

Macroeconomic Drivers of Inflation in Nigeria

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Abstract: Today, the Nigerian State is worst hit by the negative impact of inflation due to increase in prices. Consequently, the government and stake holders including the academia are curious about searching and indentifying the major drivers of inflation in Nigeria so as to enact policies that could mitigate the negative impact of inflation in the country. To address the conundrum, this study therefore examines drivers of inflation in Nigeria by modeling macroeconomic indices like money supply, government expenditure, fiscal deficits, crude oil prices, trade openness, exchange rate and prime price to determine their various contributions to inflation in Nigeria. The study explored secondary time series data obtained from the CBN bulletin of various issues which were analyzed using econometric regression technique of the Ordinary Least Square (OLS). From the results of the OLS, it was observed that money supply, government expenditure, crude oil prices, trade openness and exchange rate have a positive influence on inflation in Nigeria, although, exchange rate was expected to be either positive or negative. On the other hand, fiscal deficit and prime rate has inverse relation on inflation in Nigeria. The results also showed that all the variables - money supply, government expenditure, fiscal deficit, crude oil prices, trade openness, exchange rate and prime rate are statistically significant in explaining inflation and are also major determinants of inflation in Nigeria. The F-test conducted in the study shows that the model has a goodness of fit and is statistically different from zero. In other words, there is a significant nexus between the dependent and independent variables in the model. The study recommends that to curb inflation, Nigeria needs a proactive leadership that enact and implement enabling laws and policies that will curb corruption which causes leakages in the nation's monetary and fiscal policies that regulates the various indices modeled this study.

Keywords: Inflation, Money Supply, Government Expenditure, Fiscal Deficit, Crude Oil Prices, Trade Openness, Exchange Rate, Prime Rate.

1. INTRODUCTION

Inflation in Nigeria, like in many other countries, is influenced by a combination of domestic and global factors. Understanding the drivers of inflation in Nigeria is crucial for policymakers, businesses, and individuals to make informed economic decisions. Available literature posits a number of indicators like

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monetary policy, exchange rates, fiscal policy, supply-side factors, food prices, energy prices, wage inflation, expectations, global factors, structural issues and policy and regulatory environment that drives inflation in Nigeria. The actions of the Central Bank of Nigeria (CBN) play a significant role in driving inflation (Okotori, 2019). The CBN can influence inflation through the adjustment of interest rates, reserve requirements, and open market operations. Expansionary monetary policies, such as lowering interest rates and increasing money supply, can lead to higher inflation. Again, Nigeria's heavy reliance on imports, especially for essential goods like fuel, food, and machinery, means that fluctuations in the exchange rate can significantly impact inflation. A depreciating Nigerian Naira can increase the cost of imported goods and, in turn, push up inflation. Government fiscal policy, including the budget deficit, public spending, and taxation, can affect inflation. Excessive government spending and budget deficits can increase demand for goods and services, leading to higher prices (Obinna, 2020; Amassoma, Onyedikachi & Sunday, 2018).

Inflation can also be driven by supply-side factors, such as disruptions in the supply chain, natural disasters, and increases in production costs. These factors can lead to supply shortages, which can push prices higher. Food is a significant component of the Consumer Price Index (CPI) in Nigeria. Fluctuations in food prices, often driven by factors like weather conditions, crop failures, and transportation costs, can have a substantial impact on overall inflation. Furthermore, energy prices, particularly fuel, are also important drivers of inflation in Nigeria. Government policies affecting fuel subsidies and global oil prices can influence the cost of energy, which, in turn, impacts transportation and production costs. Increases in labour costs, often driven by demands for higher wages or a tight labor market, can lead to higher production costs for businesses. These increased costs are often passed on to consumers in the form of higher prices. Inflation expectations can be self-fulfilling. If businesses and consumers expect higher future inflation, they may adjust their behaviour accordingly, demanding higher wages and increasing prices, thus contributing to inflation. Nigeria is not isolated from global economic trends. International economic developments, such as changes in oil prices (since Nigeria is an oil-dependent economy), can have a significant impact on the country's inflation rate. Nigeria faces various structural issues that can exacerbate inflation, including poor infrastructure, corruption, and inefficient business practices. These issues can hinder productivity and economic growth, contributing to inflation. Government policies, including trade restrictions, subsidies, and regulatory changes, can influence the pricing of goods and services, which can impact inflation. In Nigeria, addressing inflation often requires a combination of prudent monetary and fiscal policies, efforts to improve infrastructure and supply chains, and measures to address structural issues. Additionally, central bank and government policies need to strike a balance between ensuring price stability and promoting economic growth, as the two objectives can sometimes be in conflict (Aimola & Odhiambo, 2021; Adodo, Akindutire & Ogunyemi, 2018).

Controlling inflation, or maintaining a low and stable rate of price increases in an economy, offers several significant benefits. Inflation can have both positive and negative effects, and controlling it helps strike a balance between these factors. Here are some of the key benefits of controlling inflation: price stability, predictable business environment, increased saving and investment, lower interest rates, improved international competitiveness, encourages economic efficiency, reduces uncertainty, social equity, credibility and confidence and avoidance of hyperinflation. One of the most obvious benefits is price stability. Low and stable inflation rates ensure that the purchasing power of a currency remains relatively constant over time (Ahamba, Obi, Durueke, Onoja, Okoro & Nwuzor, 2020). Consumers can plan their budgets and make financial decisions with greater confidence when prices are not subject to wild fluctuations. A controlled inflation environment provides businesses with more predictable costs and pricing strategies. This helps in long-term planning, investment, and decision-making, contributing to economic stability and growth (Onwubuariri, Oladeji & Bank-Ola, 2021).

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When people expect their money to retain its value, they are more likely to save and invest. Higher savings can lead to increased capital formation, which is essential for economic growth and development. Businesses can access more funds for investments, leading to increased productivity and job creation. Central banks often lower interest rates to combat high inflation. This, in turn, can result in reduced borrowing costs for consumers and businesses, making it more affordable to invest in housing, education, and other long-term assets. Lower interest rates also stimulate consumer spending. Low inflation can enhance a nation's international competitiveness. A stable currency with low inflation is attractive to foreign investors and can lead to increased exports, which can contribute to economic growth and job creation. Inflation can distort price signals, making it harder for consumers and businesses to make informed decisions. When inflation is controlled, resources are allocated more efficiently in the economy, leading to improved productivity. High inflation rates can create economic uncertainty and disrupt financial markets. By controlling inflation, central banks and governments reduce this uncertainty, fostering a more stable economic environment. High inflation can disproportionately affect low-income households, as they often have limited means to protect themselves from rising prices. Controlling inflation helps protect the purchasing power of vulnerable populations, promoting social equity (Olayinka, 2021; Aimola & Odhiambo, 2021).

A track record of controlling inflation builds confidence in an economy's stability and the competence of its monetary authorities. This confidence can attract both domestic and foreign investments. One of the most extreme consequences of unchecked inflation is hyperinflation, where prices spiral out of control, leading to severe economic and social disruptions. Controlling inflation helps prevent such catastrophic scenarios. While there are many benefits to controlling inflation, it's essential to strike a balance, as excessively low inflation or deflation can also have negative consequences, such as reduced consumer spending and stagnant economic growth. Central banks typically aim for a moderate, stable inflation rate, often targeting a specific annual rate maximize the benefits while avoiding the drawbacks of inflation (Okeke, Ohazulume, & Emerenini, 2022; Aimola & Odhiambo, 2021).

Statement of the Problem

Nigeria has faced persistent challenges with inflation over the years, and various efforts have been made to curb it, but not all of them have been successful. Some notable efforts to curb inflation in Nigeria that have faced challenges or have been less effective include: Monetary Policy Tools, Exchange Rate Management, Fiscal Policy, Subsidy Removal, Structural Reforms, Security and Conflict Resolution, Global Commodity Prices, Unemployment and Income Inequality etc. The Central Bank of Nigeria (CBN) has traditionally used monetary policy tools, such as interest rate adjustments and reserve requirements, to control inflation. However, these measures have often yielded limited success due to structural issues in the Nigerian economy. For instance, high inflation can be driven by supply-side factors, such as food production and distribution inefficiencies, making it less responsive to traditional monetary policy tools. Nigeria has also tried to manage inflation by controlling its exchange rate (Okoye, Olokoyo, Ezeji Okoh & Evbuomwan, 2019). A stable exchange rate can help reduce imported inflation, but Nigeria's exchange rate policies have been inconsistent, leading to multiple exchange rates in the country, which has often fueled inflationary pressures (Melaku, 2020). The government has attempted to curb inflation through fiscal policy, such as reducing budget deficits and implementing austerity measures. However, achieving fiscal discipline has been challenging, and efforts to reduce government spending have often faced resistance and political constraints. Subsidy removal, particularly on fuel and electricity, has been a contentious issue in Nigeria. While removing subsidies can help reduce government spending and inflationary pressures, it often leads to public protests and opposition, making it politically difficult to implement. Long-term structural reforms are crucial to tackling inflation, especially in an economy like

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Nigeria's. These reforms may involve improving infrastructure, reducing corruption, enhancing agricultural productivity, and boosting industrialization (Aimola & Odhiambo, 2021). However, the implementation of such reforms has been slow and often faces political and bureaucratic obstacles. Inflation can also be influenced by security issues, such as conflicts and insurgency. Nigeria has faced security challenges, particularly in the northeast, which disrupt economic activities and hinder efforts to control inflation. Nigeria's economy is heavily reliant on oil exports, and global oil price fluctuations can impact inflation rates. Efforts to stabilize oil prices, such as through production cuts, have not always been effective. High unemployment and income inequality can contribute to inflationary pressures. Efforts to address these issues and create more inclusive economic growth have faced challenges in implementation (Adeleye, Ogundipe, Ogundipe, Ogunrinola & Adediran, 2019). In line with the above, the main goal of this study is to empirically examine the main determinants of inflation in Nigeria within a dynamic framework. Specifically however, the paper seeks to explore the trend of inflation in Nigeria and also examine the extent to which inflation depends on crude oil price, trade openness, money supply and other macroeconomic variables and also examine the extent of relationship in both the short run and the long run.

Objective of the Study

The main objective of the study is to examine macroeconomic drivers of inflation in Nigeria. Specifically, the study seeks to:

1. Ascertain the extent to which money supply drives inflation in Nigeria
2. Determine the extent to which government expenditure drives inflation in Nigeria
3. Examine the extent to which fiscal deficit drives inflation in Nigeria
4. Investigate the extent to which crude oil price drives inflation in Nigeria
5. Evaluate the extent to which trade openness drives inflation in Nigeria
6. Ascertain the extent to which exchange rate drives inflation in Nigeria
7. Determine the extent to which prime rate drives inflation in Nigeria

Statement of Hypothesis

H₀₁: Money supply is not a significant driver of inflation in Nigeria

H₀₂: Government expenditure is not a significant driver of inflation in Nigeria

H₀₃: Fiscal deficit is not a significant driver of inflation in Nigeria

H₀₄: Crude oil price is not a significant driver of inflation in Nigeria

H₀₅: Trade openness is not a significant driver of inflation in Nigeria

H₀₆: Exchange rate is not a significant driver of inflation in Nigeria

H₀₇: Prime rate is not a significant driver of inflation in Nigeria

2. METHODOLOGY

Model Specification

The study model is specified as follows:

The structural form of the model is:

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$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7) \quad (1)$$

The mathematical form of the model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 \quad (2)$$

The econometric form of the model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu_i \quad (3)$$

Where Y = Inflation rate (INF)

X₁ = Money supply (MYS)

X₂ = Government expenditure (GEX)

X₃ = Fiscal deficit (FID)

X₄ = Crude oil price (CRP)

X₅ = Trade openness (TOP)

X₆ = Exchange rate (EXR)

X₇ = Prime rate (PMR)

β₀ = Intercept of the model

β₁ – β₇ = Parameters of the regression coefficients

μ_i = Stochastic error term

Method of Data Analysis

The economic technique employed in the study is the ordinary least square (OLS). This is because the OLS computational procedure is fairly simple a best linear estimator among all unbiased estimation, efficient and shown to have the smallest (minimum variance) thus, it become the best linear unbiased estimator (BLUE) in the classical linear regression (CLR) model. Basic assumptions of the OLS are related to the forms of the relationship among the distribution of the random variance (μ_i). OLS is a very popular method and in fact, one of the most powerful methods of regression analysis. It is used exclusively to estimate the unknown parameters of a linear regression model. The Economic views (E-views) software will be adopted for regression analysis.

Stationarity (unit root) test

The importance of this test cannot be overemphasized since the data to be used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test would be used for this analysis since it adjusts for serial correlation.

Decision rule: If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

Cointegration test

Econometrically speaking, two variables will be cointegrated if they have a long-term, or equilibrium relationship between them. Cointegration can be thought of as a pre-test to avoid spurious regressions

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situations (Granger, 1986). As recommended by Gujarati (2004), the ADF test statistic will be employed on the residual.

Decision Rule: if the ADF test statistic is greater than the critical value at 5%, then the variables are cointegrated (values are checked in absolute term)

Evaluation of Parameter Estimates

The estimates obtained from the model shall be evaluated using three (3) criteria. The three (3) criteria include:

1. The economic a priori criteria.
2. The statistical criteria: First Order Test
3. The econometric criteria: Second Order Test

Evaluation based on economic a priori criteria

This could be carried out to show whether each regressor in the model is comparable with the postulations of economic theory; i.e., if the sign and size of the parameters of the economic relationships follow with the expectation of the economic theory. The a priori expectations, in tandem with the manufacturing sector growth and its determinants are presented in Table 3.1 below, thus:

Table 1: Economic a priori expectations for the model

Parameters	Variables		Expected Relationships	Expected Coefficients
	Regressand	Regressor		
β_0	INF	Intercept	+/-	$0 < \beta_0 > 0$
β_1	INF	MYS	+	$\beta_1 < 0$
β_2	INF	GEX	+	$\beta_2 < 0$
β_3	INF	FID	-	$\beta_3 < 0$
β_4	INF	CRP	+	$\beta_4 < 0$
β_5	INF	TOP	+	$\beta_5 < 0$
β_6	INF	EXR	+/-	$0 < \beta_6 > 0$
β_7	INF	PMR	-	$\beta_7 < 0$

Source: Researchers computation

A positive '+' sign indicate that the relationship between the regressor and regressand is direct and move in the same direction i.e. increase or decrease together. On the other hand, a '-' shows that there is an indirect (inverse) relationship between the regressor and regressand i.e. they move in opposite or different direction.

Evaluation based on statistical criteria: First Order Test

This aims at the evaluation of the statistical reliability of the estimated parameters of the model. In this case, the F-statistic, standard error, t-statistic, Co-efficient of determination (R^2) and the Adjusted R^2 are used.

The Coefficient of Determination (R^2)/Adjusted R^2

The square of the coefficient of determination R^2 or the measure of goodness of fit is used to judge the explanatory power of the explanatory variables on the dependent variables. The R^2 denotes the percentage of variations in the dependent variable accounted for by the variations in the independent variables. Thus,

the higher the R^2 , the more the model is able to explain the changes in the dependent variable. Hence, the better the regression based on OLS technique, and this is why the R^2 is called the co-efficient of determination as it shows the amount of variation in the dependent variable explained by explanatory variables.

However, if R^2 equals one, it implies that there is 100% explanation of the variation in the dependent variable by the independent variable and this indicates a perfect fit of regression line. While where R^2 equals zero. It indicates that the explanatory variables could not explain any of the changes in the dependent variable. Therefore, the higher and closer the R^2 is to 1, the better the model fits the data. Note that the above explanation goes for the adjusted R^2 .

The F-test: The F-statistics is used to test whether or not, there is a significant impact between the dependent and the independent variables. In the regression equation, if calculated F is greater than the F table value, then there is a significant impact between the dependent and the independent variables in the regression equation. While if the calculated F is smaller or less than the table F, there is no significant impact between the dependent and the independent variable.

Evaluation based on econometric criteria: Second Order Test

This aims at investigating whether the assumption of the econometric method employed are satisfied or not. It determines the reliability of the statistical criteria and establishes whether the estimates have the desirable properties of unbiasedness and consistency. It also tests the validity of non-autocorrelation disturbances. In the model, Durbin-Watson (DW), unit root test, co-integration test are used to test for: autocorrelation, multicollinearity and heteroskedasticity.

Test for Autocorrelation

This test is carried out to see if the error or disturbance term (μ_t) is temporarily independent. That is, the values of μ_t at every different period are not the same. It tests the validity of non autocorrelation disturbance. The Durbin-Watson (DW) test is appropriate for the test of First-order autocorrelation and it has the following criteria.

1. If d^* is approximately equal to 2 ($d^* = 2$), we accept that there is no autocorrelation in the function.
2. If $d^* = 0$, there exist perfect positive auto-correlation. In this case, if $0 < d^* < 2$, that is, if d^* is less than two but greater than zero, it denotes that there is some degree of positive autocorrelation, which is stronger the closer d^* is to zero.
3. If d^* is equal to 4 ($d^* = 4$), there exist a perfect negative autocorrelation, while if d^* is less than four but greater than two ($2 < d^* < 4$), it means that there exist some degree of negative autocorrelation, which is stronger the higher the value of d^* .

Test for Multicollinearity

This means the existence of an exact linear relationship among the explanatory variable of a regression model. It is use to determine whether there is a correlation among variables.

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicollinearity but if the coefficient is less than 0.8 there is no multicollinearity. Also, reject the null hypothesis (H_0), if any two variables in the model are in excess of 0.8 or even up to 0.8. Otherwise we reject.

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Test for Heteroscedasticity

The essence of this test is to see whether the error variance of each observation is constant or not. Non-constant variance can cause the estimated model to yield a biased result. White’s General Heteroscedasticity test would be adopted for this purpose.

Decision Rule: We reject H_0 if $F_{cal} > F_{tab}$ at 5% critical value. Or alternatively, we reject H_0 (of constant variance i.e., homoskedasticity) if computed F-statistics is significant. Otherwise accept at 5% level of significance.

Test for Research Hypotheses

This study will test the research hypothesis using t-test. The t-statistics test tells us if there is an existence of any significance relationship between the dependent variable and the explanatory variables. The t-test will be conducted at 0.05 or 5% level of significance.

Decision rule: Reject H_0 if $t_{cal} > t_{\alpha/2, (n-k)}$. Otherwise, we accept.

Nature and Source of Data

All data used in this research are secondary time series data which are sourced from the Central Bank of Nigeria (CBN) statistical bulletin and National Bureau of Statistics (NBS) annual reports.

3. DATA PRESENTATION AND ANALYSIS

Summary of Stationary Unit Root Test

Establishing stationarity is essential because if there is no stationarity, the processing of the data may produce biased result. The consequences are unreliable interpretation and conclusions. We test for stationarity using Augmented Dickey-Fuller (ADF) tests on the data. The ADF tests are done on level series, first and second order differenced series. The decision rule is to reject stationarity if ADF statistics is less than 5% critical value, otherwise, accept stationarity when ADF statistics is greater than 5% criteria value. The result of regression is in table 2 below.

Table 2: Summary of ADF test results

Variables	ADF Statistics	Lagged Difference	1% Critical Value	5% Critical Value	10% Critical Value	Order of Integration
INF	-5.914271	1	-3.653730	-2.957110	-2.617434	$I(1)$
MYS	-9.380007	1	-3.653730	-2.957110	-2.617434	$I(2)$
GEX	-6.557124	1	-3.653730	-2.957110	-2.617434	$I(2)$
FID	-5.663066	1	-3.653730	-2.957110	-2.617434	$I(1)$
CRP	-6.832986	1	-3.653730	-2.957110	-2.617434	$I(1)$
TOP	-6.530758	1	-3.653730	-2.957110	-2.617434	$I(1)$
EXR	-5.164325	1	-3.653730	-2.957110	-2.617434	$I(1)$
PMR	-6.853553	1	-3.653730	-2.957110	-2.617434	$I(1)$

Source: Researchers computation

Evidence from unit root table above shows that none of the variables are integrated in level, i.e., $I(0)$. MYS and GEX are stationary at second difference, that is, $I(2)$, all other variables of the study are stationary at first difference, that is, $I(1)$. Since the decision rule is to reject stationarity if ADF statistics is less than 5% critical value, and accept stationarity when ADF statistics is greater than 5% criteria value, the ADF absolute value of each of these variables is greater than the 5% critical value at their first

difference but less than 5% critical value in their level form. Therefore, they are all stationary at their first and second difference integration. The parameters are therefore stationary at the order of integration as indicated in the table 2 above. They are also significant at 1%, 5% and 10% respectively.

Since all the variables are integrated at first difference, we go further to carry out the cointegration test. The essence is to show that although all the variables are stationary, whether the variables have a long term relationship or equilibrium among them. That is, the variables are cointegrated and will not produce a spurious regression.

Summary of Johansen Cointegration Test

Cointegration means that there is a correlation among the variables. Cointegration test is done on the residual of the model. Since the unit root test shows that some variables are stationary at first difference, $I(1)$ while others at second difference $I(2)$, we therefore test for cointegration among these variables. The result is presented in tables 3 below for Trace and Maximum Eigen-value cointegration rank test respectively.

Table 3: Summary of Johansen Cointegration Test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.971166	293.2995	159.5297	0.0000
At most 1 *	0.822640	176.2744	125.6154	0.0000
At most 2 *	0.703438	119.1984	95.75366	0.0005
At most 3 *	0.635380	79.08696	69.81889	0.0076
At most 4	0.534577	45.79326	47.85613	0.0771
At most 5	0.340823	20.55458	29.79707	0.3860
At most 6	0.138780	6.801413	15.49471	0.6009
At most 7	0.055121	1.871052	3.841466	0.1714
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.971166	117.0252	52.36261	0.0000
At most 1 *	0.822640	57.07597	46.23142	0.0025
At most 2 *	0.703438	40.11143	40.07757	0.0496
At most 3	0.635380	33.29370	33.87687	0.0586
At most 4	0.534577	25.23868	27.58434	0.0969
At most 5	0.340823	13.75316	21.13162	0.3856
At most 6	0.138780	4.930361	14.26460	0.7506
At most 7	0.055121	1.871052	3.841466	0.1714

Source: Researchers computation

Table 3 indicates that trace have only 4 cointegrating variables in the model while Maximum Eigenvalue indicated only 3 cointegrating variables. Both the trace statistics and Eigen value statistics reveal that there is a long run relationship between the variables. That is, the linear combination of these variables cancels

out the stochastic trend in the series. This will prevent the generation of spurious regression results. Hence, the implication of this result is a long run relationship between inflation and other variables used in the model.

Presentation of Result

Having verified the existence of long-run relationships among the variables in our model, we therefore, subject the model to ordinary least square (OLS) to generate the coefficients of the parameters of our regression model. The result of the regression test is presented in table 4 below.

Table 4: Summary of regression results

Dependent Variable: INF

Method: Least Squares

Sample: 1999 2022

Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	47.37373	5.694087	12.83198	0.0000
MYS	-0.100543	0.002138	-5.253810	0.0000
GEX	0.050121	0.000965	7.125423	0.0000
FID	-0.100102	0.001829	-4.055921	0.0003
CRP	5.035158	6.444243	8.781342	0.0000
TOP	0.101469	0.187107	3.542304	0.0012
EXR	0.159773	0.120594	3.324885	0.0013
PMR	-1.828994	0.629726	-2.904430	0.0073
R-squared	0.758139	F-statistic		32.15216
Adjusted R-squared	0.691730	Prob(F-statistic)		0.000000
S.E. of regression	16.53990	Durbin-Watson stat		1.959683

Source: Researchers computation

Evaluation of Findings

To discuss the regression results as presented in table 4, we employ economic a priori criteria, statistical criteria and econometric criteria.

Evaluation based on economic a priori criteria

This subsection is concerned with evaluating the regression results based on a priori (i.e., theoretical) expectations. The sign and magnitude of each variable coefficient is evaluated against theoretical expectations.

From table 4, it is observed that the regression line have a positive intercept as presented by the constant (c) = 47.37373. This means that if all the variables are held constant or fixed (zero), INF will be valued at 47.37373. Thus, the a-priori expectation is that the intercept could be positive or negative, so it conforms to the theoretical expectation.

It is observed in table 4 that money supply, government expenditure, crude oil prices, trade openness and exchange rate have a positive impact on inflation in Nigeria, although, exchange rate was expected to be

either positive or negative. This implies that a unit increase in money supply, government expenditure, crude oil prices, trade openness and exchange rate will lead to a increase in the INF in Nigeria. On the other hand, fiscal deficit and prime rate has a negative impact on inflation in Nigeria. This means that as fiscal deficit and prime rate are increasing, inflation will be decreasing in Nigeria. Thus, this shows that money supply, government expenditure, crude oil prices, trade openness and exchange rate are major determinants of inflation in Nigeria while fiscal deficit and prime rate are not determinants of inflation in Nigeria.

From table 4, it is observed that all the variables conform to the a priori expectation of the study. Thus, table 5 summarises the a priori test.

Table 5: Summary of economic a priori test

Parameters	Variables		Expected Relationships	Observed Relationships	Conclusion
	Regressand	Regressor			
β_0	INF	Intercept	+/-	+	Conform
β_1	INF	MYS	+	+	Conform
β_2	INF	GEX	+	+	Conform
β_3	INF	FID	-	-	Conform
β_4	INF	CRP	+	+	Conform
β_5	INF	TOP	+	+	Conform
β_6	INF	EXR	+/-	+	Conform
β_7	INF	PMR	-	-	Conform

Source: Researchers compilation

Evaluation based on statistical criteria

This subsection applies the R^2 , adjusted R^2 , the S.E and the f–test to determine the statistical reliability of the estimated parameters. These tests are performed as follows:

From our regression result, the coefficient of determination (R^2) is given as 0.758139, which shows that the explanatory power of the variables is very high and/or strong. This implies that 76% of the variations in the growth of the inflation are being accounted for or explained by the variations in money supply, government expenditure, fiscal deficit, crude oil prices, trade openness, exchange rate and prime rate in Nigeria. While other determinants of INF not captured in the model explain just 24% of the variation in inflation in Nigeria.

The adjusted R^2 supports the claim of the R^2 with a value of 0.691730 indicating that 69% of the total variation in the dependent variable (inflation rate is explained by the independent variables (the regressors)). Thus, this supports the statement that the explanatory power of the variables is very high and strong.

The standard errors as presented in table 4.3 show that all the explanatory variables were all low. The low values of the standard errors in the result show that some level of confidence can be placed on the estimates.

The F-statistic: The F-test is applied to check the overall significance of the model. The F-statistic is instrumental in verifying the overall significance of an estimated model. The hypothesis tested is:

H_0 : The model has no goodness of fit

H_1 : The model has a goodness of fit

Decision rule: Reject H_0 if $F_{cal} > F_{\alpha} (k-1, n-k)$ at $\alpha = 5\%$, accept if otherwise.

Where

V_1 / V_2 Degree of freedom (d.f)

$V_1 = n-k, V_2 = k-1$:

Where; n (number of observation); k (number of parameters)

Where $k-1 = 8-1 = 7$

Thus, $n-k = 35-8 = 27$

Therefore, $F_{0.05(7,27)} = 2.01$ (From the F table) ... F-table

F-statistic = 32.15216 (From regression result) ... F-calculated

Since the F-calculated $>$ F-table, we reject H_0 and accept H_1 that the model has goodness of fit and is statistically different from zero. In other words, there is significant impact between the dependent and independent variables in the model.

Evaluation based on econometric criteria

In this subsection, the following econometric tests are used to evaluate the result obtained from our model: autocorrelation, heteroscedasticity and multicollinearity.

Test for Autocorrelation

Using Durbin-Watson (DW) statistics which we obtain from our regression result in table 4, it is observed that DW statistic is 1.959683 or approximately 2. This implies that there is no autocorrelation since d^* is approximately equal to two. 1.959683 tends towards two more than it tends towards zero. Therefore, the variables in the model are not autocorrelated and that the model is reliable for predications.

Test for Heteroscedasticity

This test is conducted using the white’s general heteroscedascity test. The hypothesis testing is thus:

H_0 : There is a heteroscedasticity in the residuals

H_1 : There is no heteroscedasticity in the residuals

Decision rule: Reject H_0 if the computed f-statistics is significant. Otherwise, accept at 5% level of significance. Hence, since the F-calculated is significant, we reject H_0 and accept H_1 that the model has no heteroscedasticity in the residuals and therefore, reliable for predication.

Test for Multicollinearity

This means the existence of an exact linear relationship among the explanatory variable of a regression model. This means the existence of an exact linear relationship among the explanatory variable of a regression model. This will be used to check if collinearity exists among the explanatory variables. The basis for this test is the correlation matrix obtained using the series. The result is presented in table 6 below.

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Table 6: Summary of Multicollinearity test

Variables	Correlation Coefficients	Conclusion
MYS and GEX	0.754639	No multicollinearity
MYS and FID	-0.712018	No multicollinearity
MYS and CRP	0.653464	No multicollinearity
MYS and TOP	0.016725	No multicollinearity
MYS and EXR	0.799096	No multicollinearity
MYS and PMR	0.120301	No multicollinearity
GEX and FID	-0.739607	No multicollinearity
GEX and CRP	0.743125	No multicollinearity
GEX and TOP	0.073017	No multicollinearity
GEX and EXR	0.796513	No multicollinearity
GEX and PMR	0.183815	No multicollinearity
FID and CRP	-0.562163	No multicollinearity
FID and TOP	-0.141685	No multicollinearity
FID and EXR	-0.745091	No multicollinearity
FID and PMR	-0.175924	No multicollinearity
CRP and TOP	0.061723	No multicollinearity
CRP and EXR	0.709947	No multicollinearity
CRP and PMR	0.419421	No multicollinearity
TOP and EXR	0.097086	No multicollinearity
TOP and PMR	0.191754	No multicollinearity
EXR and PMR	0.323524	No multicollinearity

Source: Researchers computation

Decision Rule: From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicollinearity but if the coefficient is less than 0.8 there is no multicollinearity. We therefore, conclude that the explanatory variables are not perfectly linearly correlated.

Test of Research Hypotheses

The test is used to know the statistical significance of the individual parameters. Two-tailed tests at 5% significance level are conducted. The Result is shown on table 4.6 below. Here, we compare the estimated or calculated t-statistic with the tabulated t-statistic at $t_{\alpha/2} = t_{0.05} = t_{0.025}$ (two-tailed test).

Degree of freedom (df) = n-k = 35-8 = 27

So, we have:

$T_{0.025(27)} = 2.052$... Tabulated t-statistic

In testing the working hypotheses, which partly satisfies the objectives of this study, we employ a 0.05 level of significance. In so doing, we are to reject the null hypothesis if the t-value is significant at the chosen level of significance; otherwise, the null hypothesis will be accepted. This is summarized in table 7 below.

Table 7: Summary of t-statistic

Variable	t-tabulated ($t_{\alpha/2}$)	t-calculated (t_{cal})	Conclusion
Constant	± 2.052	12.83198	Statistically Significance
MYS	± 2.052	5.253810	Statistically Significance
GEX	± 2.052	7.125423	Statistically Significance
FID	± 2.052	-4.055921	Statistically Significance
CRP	± 2.052	8.781342	Statistically Significance
TOP	± 2.052	3.542304	Statistically Significance
EXR	± 2.052	3.324885	Statistically Significance
PMR	± 2.052	-2.904430	Statistically Significance

Source: Researchers computation

We begin by bringing our working hypothesis to focus in considering the individual hypothesis. From table 5, the t-test result is interpreted below;

For **MYS**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that **MYS** have a significant impact on **INF**.

For **GEX**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. Thus, **GEX** do have a significant impact on **INF**.

For **FID**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that **FID** do has a significant impact on **INF**.

For **CRP**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that **CRP** has a significant impact on **INF**.

For **TOP**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. Thus, **TOP** does have a significant impact on **INF**.

For **EXR**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that **EXR** do has a significant impact on **INF**.

For **PMR**, $t_{\alpha/2} < t_{cal}$, therefore we reject the null hypothesis and accept the alternative hypothesis. This means that **PMR** do has a significant impact on **INF**.

4. CONCLUSION AND RECOMMENDATIONS

From the result of the OLS, it is observed money supply, government expenditure, crude oil prices, trade openness and exchange rate have a positive impact on inflation in Nigeria, although, exchange rate was expected to be either positive or negative. This implies that a unit increase in money supply, government expenditure, crude oil prices, trade openness and exchange rate will lead to a increase in the **INF** in Nigeria. On the other hand, fiscal deficit and prime rate has a negative impact on inflation in Nigeria. This means that as fiscal deficit and prime rate are increasing, inflation will be decreasing in Nigeria. Thus, this shows that money supply, government expenditure, crude oil prices, trade openness and exchange rate are major determinants of inflation in Nigeria while fiscal deficit and prime rate are not determinants of inflation in Nigeria. The F-test conducted in the study shows that the model has a goodness of fit and is statistically different from zero. In other words, there is a significant impact between the dependent and independent variables in the model. The findings of the study also show that money supply, government expenditure, fiscal deficit, crude oil prices, trade openness, exchange rate and prime rate are statistically significant in explaining inflation in Nigeria. This study concludes that Nigeria's efforts to curb inflation

have often been hindered by structural and systemic issues, political challenges, and external factors. Achieving sustained inflation control requires a combination of well-coordinated monetary, fiscal, and structural reforms, alongside a stable political environment. It's essential for policymakers in Nigeria to address the root causes of inflation and pursue a holistic and sustained approach to manage it effectively. Nigeria needs a proactive leadership that enacts and implements enabling laws and policies that will curb corruption which causes leakages in the nation's monetary and fiscal policies that regulate the various indices modeled this study.

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