mean of 18.949 and a standard deviation of 16.659, suggesting the variable is clustered around the mean. Its maximum and minimum values are 72.835 and 5.383, respectively. INF is positively skewed, with a skewness coefficient of 1.854, and exhibits leptokurtosis with a kurtosis value of 5.307, which is greater than 3. The Jarque-Bera probability indicates that INF is not normally distributed.

The table also reveals that the money supply (MS) has a mean of 8126.415 and a standard deviation of 11875.70, suggesting that the variable deviates from the mean. The maximum and minimum values are 40318.29 and 14.47, respectively. The MS exhibits a positive skewness, as indicated by a skewness coefficient of 1.262983, and displays leptokurtosis, as evidenced by a kurtosis value of 3.560, which is greater than 3. The Jarque-Bera probability confirms that MS is not normally distributed.

Moreover, the table reveals that government expenditure (GEX) has a mean of 2494.307 and a standard deviation of 3189.896, indicating a wide spread from the mean. The maximum and minimum values are 12164.15 and 9.6365, respectively. GEX is positively skewed, with a skewness coefficient of 1.407, and exhibits leptokurtosis with a kurtosis value of 4.206007, which is greater than 3. The Jarque-Bera probability indicates that GEX is not normally distributed.

Finally, the table shows that taxation (TAX) has a mean of 431.756 and a standard deviation of 610.789, indicating a wide spread from the mean. The maximum and minimum values are 2547.840 and 1.381, respectively. TAX is positively skewed, with a skewness coefficient of 1.618734, and exhibits leptokurtosis with a kurtosis value of 5.223, which is greater than 3. The Jarque-Bera probability shows that TAX is not normally distributed. Table 2 presents the correlations.

Table 2: Correlation Matrix

	LMS	LGEX	LTAX
LMS	1		
LGEX	0.69	1	
LTAX	0.75	0.49	1

The correlation which is meant to check for the possibility of multicollinearity in the regressors is presented in table 2. The table showed that all the variables are positively associated with the highest coefficient being 0.69, hence showing the absence of multicollinearity among the variables proving their independence of each other. The moves to estimates the stationarity test is shown in table 3.

Table 3: Unit Root Test

Variables	**Levels**	**1st Diff**	**Order of Integration**
LINF	-3.496995		I0)
LMS	-1.059083	-4.089153	I(1)
LTAX	-0.703720	-5.694225	I(1)
LGEX	-1.568906	-7.693895	I(1)

The unit root test which is meant to determine the stationarity level of the variables is presented in table 3. The table showed that only INF is stationary at levels while MS, TAX, and GEX are stationary at first difference. All critical values are determined at 5% significance level. Due to the mixture in integration order the ARDL estimations is appropriate for the model. The study moves to determine the optimal lag structure for the study in table 4.

Table 4: Optimal Lag Structure

Lag	LogL	LR	FPE	AIC	SC	HQ
0	9.034049	NA	9.02e-06	-0.264950	-0.092572	-0.203619
1	187.099	309.272*	1.79e-09*	-8.794708*	-7.932821*	-8.488055*
2	200.326	20.18705	2.14e-09	-8.648708	-7.097311	-8.096733
3	215.741	20.28383	2.38e-09	-8.617956	-6.377049	-7.820659

Table 4 presents the lag recommended by the different information criterions. All the criterions recommended lag for this study, hence this study adopts lag one as it optimal lag. The moves to estimate serial correlation for the model in table 5.

Table 5: Serial Correlation
Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 1 lag

F-statistic	0.015576	Prob. F(1,32)	0.9015
Obs*R-squared	0.019461	Prob. Chi-Square(1)	0.8891

The result of the serial correlation is presented in table 4 above. The probability value of the chi-square shows that there is no serial correlation among the regressors with a value 0.8891. Hence, there is no autocorrelation in the model. The moves to estimate the stability test.

The CUSUM stability test shows that the model is stable as the CUSUM line did not stray out of the significance region. The study moves to the multicollinearity test in Table 5.

Table 6: Multicollinearity Test

	Coefficient	Uncentered
Variable	Variance	VIF
LMS	0.090	4.127
LTAX	0.020	2.531
LGEX	0.082	3.641

The multicollinearity test estimated using variance inflation factors (VIF) indicates that all the variables are independent of each, this conclusion is made from the uncentred VIF which are all lesser than 10. Hence, the study concludes that regressors are fit to be regressed on inflation. The study moves to the model selection. The model ARDL model selection shows that model 1,1,1,0 is the most appropriate for the study, this is so as the model has the lowest value among all the other model.

Discussion

Table 7: Bound Test

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.606	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

The bound test presented in table 7 aims at determining the existence of long run relationship in the model. The F-statistics value of 7.605987 is greater than both the lower and upper bound which valued at 2.79 and 3.67 respectively at 5% significance level, this indicates that there is a long-run relationship in the model.

Table 8: Long Run Multiplier

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LMS	0.649	0.298	2.181	0.035
LTAX	-1.342	0.142	-9.419	0.000
LGEX	0.620	0.287	2.157	0.037
C	-1.183	1.515	-0.781	0.440

The long run relationship between the variables is presented in Table 8 above. The result showed that MS have a positive and significant effect on INF with coefficient of 0.649, indicating that a 1 percent increase in MS will lead to a 65 percent increase in INF. While, TAX have a negative and significant effect on INF with coefficient of -1.342, indicating that a 1 percent increase in TAX will lead to a 134 percent increase in INF. Conversely, GEX have a positive and significant effect on INF with coefficient of 0.620388, indicating that a 1 percent increase in GEX will lead to a 62 percent increase in INF. Hence, all the independent variables exert a statically significance effect on INF in the long run.

5.0 Conclusion and Recommendations

The study specifically examined the effects of money supply, tax administration, and government expenditure on the inflation rate in Nigeria. The data analysis phase of the study, spanning thirty years, investigated three hypotheses. The study was based on the quantity theory of money, Wagner's law of public expenditure, and the monetary theory of inflation. Data were obtained from the CBN statistical bulletin and WB data indicators for the year 2023. A purposive sampling technique was employed. The study utilized the ARDL model as the principal estimation technique, chosen based on the unit root test.

The study uncovered a consistent correlation between monetary and fiscal policy and the inflation rate in Nigeria. Factors such as money supply, tax administration, and government expenditure significantly influence the inflation rate in Nigeria over a prolonged period. Moreover, there was a transient correlation between the variables. However, in the short run, only the amount of money in circulation had a significant effect on the inflation rate. Ultimately, the model passed the robustness test it underwent.

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