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PUMP PRICES OF PETROLEUM PRODUCTS AND INFLATIONARY PRESSURE IN NIGERIA

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KEYWORDS*: Petroleum, Products, Prices, Inflation.*

ABSTRACT: *Inflation is a serious problem bedeviling the Nigerian economy today. It is generally asserted that the high of energy, especially, largely responsible for the inflationary pressure being experienced in the country. This study therefore examines the relationship between the retail pump prices of petroleum products and inflation in Nigeria. Specifically, the study examines the impact of the pump prices of dual purpose kerosene (Kerosene), premium motor spirit (Petrol) and automotive gas oil (diesel) on inflation in Nigeria. Annual time – series data covering the period 1981 to 2020 were used for the study. The analytical techniques applied include the Phillips – Perron unit toot test, Johansen cointegration test, error correction mechanism (ECM), and Granger causality test. The findings indicated that the prices of Kerosene and petrol strongly aggravate inflationary pressure while the price of diesel has weak positive impact on inflation in Nigeria. The Granger causalitytest indicated a bidirectional causality between pump price of premium motor spirit and inflation while unidirectional causality from pump price of automotive gas oil to inflation was found. It is recommended, among other things, that the country's refineries should be maintained to full capacity while licenses should be granted to interested entrepreneurs to operate new refineries in the country. This will help to make petroleum products available and reduce the inflationary pressure associated with imported petroleum products.*

1. Introduction

Inflation is a serious economic problem bedeviling the Nigerian economy today. It reduces the real valueof money and worsens the people's standard of living. It is generally believed that persistent rise in the general price level undermines the functions of money as a store of value and standard for deffered payments. Inflation equally frustrates savings, investment and economic growth (Umaru & Zubairu, 2012). In fact, according to Ajayi & Ojo (1981), there is a long-run negative nexus between inflation and economic growth in Nigeria. This explains why price stability has remained the main monetary policy objective in most developing countries including Nigeria (Korgbeelo & Nwiado, 2021).

Although inflation could be attributed to several causes, it is generally asserted that the inflationary pressures currently being experienced in Nigeria is largely as a result of high cost of energy, especially, the high prices of petroleum products. The argument is that, every household and business unit rely on one type of petroleum product or the other. Therefore,

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increases in the pump process of petroleum products automatically lead to increased cost of production which is ultimately transferred to the final consumers in the form of higher prices. The increase in the pump prices of petroleum products creates panic and anxiety among households and business owners. This is because, an increase in the prices of petroleum products has the capacity to affect the standard of living negatively. Increased prices of refined petroleum products lead to higher cost of production and reduction in output. In fact, this explains why every episode of petroleum price subsidy removal in Nigeria is followed by public protests (Eregha et al, 2015).

From the foregoing, it can be intuitively inferred that hikes in the prices of petroleum create inflationary pressure in Nigeria. This line of reasoning has also been supported by empirical evidence (Bobai, 2012; Eregha et al, 2015). However, there is the need to confront the issue with recent empirical data. This study therefore, examines the impact of petroleum products prices on inflation in Nigeria. In specific terms, the study examines the impact of the pump prices of dual purpose kerosene (DPK), premium motor spirit (PMS), and automative gas oil (AG)), and exchange rate on inflation rates in Nigeria. Exchange was introduced as a check variable.

2. Conceptual Clarifications and Literature Review

2.1 Conceptual Clarifications

2.1.1 Petroleum Products Prices

Petroleum products refer to the products obtained from refined crude oil. For the purpose of this study, petroleum products refer to dual purpose kerosene (DPK), premium motor spirit (PMS) and automotive gas oil (AGO).

The pump prices of petroleum products refer to the retail price per liter of the aforementioned petroleum products at the filling stations.

2.1.1 Inflation

Inflation refers to the sustained and persistent increase in the general level of prices of goods and services. It is a measure of the rate at which the average price of a basket of selected goods and services increase over a period of time.

2.1.1 Inflationary Trends in Nigeria: An Overview.

The trends of inflation in Nigeria can be discussed under four broad phases. The oil boom era of the 1970s marked the first phase of inflation in the country. The abrupt rise in oil revenue during the 1970s resulted in a spending spree. This resulted in fiscal dominance and huge macroeconomic imbalances. Consequently, the increase in money supply, excess liquidity, and the new minimum wage recommended by the Udoji Commission brought the inflation rate to an average value of 33.7 percent in 1975 (Ogenyi &Umeh, 2019). To put the inflationary pressure under control, policies that will bring about output expansion and job creation were adopted. Hence, there was import liberalization while banks were persuaded to extend more credit facilities to the productive sectors of the economy. This resulted in a reduction of the inflation rate to 11.8 percent in 1979 (Orajaka & Okeke, 2017).

The oil glut of the 1980s constituted the second phase of Nigeria's inflationary trend. The period featured continuous over-valuation of the naira inspite of the significant drop in oil revenue. This led to significant distortions, import dependence and balance of payments crisis. There was therefore an increase in the inflation rate to 41.2 percent in 1984 (Ogunmuyiwa, 2020). As a result of favourable climatic conditions, and tight fiscal and monetary policies, the inflation rate was drastically reduced to 5.5. percent and 5.4 percent in 1985 and 1986 respectively (Femi, 2014). Due to the drought experienced in 1987 – 1988, coupled with the lag-in-effect of the 1986 devaluation, the rate of inflation increased to 10 percent 1987 and 59.9 percent in

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1988. The inflation rate remained above 50 percent in 1989 mainly as a result of the increased money supply and devaluation (Umaru & Zubairu, 2012).

The 1990s constituted the third phase of Nigeria's inflationary trends. The increased money supply and fiscal growth of the 1990s resulted in very high inflation rates. It was during this period that Nigeria witnessed the highest inflation rate of 79.9 percent in 1995. To put the inflationary pressure under control, the government adopted some contractionary policies including effective monetary policy, fiscal prudence and exchange stabilization. Consequently, the rate of inflation fell to 6.6 percent in 1999 (Bawa & Abdul, 2012).

The fourth phase refers to the period 2000 to date. The inflation rate increased to 18.9 percent in 2001. It dropped to 14 percent in 2003 and further fell to 6.6 percent in 2007. There was an abrupt increase in the rate of inflation to 15.1 percent in 2008 which later dropped to 12.1 percent in 2009. The inflation rate rose to 13.8 percent in 2010 and by 2014, it was 8.0 percent. It increased to 9.5 percent in 2015. In 2016 that the country plunged into recession, the inflation rate rose to 15.7 percent and later increased to 16.5 percent in 2017. The rate of inflation stood at 12.1 percent and 11.4 percent in 2018 and 2019 respectively. The inflation rate was 13.2 percent in 2020 (CBN, 2021).

Several factors were responsible for the high inflation rates in the fourth phase. These include increases in the pump prices of petroleum products, increased political activities during the 2003 and 2015 general elections, the global financial crisis in 2008/2009, higher energy prices, high costs of inputs, currency depreciation, etc. (CBN, 2010; Ministry of Budget and National Planning, 2017).

Theoretical Literature Review

Some theories of inflation are briefly examined in this section.

The Classical Quantity Theory of Money

The classical quantity theory of money is indeed the oldest theory that explains inflation. Beginning with Jean Bodin in the mid-16th century, the quantity theory witnessed some modifications and refinements in the 18th century by John Locke, Richard Cantillon and David Hume. Milton, Friedman, Phillip Cogan, Allen Meltzer and Karl Brunner later expanded the basic propositions of the classical quantity theory of money (Humphrey, 1974; Volckart, 1997).

Two similar formulations have been used to explain the quantity theory. These include the Irving Fisher's equation of exchange and the cash – balance approach formulated by a group of Cambridge economists such as Pigou, Marshal, Robertson and Keynes (Ahuja, 2013). The main idea behind the quantity theory of money is that the quantity of money in circulation is the major determinant of the general level of prices (Anyanwu, 1993).

The Keynesian Theories of Inflation

There are Keynesian theories of inflation. These are the demand – pull and cost – push theories of inflation. The demand – pull theory which works through the investment – saving mechanism states that excess investment over savings induces an inflationary gap which results into excess aggregate demand. The excess aggregate demand causes prices to rise and consequently, demand – pull inflation is said to take place (Onoh & Obioma, 2017). In the cost – push theory of inflation Keynes attributed inflation to supply side factors such as increasing costs of production caused by wage increases brought about by powerful trade union activities (Ahuja 2013).

The Monetarist Theory of Inflation

The central theme of the monetarist theory of inflation is that changes in the supply of money produce only short-run influence on output but effects on the price level. As pointed out by the leader of the monetarist school Professor Milton

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Friedman, "inflation is always and everywhere a monetary phenomenon in the sense that it is and can be produced only by a more rapid increase in the quantity of money than in output". Thus, according to the monetarists, inflation is mainly as a result of monetary expansion (Frisch, 1984).

The Structural Theory of Inflation.

Another crucial theoretical proposition which offers explanations on the causes of inflation is the structuralist theory. The structuralists attribute inflation in less developed countries to market imperfections, distortions and structural rigidities of different types. These structural rigidities, according to the structuralists include the following:

(i) Agranian rigidities which render the supply of farm produce inelastic,
(ii) Government budget bottlenecks; and
(iii) Foreign exchange constraints which make it difficult for developing countries to fund the necessary imports required for economic development (Blesser – Pereira, 2012; Missio et al, 2015)

Empirical Literature Review

Some of the empirical studies relating to the topic of this study are reviewed in this section.

Nwosu examined the impact of fuel prices on inflation in Nigeria. The study applied vector autoregressive (VAR) techniques on quarterly data for the period 1995 to 2008. The findings showed a positive relationship between fuel prices and inflation. Arinze (2011) established that upward increases in the prices of petroleum products fuel inflation, increase the cost of living and worsen inequality in Nigeria for the period 1978 to 2007.

Akinleye and Ekpo (2013) employed the vector autoregressive (VAR) estimation techniques on annual data for the period to examine the impact of oil price shocks onmacroeconomic performance in Nigeria. The study found out that positive rather negative oil price shocks have stronger short- run and long – run effects on real gross domestic product which triggers inflationary pressure and currency depreciation due to increased importation.

Sanni (2014) examined the impact of prices changes on the distribution of petroleum products in Gwagwalade Council Area of Abuja, Nigeria for the period 2000 to 2012. Through a survey of 285 respondents, the findings showed that price changes cause significant fluctuations in the supply and distribution of the products in the study area.

Eregha et al, (2015), applied Engle – Granger cointegration test on annual data for the period 1994 to 2012 to investigate the impact of pump prices of petroleum products on inflation in Nigeria. The result showed that the prices of PMS and DPK have significant positive impact on inflation while the price of AGO has weak positive impact on inflation.

Bobai (2012) applied ordinary least squares (OLS) regression technique on annual data from 1990 to 2011 to study the impact of petroleum product prices on inflation in Nigeria. The result showed that PMS has significant positive impact on inflation; AGO has insignificant positive impact on inflation while DPK has significant negative impact on inflation.

Apere (2017) analyzed the relationship between fluctuations in crude oil prices and inflation in Nigeria. Applying the vector autoregressive (VAR) model on quarterly data from 1980: 1 to 2015:4, the study concluded that oil price fluctuations have significant negative relationship with inflation in Nigeria.

Orlu (2017) analyzed the impact of petrol price on economic growth in Nigeria for the period 1970 to 2013. The outcome of the study showed that the price of petrol has significant negative impact on economic growth.

Gatawa andAbdullahi (2017) analyzed the relationship between petroleum product prices and households' welfare in Zaria metropolis of Kaduna State, Nigeria. The result obtained from a sample of 400 household heads indicated that increase

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petroleum product prices (i.e., PMS, cooing gas and DPK) causes decrease in the demand for the products and also have multiplier effects on goods and services.

Nwaocha et al (2018) employed ordinary least squares (OLS) technique to study the impact of pump prices of petroleum products on standard of living in Nigeria for the 1981 to 2016. The findings showed that the prices of PMS, DPK and AGO has significant negative impact on per capita income and significant positive impact on inflation in Nigeria.

Shitile and Usman (2020) applied non – linear autoregressive distributed lag (NARDL) on quarterly time – series from 1996: QR to 2019: Q1 to analyze the I pact of crude oil price on inflation in Nigeria. The result showed that crude oil prices have asymmetric long – run relationship with inflation in Nigeria. Similarly, Bawa et al (2020) utilized non – linear autoregressive distributed lag (NARDL) approach on quarterly data for the period 199: Q1 to 2018:Q4 to investigate the effect of crude oil price shocks on inflation in Nigeria. The outcome indicated that inflation responds positively to crude oil price shocks.

Olayungbo and Ojeyinka (2021) examined the asymmetric response of petroleum product prices to crude oil prices in Nigeria using quarterly data from 1973:Q1 to 2020:Q2. The findings showed that positive changes in crude oil prices produce larger and stronger impact on refined products prices than negative changes in crude oil prices.

From the empirical literature reviewed, it is observed that most of the studies concentrated on the impact of crude oil prices on inflation and other macroeconomic variables. The only studies that examined the impact of petroleum product prices and inflation in Nigeria are the studies conducted by Bobai (2012) and Eregha et al (2015). While Bobai (2012) study covered the period 1990 2011, that of Eregha et al (2015) covered the period 1994 to 2012). Our argument therefore is that, between 2012 and 2020, several changes have taken place both in the pump prices of petroleum products and the value of inflation rate. There is therefore the need to confront the issue with recent empirical data from the Nigerian economy.

METHOD OF STUDY

3.1 Description of the Variables of the Study

The variables used for this study are briefly explained in this section

(i) Dependent Variable

The dependent variable for the study is inflation rate. For the purpose of this study, the annual inflation is used. The annual inflation for a given year is the percentages change in the consumer price index (CPI) between that gear and that of the previous year.

(ii) Independent Variables:

The independent variables are:

(a) the pump price of dual purpose kerosene (kerosene);
(b) the pump price of premium motor spirit (petrol);
(c) the pump price of automative gas oil (diesel);
(d) naira – dollar exchange rate.

The pump prices of petroleum products refer to the annual average price per litre of kerosene, petrol and diesel. Exchange rate was introduced as a control variable

3.2 Model Specification

The analytical model used for this study is specified based on the Keynesian cost – push theory of inflation and analytical model used by Bobai (2012). The model used by Bobai (2012) is expressed as:

INF = f (PMS, AGO, ECM (- 1 ……..3.1

Where INF = Inflation, PMS = the pump price of premium motor spirit, AGO = the pump price of automotive gas oil, DPK = the pump price of dual purpose kerosene, and ECM (-1) = the error correction mechanism at lag one.

The above model was however slightly modified to enable us include the variables of the

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present study. The mathematical form on which our econometric model is built is specified as:

INFR = f (PDPK, PPMS, AGO, EXR)……..3.2

Where INFR = Inflation rate,
PDPK = Pump price of dual purpose kerosene;
PPMS = Pum Price of premium motor spirit;
PAGO = Pump of Automative Gas Oil;
E & R = Naira – dollar exchange Rate; and
f = functionality notation

INFR is the dependent variable while PDPK, PPMS, PAGO and EXR are the explanatory variables. The econometric form of mathematical model if expressed as:

$INFR = \beta_o + C\ PDPKT + \beta_2 + PPMS + \beta_3\ PAGO + \beta_4\ EXR + U$…….3.3

Where β_o is theregression intercept, β_1, β_2 $\beta_3\beta_4$ are the coefficients of the explanatory variables, and U is the white noise error term. Transforming equation 3.3. into logarithmic form, we have:

$INFR = \beta_o + \beta_1$, Log PDPK + $\beta_2 +$ LogPPMS + β_3 Log PAGO + β_4 EXR +U……3.4

Where log is the natural logarithm of the variables where applicable. All other variables are as earlier defined.

A priori Theoretical Expectations

Based on a priori reasoning, we expect the following signs of the explanatory variables.

$INFR = \beta_o + \beta_1$, Log PDPK + $\beta_2 +$ Log PPMS + β_3 Log PAGO + β_4 EXR +U ($\beta_{1,>}o$, $\beta_{2,>}o$, $\beta_{3,>}o$ and $\beta_{4,>}o$)

The implication of the above signs is that we expect positive relationship between each of the explanatory variables and inflation in Nigeria.

3.3 Nature and Sources of Data

This study made use of annual time – series data from 1981 to 2020. The study were obtained from secondary sources include the Central Bank of Nigeria annual statistical bulletin for 2020, the Central Bank of Nigeria annual reports and statement of account (various years) and the Organization of Petroleum Export Countries (OPEC) annual statistical bulletin (various years).

3.4 Data Estimation Technique

Since the study made use of time – series data, we started the analytical procedure with the test for unit to see whether the variables are stationary or not and determine their other of integration. The unit root test was conducted using Phillips – Perron unit root test.

Based on the result unit root test, the Johansen cointegration test the error correction mechanism (ECM) were used in estimating the specified model while the Granger causality was used to determine the nature and direction of causality among the variables of the study.

4. PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

4.1 Presentation of Results

4.1.1 Descriptive statistics Result

The results of the descriptive statistics are presented in table 4.1

Table 4.1: Descriptive Statistics Results

Variable	INFR	LOG(PDPK)	LOG(PPMS)	LOG(PAGO)	LOG(EXR)
Mean	18.75775	2.229842	2.338049	2.401504	103.2720
Median	12.95000	2.867883	3.100052	2.401504	107.0250

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Maximum	72.80000	5.830092	5.047610	5.42787	358.8000
Minimum	5.400000	-2.207275	-1.897120	-2.207275	0.610000
Std. Dev.	16.15612	2.646091	2.408844	2.541454	103.2564
Skewness	1.804447	-0.347340	-0.569034	-0.456669	0.831752
Kurtosis	5.456833	1.79136	1.740988	1.700899	2.751063
Jarque-Bera	31.76691	3.538656	4.800521	4.203086	4.715359
Probability	0.000000	0.170447	0.090694	0.122268	0.094640
Sum	750.3100	89.19369	93.52197	96.06015	4130.880
Sum Sq. Dev.	10179.78	273.0701	226.3986	251.9006	415813.2
Observations	40	40	40	40	40

Source: Computed from E – view.

4.1.2 Unit Root Test Result

The result of Phillips – Perron unit root test is presented in table 4.2

Table 4.2 Unit Root Test Result

Variable	Phillips-Perron Test Statistic (At Levels)	1% Critical Value	5% Critical Value	Phillips-Perron Test Statistic (At1st Diff)	1% Critical Value	5% Critical value	Order of integration
INFR	-2.904873	-3.610453	-2.938987	-10.33777*	-3.615588	-2.941145	I(1)
LOG(PDPK)	-1.037699	-3.610453	-2.938987	-5.482580*	-3.615588	-2.941145	I(1)
LOG(PPMS)	-1.695121	-3.610453	-2.938987	-4.167904*	-3.615588	-2.941145	I(1)
LOG(PAGO)	-1.940019	-3.610453	-2.938987	-4.981790*	-3.615588	-2.941145	I(1)
LOG(EXR)	1.999762	-3.610453	-2.938987	-5.590944*	-3.615588	-2.941145	I(1)

SOURCE: Computed from E- View

Note: * denotes rejection of the null hypothesis of unit root at the percent level of significance.

The Phillips -Perron unit root test result in table 4.2 shows that none of the variables are stationary at levels. They are however stationary after taking their first difference (ie., I(1)] at the 1 percent level of significance.

4.1.3 Cointegration Test Result

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The result of the Johansen cointegration test is presented in table 4.3. The Trace statistic and Max-Eigen statistic are used in interpreting the result

Table 4.3: Johansen Cointegration Test Result

Hypothesized No. of CE(s)	**Trace statistic**	**0.05 Critical Value**	**Prob.****
None*	73.90760	69.81889	0.0227
At Most 1	36.03777	47.85613	0.3944
At Most 2	15.72787	29.79707	0.7313
At Most 3	3.391251	15.49471	0.9464
At Most 4	0.084805	3.841466	0.7709
Hypothesized No. of CE(s)	**Max – Eigen Statistic**	**0.05 Critical Value**	**Prob. ****
None *	37.86983	33.87687	0.0158
At Most 1	20.30990	27.58434	0.3201
At Most 2	12.33662	21.13162	0.5148
At Most 3	3.306446	14.26460	0.9243
At Most 4	0.084805	3.841466	0.7709

Source: Computed from E – View

Trace test indicates 1 cointegrating equation at the 0.05 significance level.

Max-eigen value test indicates 1 cointegrating equation at the 0.05 significance level.

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

From the Johansen cointegration test result in table 4.3, both the Trace statistic and the Max-eigen statistic indicate 1 cointegrating equation each. This shows the presence long – run (equilibrium) relationship between inflation and explanatory variables.

4.1.4 Long – Run Regression Result

The long – run coefficients, standard errors and t-values obtained from the normalized cointegrating coefficients are presented in table 4.4.

Table 4.4: Long – Run Coefficients

INFR	**Log (PDPK)**	**Log (PPMS)**	**Log (PAGO**	**Log (EXR)**
0.709510	28.38270	0.332435	0.606009	0.101608
(0.12235)	(12.9065)	(0.36072)	(0.93379)	(0.12091)
(5.799019	(2.199101)	(2.307704)	(0.648978)	(0.840361)

Source: Computed from E – View

Note: The figures in the first and second parentheses are the standard errors and t – values respectively.

4.1.5 Error Correction Model (ECM) Result

The result of the error correct model is presented in table 4.5

Table 4.5: Error Correction Model Result
Dependent Variable: INFR

TABLE 4.4: ERROR CORRELATION MODEL RESULT

Variable	Coefficient	Std. Error	t-statistic	Prob.
C	18.44727	9.123598	2.021930	0.0528
Log(PDPK)	22.99520	10.16447	2.262312	0.0497
Log[PDP(-2)]	-5.680303	8.924271	-0.636493	0.5296
Log(PPMS)	5.005035	2.121998	2.358645	0.0430
Log(PPMS(-1))	-0.303678	14.96135	-0.020297	0.9840
Log (PAGO)	7.439486	9.985543	0.745026	0.4625
Log(PAGO(-1))	-8.805410	9.321307	-0944654	0.3529
Log(EXR)	0.032658	0.145108	0.205063	0.8236
Log(EXR(-2))	0.056083	0.117694	0.476516	0.6374
ECM(-1)	-0.451467	0.161595	-2.793825	0.0093
R-squared	0.497298	Mean dependent var		19.11842

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Adjusted R-squared	0.335716	S.D dependent var	16.47730
S.E. of regression	13.42960	Akaieinfor criterion	8.253734
Sum squared Resid	5049.919	Schwarz criterion	8.684678
Log likelihood	-146.8209	Hannan-Quiunncriter	8.407061
F-statistic	3.077671	Durbin-Watson Stat	2.091990
Prob. (f-statistic)	0.010769		

Source: Computed from E- View

The result of the error correction model in table 4.5 shows that the error correction variable [(ECM (-1)]is correctly signed. It is also statistically significant at the 0.05 level of significance. The ECM(-1) variable has a coefficient of -0.451467. This indicates a speed of adjustment of about 45 per cent from any short – run disequilibrium to long – run (equilibrium) values within one year in the current period.

4.1.6 Granger Causality Test Result

The result of the pairwise Granger causality test is presented in table 4.6.

Table 4.6: Pairwise Granger Causality Test Result

Null Hypothesis	Obs	F-Statistic	Prob.
Log (PDPK) does not Granger cause INFR	38	2.14868	0.1327
INFR does not Granger Cause Log (PDPK)		1.92002	0.1626
Log(PPMS) does not Granger cause INFR	38	4.672218	0.0163
INFR does not Granger cause Log (PPMS)		3.28673	0.0499
Log(PAGO) does not Granger cause INFR	38	6.67155	0.0037
INFR does not Granger cause Log(PAGO)		1.64164	0.2091
Log(EXR) does not Grange cause INFR	38	1.35483	0.2720
INFR does not Granger cause Log (EXR)		0.76631	0.4728

Source: Computed from E-view

The Granger causality test result in table 4.6 shows that there is no causality between the pump price of dual purpose kerosene and inflation and between exchange rate and inflation. However bidirectional causality exists between pump price of premium motor spirit and inflation while unidirectional causality from the pump price of automotive gas oil to inflation was also observed.

4.1.7 Post Estimation Test

The classical linear regression model (CLRM) is based on certain assumption which include linearity, homoscedasticity, serial correlation, normality and stability. Some of these assumptions were tested and results are presented in table 4.7

Table 4.7 Post Estimation Tests Results

Test	Value	Prob.	Decision

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Linearity (Ramsey-Reset) Test t-statistic F-statistic	0.937132 0.796766	0.4286 0.4286	Accept (Model Correctly specified)
Breusch-Godfrey Serial correlation LM Test F-Statistic	0.096781	0.9183	Accept (No autocorrelation)
Heteroscedasticity (Breusch-Pagan-Godfrey) Test F-Statistic	0.975226	0.4861	Accept (Residuals have constant variance)
Normality (Jarque-Bera)Test F-statistic	1.413940	0.486772	Accept (Data normally distributed)

Source: Computed from E-view

4.2 Discussion of Findings

Estimated Long-Rum Results

The estimated Long-Run result shows that the pump prices of dual purpose kerosene and premium motor spirit have significant positive impact on inflation while the pump price of automotive gas oil has insignificant positive impact on inflation. Also, exchange has insignificant positive impact on inflation in Nigeria.

Short-Run Result

From the estimated Parsimonious error correction model, the pump price of dual purpose kerosene in the current period has significant positive impact on inflation while its value lagged by 2 periods has insignificant negative impact on inflation. Similarly, the pump price of premium motor spirit in the current period has significant positive relationship with inflation while its lagged value in period one has insignificant negative relationship with inflation.

The pump price of automotive gas oil in the current period has insignificant positive impact on inflation. The insignificant positive impact on inflation. The lagged value of the pump price of automotive gas oil in period one has insignificant negative impact on inflation. Exchange rate in the current period and its value lagged by one period have insignificant positive impact on inflation.

The coefficient of multiple determination (R-squared) is 0.497298. This shows that the explanatory variables jointly account variations in the dependent variable. The implication is that the pump prices of petroleum products together with exchange cause approximately 50 percent of the inflation experienced in Nigeria. The F-Statistic is 3.07767 with probability (F-statistic) of 0.010769. This shows that the overall regression model is statistically significant at the 0.05 level of significance. The Durbin-Watson statistic is 2.091990. This implies that the model is not affected by the problem of autocorrelation.

Granger Causality Test Result

The Granger causality test result show that no causality exists between the pump price of dual purpose kerosene and inflation and between exchange rate and inflation. Also, a bidirectional causality was found between the pump price of premium motor spirit and inflation while a unidirectional causality was found running from the pump price of automotive gas oil and inflation. The findings from this study is in support of the findings of Eregha et al(2015).

5 Conclusions and Recommendations

5.1 Conclusion

Based on the findings of this study, the following conclusion are drawn;

(i) The pump prices of dual purpose kerosene (Kerosene) and premium motor spirit (petrol) strongly aggravate inflation in Nigeria.

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(ii) The pump price of automotive gas oil (diesel) has weak positive impact on inflation in Nigeria)
(iii) Exchange rate has insignificant positive impact on inflation in Nigeria

5.2 Recommendations

Based on the conclusion drawn from the study, the following policy recommendation are suggested;

(i) To reduce the adverse effects of the pump prices of petroleum products on inflation, there is the need to carry out turn around maintenance on our refineries to enable them function at full capacity. Licenses should also be granted to private individuals to operate modular refineries in the country. This will ensure that the products are refined at home to reduce the effect of imported petroleum products on the general price level. It will also make the refined products readily available through increased competition and efficiency in the refining and distribution of the product.
(ii) To alleviate the burden of petroleum products price hikes on the people, the government should increase its price subsidy payments on petroleum products especially, petrol and kerosene
(iii) To reduce reliance on fossil fuels and their adverse effects on the general price level, renewable energy sources such as bio-fuel, solar energy, wind energy, etc. should be explored and developed.

REFERENCES

Umaru, A., &Zubairu, A. A.,(2012). Effect of inflation on the Nigerian economy (An empirical analysis). *International Journal of Business and Social Science, 3*(1).183-191.

Ajayi, S. I., &Ojo, O. O., (1981). *Money and Banking Analysis and Policy in Nigerian Context*. George Allen and Unwin.

Korgbeelo, C., &Nwiado, D. (2021). Monetary Policy instruments and the control of inflation in Nigerian: A time-series analysis. *South Asian Research Journal of Humanities and Social Sciences, 3*(2), 71-80. https://doi.org/10.36346/sarjhss.2021.vo3102.006

Eregha, P. B., Mesagan, E. P., &Olawale, O. O., (2015). Petroleum Products prices and inflationary dynamics in Nigeria. *Munich Personal RePEC Archive (MPRA) Paper No. 70251.*

Bobai, F. D., (2012). An analysis of the relationship between petroleum product price and inflation in Nigeria. *International Journal of Business and Commerce, 1*(12), 1-7.

Ogenyi, A. O., &Umeh, J.C. (2019). Determinants of Inflation volatility in Nigeria, 1980-2010. A Paper presented at the 6th African Conference of Agricultural Economist, September 23-26, Abuja, Nigeria.

Orajaka, U. P., &Okeke, C. P., (2017). Inflationary trend and its impact on Nigeria stock exchange market. *International Journal of Academic Research in Business and Social Sciences, 7*(1), 127-140. https://doi.org/10.6007/IJARBSS/V7-U1/3445

Ogunmuyiwa, M. S., (2020). Managing the inflation problem in Nigeria using the fisco-monetary approach. *Athens Journal of Business and Economics, 6*(3), 239-252. https://doi.org/10.30958/ajbe.b-3-4

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Femi, O. T., (2014). Inflation and demand for money in emerging economics: Evidence from Nigeria. *Journal of Economics and Sustainable Development*, *5*(8), 77-87.

Bawa, S., &Abdullahi, I.S ., (2012). Threshold effects of inflation on economic growth in Nigeria. *CBN Journal of Applied Statistics, 7*(1), 43-63

Central Bank of Nigeria (2021). 2020 Annual Statistical Bulletin

Central Bank of Nigeria (2021). 2020 Annual report and Statement of Account

Central Bank of Nigeria (2010). Macroeconometric model of the Nigerian economy. www.cbn.gov.ng/out/2015RSDmacroeconometric

Ministry of Budget and National Planning (2017). *Economic recovery and growth plan 2017-2020*. Abuja: Federal Republic of Nigeria.

Humphrey, T. M.M (1974). The quantity theory of money: Its historical evolution and role in policy debates. *Federal Research Bank of Richmond Economic Review*, 60, 2-19.

Volcart, V. (1997). Early beginning of the quality theory of money and their context in polish and Prussian monetary policies, 1520-1550. *The Economic History Review*, 50(3), 430-449. https://10.1111/1468-0289.000063

Ahiya, H. L., (2013). Modern Economic (17thed). S. Chand Publishing Ltd.

Anyanuwu, J.C(1993). *Monetary economics: Theory, Policy and Institutions*. Hybrid Publishers Ltd.

Onoh, J. O., &Obioma, J. (2017). A comparative study of monetarist and Keynesian theories on inflation and money supply in Nigeria. *International Journal of Economics and Financial Management, 2*(1). 56-70

Frisch, H., (1984). *Monetarist inflation theory*. Cambridge University Press.

Bresser-Pereira, L. C. (2012). Structuralist macroeconomics and the new developmentalism. Brazilian Journal of Political Economy, 32 (3), 347-366. https://dodi.org/10.1590/SO101-31572012000300001.

Missio, F., Jayme, F. G., &Oreiro, J. I (2015). The structuralist tradition in Economis: Methodological and Macroeconomics aspects. *Brazilian Journal of Political Economy*, 35(2), 147-166. https://dx.doi.org/10.1590/SO101-31572015V35n003

Nwosu, C. P (2009). Impact of fuel price on inflation: Evidence from Nigeria. *Research Department, Central Bank of Nigeria*.https://ssrn.com/abstract=1365820

Akinleye, S. O., &Ekpo, S. (2013). Oil price shocks and Macroeconomic performance in Nigeria. *Economia Mexicana Nueva Epoca*, XXII (4), 565-624.

Sanni, I. M., (2014). The implications of price changes on petroleum products distribution in Gwagwalada, Abuja, Nigeria. *Journal of Energy Technologies and Policy*, 4(7), 1-15.

Apere, T. O. (2017). Crude oil price fluctuation and inflation in Nigeria. *Advances in Social*

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https://aspjournals.org/Journals/index.php/bijaefa

Sciences. Research Journal, 4(3), 190-200. https://doi.org/10.14738/assrj.43.2757

Orlu, R.N. (2017). The impact of domestic pricing of petrol on economic growth of Nigeria (1970-2013). *Global Journal of Social Sciences*, 16, 1-8. https://dx.doi.org/10.4314/gjss.v16i/.1

Gatawa, N.M. &Abdullahi, Z. (2017). Impact analysis on households' welfare in Zaria metropolis, Kaduna State. *International Journal of Humanities and Social Science Invention*, 6(4), 40 – 49.

Nwaocha, W.C. Onwuka, O.O., Ejem, C. A., Obisike, N.E. &Ogbuewu, K.J. (2018). Movement of petroleum pump prices and standard of living. *Evidence from Nigeria of Social Sciences and Management Research*, 4 (8), 57 – 67.

Shitile, T.S. & Usman, N. (2020). Disaggregated inflation and assymetric oil pass-through in Nigeria. *International Journal of Energy Economics and Policy*, 10 (1), 255-264. https://doi.org/10.32479/ijeep.8343.

Olayungbo, D.O., &Ojeyinka, T.A. (2021). Crude oil prices pass-through to retail petroleum products prices in Nigeria: Evidence from hidden cointegration approach. *EconomicChange and Restructuring*, https://doi.org/10.1007/510644-021-095336-6

Bawa, S., Abdullahi, I.S., Tukur, D., Barda, S.I., & Adams, Y.J. (2020). Assymmetric impact of oil prices on inflation in Nigeria. *CBN Journal of Applied Statistics*, 11(2), 85-113.