European Journal of Applied Sciences – Vol. 9, No. 6
Publication Date: December 25, 2021
DOI:10.14738/aivp.96.11418.
Ayodele, T. D., Akinyede, O. M., Afolabi, T. S., Ojedele, M. I., & Adeyanju, O. D. (2021). Effectiveness of Economic Policies in Combating Inflation in Nigeria. European Journal of Applied Sciences, 9(6). 524-534.

SOCIETY FOR SCIENCE AND EDUCATION

Effectiveness of Economic Policies in Combating Inflation in Nigeria

AYODELE, Thomas Duro (PhD)
ORCID ID: 0000-0002-0070-2948
Department of Finance, Redeemer's University, Ede, Nigeria

AKINYEDE, Oyinlola Morounfoluwa (PhD)
ORCID ID: 0000-0001-6587-0531
Department of Finance, Redeemer's University, Ede, Nigeria.

AFOLABI, Taofeek Sola (PhD)
ORCID ID: 0000-0002-9371-6176
Department of Finance, Redeemer's University, Ede, Nigeria

OJEDELE, Mofoluwaso Iyabode (PhD)
ORCID ID: 0000-0003-3066-1646
Department of Accounting, Redeemer's University, Ede, Nigeria

ADEYANJU, Olanrewaju David
Department of Accounting, Redeemer's University, Ede, Nigeria.

ABSTRACT

This study assessed the effectiveness of economic policies (monetary and fiscal policies) in fighting Nigeria's Inflation. Secondary data obtained over thirty-eight years (1981-2018) from the Central Bank of Nigeria (CBN)'s statistical bulletins were used. The econometric test was carried out on the data, which included the ADF-Fisher unit root test and the Johansen co-integration test. A Vector Autoregressive model was used to specify the relationship between the independent variables (Interest rate, Money supply and Liquidity ratio) and the dependent variable (Inflation rate), through the least squares technique. The result revealed that money supply and lending rate have direct and significant influence on inflation (p-values<0.05). However, external debt and government expenditure do not significantly influence inflation. The study concluded that monetary policy is more effective than fiscal policy in combating inflation. Therefore, it was recommended that financial institutions in Nigeria should comply with specified prudential guidelines on monetary policy implementations. Furthermore, the Central Bank of Nigeria should be allowed to carry out her functions without pressure or hinderance from any arm of government.

Keywords: Inflation, Money Supply, Interest Rate, External Debt.

INTRODUCTION

Nigeria's inflation rate has been consistently rising since inflation was apparent from the start of its national history. This was accelerated in the 1960s by the government's "cheap money scheme" to stimulate growth after independence. The inflation rate in Nigeria averaged 12.54 percent from 1996 until 2021, reaching an all-time high of 47.56 percent in January of 1996 and a record low of -2.49 percent in January of 2000. Interest rates were lowered and targeted at the favored sectors of the economy that were expected to bring about the implementation of the First National Development Program and ultimately the resolution of the civil war that gradually led to a substantial monetary rise in government revenue in the form of foreign exchange from oil exports. As time went by, revenue increased, triggering the replication of basic minimum wage in the public sector that led to a widespread strike in the private sector. This trend resulted in a further reduction in production and higher inflation as the rise in money supply, and labor demand did not match the productivity increase.

Additionally, one of the inflation features is a fall in the value of the country's currency and an increase in foreign exchange rates. This is evident in the case of Nigeria's Naira (almost), which in 1981 was about N1 to $1 and recently N450 to $1.This decline in Naira's value coincides concurrently with the country's cycle of inflationary rise and has triggered a dramatic downward change in an ordinary Nigerian's standard of living.

Ibeabuchi (2007) describes inflation as a rise in the price for commodities that an individual pays. It is an industrial cankerworm that has eaten deep into the industrial structure of the world. Its effect on the Nigerian economy is so devastating that the country's actual Gross Domestic Product (GDP) has buttress production over the last few years. Inflation is an economically widespread occurrence**.** According to Nwoko, Ihemeje & Anumadu (2016), when the inflation rate is low enough, households and companies do not need to take it into account when making their day-to-day decisions, but when otherwise the trend is a big problem to be addressed in any household and business institution. Every government regulates its economy against inflation by fiscal and monetary policy acts combined. The prominent and noticeable factor of fiscal policy is its direct impact on recurring governments expenditure on projects. Monetary policy, on the other hand, is the mechanism by which the government controls the supply of currency, the price of liquidity, and the cost of money or interest rates by a country's central bank or monetary authority, to accomplish a collection of goals geared towards economic development and stability. Monetary policy depends upon the relationship between an economy's interest rates and overall money supply. With all these weapons in place, the desired impact is not yet felt like the inflation rate continues to soar against the monetary authorities' goal (International Monetary Fund IMF, 2019).

Hence, the paper is written to examine the effect of Nigeria's fiscal and monetary policies in the battle against inflation. This research aims to do so by:
i. highlighting the Interest Rate-Inflation relationship.
ii. examining the extent to which Money Supply was able to fight Inflation in Nigeria.
iii. testing the degree to which liquidity ratio impacts Nigerian inflation.
iv. finding out if government spending has a significant impact on Nigeria's Inflation.

LITERATURE REVIEW

Relevant literature on economic policies, fiscal policies, and monetary policies and their effect on economic growth, economic development, and inflation rate are reviewed below:
Wauk and Adjorlolo (2019) examined the monetary policy, inflation, and economic growth of the Ghanaian economy for the period 1982-2017 using Autoregressive Distributed Lag (ARDL) as a model of cointegration. The study revealed that the long-term interest rate significantly affects economic growth negatively, meaning that a higher interest rate appears to curb economic growth and inflationary pressure. The long-run outcome concerning the exchange rate suggests an insignificant negative impact on economic development. The general findings indicate that interest rate and the exchange rate are the macroeconomic variables that affect economic development. There are significant impacts from macroeconomic instabilities on economic growth. They, therefore, call for the Bank of Ghana to have fiscal discipline and autonomy control, with less government intervention, to allow the smooth execution of monetary policies without any policy string attached. Evans (2019) used the autoregressive distributed lag (ARDL) approach to investigate the non-linear relationship among income, inflation, and production in Nigeria and South Africa for the period 1970–2016. He researched that the growth of money affects output in the short run and not the long run. Indication shows that monetary policy is long-run neutral; money inflation directly influences short- and long-run prices. The significant estimates of money growth in both countries on inflation show that inflation is a monetary phenomenon everywhere (both in the short and long run).

According to Adegbite (2019), taxation, a fiscal policy tool used by underdeveloped countries to combat inflation, offers an essential hedge against inflation and has had a significant adverse effect in the short term or the long term. "All taxation components (fiscal policy) did not Granger-cause inflation in Nigeria." Salako & Oyeleke (2019) concluded that government spending had a positive and significant impact on the growth of actual economic activity. The effect of public revenue on Real Gross Domestic Product (RGDP) was conversely affected. Accordingly, findings suggest that the government should cut taxes to raise disposable income to boost real aggregate output in Nigeria.

Tule, Onipede, & Ebuh (2020) indicated that while expansionary monetary policy may have a positive economic effect on society, expansionary fiscal policy does not automatically translate into growth. The fiscal expansion also magnifies levels of inflation. They concluded that while coordinated monetary and fiscal policies could help stimulate economic growth without jeopardizing price stability, fiscal activities around additional infrastructure projects would thus help to boost the economy and further boost the demand for private sector investment in the economy.

Olayiwola (2019) used interest-rate shocks to investigate the asymmetric effect of positive and negative monetary policy shocks on Nigerian output and prices. Results showed that, in the short run, adverse shocks have more significant effects on output (2.7%) than positive shocks (1.2%). Still, positive and negative monetary policy shocks have no significant effects on the price level. In the long run, positive shocks have more significant effects on both outputs than negative shocks (3.1% and 1.9%, respectively). The study concluded that monetary policy shocks in the short and long term have asymmetric effects on Nigeria's production and prices.
Fiscalists or Keynesians adduce the superiority of fiscal behavior, that is, rises in government spending contribute to aggregate production, and cuts in tax rates raise aggregate demand.

These two acts are known as having a multiplier effect. However, from empirical evidence, the monetarist argues that government spending multiplier with a constant stock of money is positive for a few quarters. However, in the long run, it is zero, thus explaining the crowing-out effect. To them, government spending can only increase aggregate demand if funded through the continual creation of money stock. IMF (2019), however, advised that developing countries will strive to implement systemic changes such as disallowing financial sector leakage after fiscal and monetary exhaustion.

According to Mesagan & Yusuf (2019), fiscal and monetary policies affect economic growth and stabilization in Nigeria, Gambia, and Ghana, based on data analyzed between 1980 and 2017. The report uses the actual gross domestic product and the exchange rate, respectively, to help economic growth and economic stability. In contrast, fiscal policy is represented by deficit financing and government spending; the broad money supply and monetary policy rate are also used as monetary policy proxies. In Nigeria, both monetary and fiscal policies are essential for economic stabilization. The report suggested more reductions in the pace of monetary policy to raise exchange rate tension and maintain the different economies.

Despite this controversy and the rational expectations and proposals, the combination of monetary and fiscal policies has proved to be resilient instruments in government-wide stabilisation goals. Ubi-Abai & Ekere (2018), using a group of 47 sub-Saharan African countries from 1996 to 2016, examined the impact of monetary and fiscal policies on economic development. Results indicated that monetary and fiscal policies have positively impacted economic growth in the sub-region. Furthermore, fiscal policy has a more substantial uncertainty in boosting sub-Saharan Africa's economic activity. The authors noted that fiscal policy affected development more than monetary policy.

Ekwe, Amah, & Omodero (2017) studied monetary policy impact assessment on Nigeria's economy (2016-2019). The research used money supply (M2) and private sector credit, and the Gross Domestic Product (GDP). The results revealed that Nigeria's monetary policy has no major effect on the economy. The broad money supply (M2) was not significant at 5 percent, meaning the level is 0.36 > 0.05, while the credit to the private sector (CPS) shows 0.22 > 0.05. The broad money supply was not adequately managed, and the rate of bank credit to the private sectors was so high that the economy was negatively impacted.

METHODOLOGY

This section covers the data sources of data and the analytical technique used in analyzing the data. Secondary data were used for the study. The data were extracted from the Statistical Bulletins of several years covering thirty-eight years (1981-2018). The least-square method is adopted as the econometric technique in this study for the Vector Autoregressive (VAR) model. This was achieved using the following factors; inflation rate (contingent variable), and money supply, interest rate, national debt, and government spending (as independent variables).

Statement of Research Hypotheses

The hypotheses on which this study is based are stated as follows, in null form:

Ho_1: There is no significant relationship between Interest Rate and Inflation.

Ho_2: Money Supply has no impact on Inflation

Ho_3: Public debt has no significant relationship with inflation.

Ho_4: Government Expenditure has no significant impact on Inflation in Nigeria.

Model Specification

The relation between inflation and monetary and fiscal variables can be presented as follows for testing the working hypotheses

INF = F (EDSC, BMCL, LEND, GFCE)

The VAR model can be defined in an expanded form, as seen below.

$$INF_t = \beta_o + \beta_j logEDSC_{t-j} + \beta_k logBMCL_{t-k} + \beta_m LEND_{t-m} + \beta_n logGFCE_{t-n} + u_t$$

Where:

INF = Inflation consumer prices Index

EDSC = External Debt Stocks (in natural log form)

BMCL = Broad MoneyCurrent LUC (in natural log form)

LEND =Lending interest rate

GFCE = Government Final Consumption Expenditure (in natural log form)

$\beta_{j,k,m,n}$ =Co-efficients (for t = 1, …w)

β_o = Constant

u = Stochastic error term of the model

Apriori Expectation

The relationship between the supply of money and inflation is positive because an increase in money supply will lead to increased inflation and vice versa. Inflation and interest rate are strongly related as increasing inflation contributes to higher interest rates, whereas lower inflation leads to lower interest rates. The same applies to inflation for public debt and government expenditure.

RESULT AND DATA ANALYSIS

Descriptive Statistics

Table 1: Descriptive Statistical Tools of Core Variables

	INF	EDSC	BMCL	LEND	GFCE
Mean	19.3504	2.62E+10	6.31E+12	17.7575	1.77E+12
Median	12.7158	2.91E+10	8.68E+11	17.5692	1.02E+11
Maximum	72.8355	4.70E+10	3.27E+13	31.6500	7.23E+12
Minimum	5.3880	9.62E+09	1.52E+10	8.9167	2.47E+09
Std. Dev.	17.2436	9.11E+09	9.59E+12	4.8427	2.49E+12
Skewness	1.7419	-0.0947	1.4308	0.2094	0.9432
Kurtosis	4.8387	2.3221	3.7351	3.6903	2.1745
Jarque-Bera	24.5702	0.7843	13.8209	1.0321	6.7134
Probability	0.0000	0.6756	0.0009	0.5969	0.0349
Sum	735.3152	9.96E+11	2.40E+14	674.7852	6.73E+13
Sum Sq. Dev.	11001.69	3.07E+21	3.40E+27	867.7199	2.29E+26
Observations	38	38	38	38	38

Source: Output from E-view9 (2020)

Table 1 provides the descriptive statistics of the variables in the regression model. The results show that the average inflation rate during the study period is 19.3, which varies across the years with a standard deviation of 17.2. The skewness and kurtosis values (1.74 and 4.84) reveal that the distribution of the time series data is tailed to the right and leptokurtic. The Jarque-Bera value of 24.57, which is statistically significant at the 5% level, suggests rejecting the null hypothesis of a normal distribution. Similar results hold for the average Broad Money Current LUC (BMCL), showing a right-tailed leptokurtic distribution and a significant Jarque-bera value of 13.82 (p = 0.00). However, the average External Debt Stocks (EDSC) and lending rate (LEND) during the study period mirror normal skewness (-0.09 & 0.21 respectively) and kurtosis (2.32 & 3.69 respectively), with non-significant Jarque-Bera values of 0.78 and 1.03 respectively (p = 0.67 & 0.59). The average Government Final Consumption Expenditure (GFCE) reveals a short-right tailed (skewness = 0.94) and slightly platykurtic distribution (kurtosis = 2.17), although the Jarque-Bera value (6.71) is statistically significant (p = 0.03).

Unit Root Test

Table 2: Augmented Dickey Fuller (ADF) unit root rest result

Variables	Method	Statistics	p-value	Order
INF	ADF-Fisher	-2.233	0.199	I(0)
	ADF-Fisher	-6.262	0.000*	I(1)
LogEDSCV	ADF-Fisher	-2.466	0.132	I(0)
	ADF-Fisher	-4.727	0.001*	I(1)
LogBMCL	ADF-Fisher	-0.801	0.807	I(0)
	ADF-Fisher	-3.416	0.017*	I(1)
LEND	ADF-Fisher	-2.492	0.126	I(0)
	ADF-Fisher	-6.794	0.000*	I(1)
LogGFCE	ADF-Fisher	-0.447	0.890	I(0)
	ADF-Fisher	-6.040	0.000*	I(1)

*** Significant at the 0.05 statistical level**
Source: Output from E-view9 (2020)

The summary of the ADF-Fisher unit root test in Table 2shows that the time series for all the variables are stationary at their first difference. The t-statistics of the variables after their first difference is significant at the 5% level ($p < 0.05$). Based on these results, we can therefore conclude that the time series data for the variables are suitable for the regression model.

Cointegration Test

Table 3: Johansen Co-integration Test Results (Trace)

Hypothesized No. of C.E. (s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.
None *	0.7027	104.2882	69.8188	0.000
At most 1 *	0.6591	63.0447	47.8561	0.001
At most 2	0.4715	26.4595	29.7971	0.116
At most 3	0.1026	4.7769	15.4947	0.832
At most 4	0.0318	1.0974	3.8415	0.295

***denotes rejection of the hypothesis at the 0.05 level**
Source: Output from E-view9 (2020)

Table 4: Johansen Co-integration Test Results (Max-Eigen)

Hypothesized No. of C.E. (s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.
None *	0.7027	41.2435	33.8769	0.006
At most 1 *	0.6591	36.5882	27.5843	0.003
At most 2 *	0.4715	21.6825	21.1316	0.042
At most 3	0.1026	3.6796	14.2646	0.892
At most 4	0.0318	1.0974	3.8415	0.295

***denotes rejection of the hypothesis at the 0.05 level**
Source: Output from E-view9 (2020)

Tables 3 and 4 reveal the Johansen cointegration test result for the time series data. The null hypothesis of the test is "no co-integrating equations." The result of the Trace test shows p-values which are significant at the 5% statistical level ($p = 0.000$ & $0.001 < 0.05$), suggesting at least one co-integrating equation. Similarly, the result of the Max-Eigen test shows p-values which are significant at the 5% level ($p = 0.006, 0.003$ & $0.042 < 0.05$), indicating at least two co-integrating equations. The summary of these results confirms there exists at least one co-integrating equation among the variables, suggesting that they are related and can be combined linearly. This makes them fit for the regression model.

Short-Run Estimates

Table 5: Lag Order SelectionCriteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-262.636	NA	1.972606	14.86867	15.08860	14.94543
1	-97.089	275.9118	0.000814	7.060499	8.380098*	7.521074
2	-63.2407	47.01145*	0.000542*	6.568930*	8.988195	7.413318*

*** indicates lag order selected by the criterion**
Source: Output from E-view9 (2020)

The lag order selection results in Table 5 indicate a maximum lag length of 2 for most criteria. The Akaike Information Criterion (AIC) used for the unit test is therefore adopted for the model, with a lag order of 2.

Table 6: VAR Model

Equation: INF = C(1)*INF(-1) + C(2)*INF(-2) + C(3)*LOGEDSC(-1) + C(4) *LOGEDSC(-2) + C(5)*LOGBMCL(-1) + C(6)*LOGBMCL(-2) + C(7) *LEND(-1) + C(8)*LEND(-2) + C(9)*LOGGFCE(-1) + C(10)*LOGGFCE(-2) + C(11) Observations: 38			
R-squared	0.682953	Mean dependent var	19.63346
Adjusted R-squared	0.556134	S.D. dependent var	17.61564
S.E. of regression	11.73611	Sum squared resid	3443.408
Durbin-Watson stat	1.838774		

Source: Output from E-view9 (2020)

Table 6 shows the specifications of the VAR model for the short-run relationship among the variables. The R-squared value of 0.683 indicates that the independent variables account for 68.3% of the variations in the dependent variables. The Durbin-Watson statistics (1.83) is very close to 2, suggesting that the model is free from serial correlations and thus a good fit for the variables.

Table 7: Estimates of the VAR Model parameters

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.545099	0.160649	3.39311	0.0009
C(2)	-0.40297	0.165808	-2.430323	0.0165
C(3)	55.03329	29.45248	1.868546	0.064
C(4)	-33.461	23.49936	-1.423909	0.157
C(5)	29.76115	54.12433	0.549866	0.5834
C(6)	-71.6483	50.38751	-1.421946	0.1575
C(7)	-0.36224	0.82874	-0.437092	0.6628
C(8)	1.985718	0.783741	2.533639	0.0125
C(9)	9.314826	16.57483	0.561986	0.5751
C(10)	21.7464	19.42539	1.119483	0.2651
C(11)	-89.3685	241.8277	-0.369554	0.7123

Source: Output from E-view9 (2020)

Results from Table 7 reveal the coefficients of variables in the VAR model at the specified lag order. Outputs from the result show significant relationships between inflation and lending rate at the 5% level (p = 0.0125). The positive coefficient (1.986) in the model also indicates a direct relationship between the variables. This result suggests that the lending rate positively and significantly affect inflation in the country in a short run. However, other effects in the VAR model indicate that in the short run, money supply, external debt, and government expenditure do not significantly influence inflation.

Long-run Estimates

Table 8: VEC Model

Equation: D(INF) = C(1)*(INF(-1) - 40.6370394109*LOGEDSC(-1) - 7.20202179242*LOGBMCL(-1) + 2.84793233253*LEND(-1) + 8.62196496873*LOGGFCE(-1) + 340.095843249) + C(2)*D(INF(-1)) + C(3)*D(LOGEDSC(-1)) + C(4)*D(LOGBMCL(-1)) + C(5)*D(LEND(-1)) + C(6)*D(LOGGFCE(-1)) + C(7)*D(INF(-2)) + C(8)*D(LOGEDSC(-2)) + C(9)*D(LOGBMCL(-2)) + C(10)*D(LEND(-2)) + C(11)*D(LOGGFCE(-2)) + C(12)

Observations: 38

R-squared	0.582546	Mean dependent var	-0.31765
Adjusted R-squared	0.382895	S.D. dependent var	15.44374
S.E. of regression	12.132	Sum squared resid	3385.262
Durbin-Watson stat	1.735422		

Source: Output from E-view9 (2020)

Table 8 shows the specifications of the VECM for the long-run relationship among the hypothesized variables. The R-squared value of 0.583 indicates that the independent variables account for 58.3% of the variations in the dependent variables. The Durbin-Watson statistics (1.74) is close to 2, suggesting the absence of serial correlations from the model and making it fit for the estimation of the parameters.

Table 9: Estimates of the VECM parameters

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.2527	0.148695	-1.69942	0.0919
C(2)	0.129623	0.159056	0.814948	0.4168
C(3)	10.62721	24.35033	0.43643	0.6633
C(4)	130.1713	60.86634	2.138642	0.0346
C(5)	-0.00213	0.76579	-0.00278	0.9978
C(6)	10.70139	15.49916	0.69045	0.4913
C(7)	-0.25561	0.186104	-1.37348	0.1723
C(8)	26.76733	28.77576	0.930204	0.3542
C(9)	-26.4056	50.87002	-0.51908	0.6047
C(10)	1.969399	0.758997	2.594738	0.0107
C(11)	-6.76251	15.44081	-0.43796	0.6622
C(12)	-11.2188	6.109666	-1.83623	0.0689

Source: Output from E-view9 (2020)

The parameters of the coefficients in the VECM in Table 9 show that money supply (BMCL)has a positive coefficient (130.17) which is statistically significant at the 5% level (p = 0.035). This suggests that the money supply positively and substantially influences inflation in the long run. Similarly, lending (LEND) has a positive coefficient (1.97) which is also statistically significant at the 5% level. This implies that lending also positively and significantly influences inflation in the long run. Further results from the VECM show that external debt and government expenditure do not significantly affect inflation in the long run.

CONCLUSION AND POLICY RECOMMENDATIONS

The researchers used data of 38 years from various Central Bank of Nigeria (CBN) financial reports. It was found out that there was a moderately positive correlation of (0.561) between the independent variable (inflation) and the dependent variables (External Debt Stock, Broad money, Lending Interest Rate, and General Government Expenditure). The result of the lending rate versus inflation was significant at 5%. Others were not significant. The overall result was also significant at 5% (F = 3.798, P = 0.012). It, therefore, showed that though both policies are effective in dealing with Nigerian inflation, monetary policy is more effective in dealing with the inflation problem in Nigeria.

Based on the findings from this research, the following recommendations have been put forward:

i. Financial institutions must comply with specified prudential guidelines, since monetary policy is more effective in combatting the inflation rate.

ii. Our analysis has shown that monetary policy must function randomly to build a proper macroeconomic framework. Therefore, monetary policy depends significantly on alignment with fiscal policy; these two phenomena should be expressed to produce effective results. Consequently, monetary policy implementation, through its strategies, should involve efficient and careful supervision on behalf of the monetary authorities. Funds leaked out of the network should be prevented.

iii. Results have indicated that the Central Bank of Nigeria (CBN) had adopted different monetary policy indicators, which has had a significant impact on the inflation rate in the country. This is understandable as Nigeria operates below the full-employment level, and increasing GDP does not always increase purchasing power. The poverty ranking has persisted in deteriorating over the years. Therefore, the CBN should improve the use of monetary policy measures to improve the economy of Nigeria. This further lends support to the place of CBN in the national development phase of the country. Therefore, the CBN should rise to its task without pressure or hindrance from any arm of the government.

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