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Interest Rate Volatility Dynamics and Its Interaction in Commodity Prices. Using Vector Autoregressive (VAR) Approach

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Abstract

The dynamic behavior in the prices of commodity particularly their interdependence, interaction and evolution, clearly cause shocks among themselves. However, this study is a multivariate time series modelling which investigates the interactions and pattern of causality using the unrestricted vector autoregressive (VAR) approach. Monthly data on the variables spanning from the period of January 2009 to December 2020 were extracted from the central bank of Nigeria (CBN) Statistical bulletin. The study used both the descriptive and analytical design. Preliminary investigation was conducted such as time plots and unit root test to determine the presence or absence of trend and unit root on the study variables. The unit root test shows that all the variables had a unit root at level I(0), while at first difference I(1) all the variables were stationary using the Augmented Dickey Fuller Test (ADFT) and Philip-Perron Test (PPT). The trace statistic and max eigen statistic results show no long memory relationship. The Akaike Information Criterion (AIC) shows a lag length of 2. The VAR estimate indicated that the variables were significantly affected by its first and second lags. The granger causality test indicated significant influence on each of the variables. The Wald statistics shows that both lags of each variables were jointly significant in affecting itself. The impulse response shows that all variables were rapidly affected by its own shocks, hence the study prohibited the response of interest rate to existing shocks in the price of groundnut oil and palm oil. The variance decomposition as well shows that at least 90% of the impulse response were from its own shocks. It was however, recommended that government should regulates interest rate and stabilized the price of commodities.

Keywords: *Vector autoregressive, Interest Rate, Volatility Dynamics.*

1. Introduction

Interest rate volatility and its dynamic interaction in the prices of commodity has been of basic concern to econometricians for the past decade. Volatility demonstrates the fluctuation or the unpredictability in the value of an asset over time, particularly in the area of prices. According to Samuelson (1965), prices of commodity fluctuates randomly. However, the random variable of prices of commodity is essential for many brokers where some countries focused their economic development on the production and export of agricultural produce. Such countries are exceedingly endangered to commodity price fluctuations caused by commodity price volatility in the international market which has indication for evaluation and hedging. Olutu (2013) cited that volatility is a complex phenomenon and at the macroeconomic level, the high volatility recorded in asset pricing, inflation, government revenues, terms of trade and real exchange rate closely reflect the movements of agricultural products prices. Abebefe (1995) noted that the unexpected changes in the commodity market has caused significant decline in some agricultural products which has led to shocks in earnings. The disequilibrium in endogenous variable and volatility in macroeconomic indicators are the shocks that are responsible for economic instability (Ejukwa, et al, 2023).

To assess the dynamics of commodity prices, the volatility of interest rate has been repeatedly indexed or ranked as a causative factor even when other factors including movements in the value of forex, changes in demand pattern globally and the rise in emerging market economies significantly influence this behavior. As interest rate fall and transitory shocks are smoothed, movements in commodity prices will be progressively driven by persistent shock such that the level of any particular commodity price approaches approximation as a random walk.

Studies have shown the impact of international oil price on both the micro and macro sectors of the economy but have failed to look at the agricultural commodities prices both in the domestic and international market place.

According to Pirrong (1994), modeling of commodity prices have not kept pace with its relevance as a means to hedge against risk, thus, as volatility in commodity prices in Nigeria continue to reflect shocks in the international commodity market, we consider the spot prices of Nigeria commodities as a reflection of exported international commodity grades as members of same commodity type.

The interrelationship between the interest rate volatility and commodity price movements of both palm oil and groundnut oil is the primary focus of this study. It will question whether the uncertainties in interest rate can stimulates price movements in the short and long run as to determine its impact.

Hence, the vector autoregressive (VAR) model introduced by Sim (1980) and popularized by Nanaka (2022) will be used to describe the interrelationship among the variables since the behavioral relationship between these variables are perceived to be bi-directional.

Objectives of the Study

The study intent is to examine the relationship between the interest rate volatility and the changes in the prices of Agricultural commodities and determine the nature and strength of relationship between these variables.

2. Literature review

In an attempt to examine the effect of interest rate volatility and the dynamics in commodity prices using vector autoregressive (VAR) approach several studies were reviewed, among the study reviewed are:

Wang (2008) analyzed the dynamics of price and quantity determination in the international market for primary commodities empirically and theoretically. A major theme in his dissertation is the application of a stochastic dynamics general equilibrium model as a means of understanding macro and micro features of primary commodity markets. His findings showed that commodity prices and consumer price index (CPI) are co-integrated and therefore the commodity price to CPI ratio is a more potent variable to forecast future commodity price inflation than the lagged commodity price inflation typically included in univariate models.

Deaton and Miller (1995) examined commodity price behavior and growth in Africa. They reviewed that the difficulties of handling price fluctuations are so severe and policy making in African countries is so dysfunctional that price booms and price slumps are equally to be feared. Their empirical evidence revealed a close positive relationship between commodity price movement and growth.

Chris and Marcel (2011) studied the stochastic behavior of the prices and volatilities of a sample of six of the most important commodity markets while comparing these properties of those of the equity market. Their findings showed that it is inappropriate to treat different kinds of commodities as a single asset class as is frequently the case in the academic literature and in the industry. They also demonstrated that commodities can be a useful diversifier of equity volatility as well as equity returns.

Machiko (2011) studied on how financialisation affects volatility of commodity price dynamics and identified factors in the financial markets that influence the interplay of demand and supply the behavior of the commodity market taking cognizance of the period 2002 to 2010. He identified factors that led to the unpredictable price swings from 2002 to 2010 from the standpoint of financialisation.

Claire Lunieski (2009) studied on commodity price volatility and monetary policy uncertainty: A GRCH Estimation. His studies measured the effect of monetary policy uncertainty had on commodity price movement. From all the studies reviewed so far, none of them focused on interest rate volatility and the dynamics in commodity prices using vector autoregressive (VAR) model and the variables used in this study include: interest rate, prices of groundnut oil and palm oil. However, since these variables have not been used in the previous studies, this implies that much work had not been done in this area and this shows that there exist gaps between this study and other related studies. Therefore, this study is aimed at filling the gap.

3. Materials and Method

This section basically deals with the research design, source of data, method of data analysis and model specification.

The research design employed is the causal-comparative research design which is retroactive in nature. It defines how an independent variable, prior to the study in the participants, affects a dependent variable.

Source and Type of Data

Monthly data was used on interest rate, groundnut oil and palm oil from January, 2009 to December, 2020. This information was derived from Central Bank of Nigeria (CBN) statistical bulletin. The data analysis was done with eviews, version 10.

Model Specification

The model adopted for this study is vector autoregressive (VAR) model. The VAR models with three endogenous variables (interest rates, groundnut oil and palm oil) and a constant being the exogenous variables, the VAR may be written as:

$$INR_t = \beta_{10} + \beta_{11}INR_{t-1} + \Upsilon_{12}GOIL_{t-1} + \varphi_{13}POIL_{t-1} + \mu_{1t} \quad \text{.....................} \quad \text{equation 1}$$

$$GOIL_t = \beta_{20} + \beta_{21}INR_{t-1} + \Upsilon_{22}GOIL_{t-1} + \varphi_{23}POIL_{t-1} + \mu_{2t} \quad \text{.......................} \text{ equation 2}$$

$$POIL_t = \beta_{30} + \beta_{31}INR_{t-1} + \Upsilon_{32}GOIL_{t-1} + \varphi_{33}POIL_{t-1} + \mu_{3t} \quad \text{.......................} \text{ equation}$$

Method of Estimation Procedure

The estimation procedure employed in this study are as follow: The pre-estimation diagnosis such as time plots, unit root, lag length, Johansen co-integration test, estimation of the model and the Post estimation test such as granger causality, impulse response and variance decomposition.

Time plot

Time plot describes how the data is trending over time and if the data points are random or exhibit any pattern. It reveals the behavior of data over time.

Unit Root Test

Unit root test determines whether a time series is stationary. It tells us if trending data should be first differenced or regressed on deterministic functions of time to render the data stationary using Augumented Dickey Fuller test (ADFT) and Philip-Perron test (PPT) to ascertain the conditions.

Lag length

The lag order is selected using the Akaike information criterion (AIC). The general approach is to fit VAR models with orders Q = 0, 1, 2,…, Q_{max} and choose value of Q which minimizes the model selection criteria (Lutkpohl, 2005). However, models with too few lags could lead to systematic variation in the residuals while too many lags come with the penalty of loss of degrees of freedom. Hence, the study adopted AIC of lag 2 which is the best fitted for the model

Johansen co-integration

Johansen co-integration test is used to determine if there exist long run relationship between non-stationary variables. The Johansen's test comes in two main forms, the trace statistic and max-eigen statistic to be compared with the critical value and that of the probability value as well to ascertain the conditions.

Vector Autoregressive (VAR) Model Estimation

The vector autoregressive (VAR) model is a multivariate forecasting algorithm used when two or more-time series influences each other. Each variable is modeled as a linear combination of its own lags. That is, the past values of the variables are used to forecast the current and future.

The VAR estimation assumed a simple model for the dynamics of the variables in commodity prices with three endogenous variables; Interest rate, groundnut oil and palm oil. Since the lag length selection criteria indicated two lags, the model above is written as:

$$INR_t = \beta_{10} + \beta_{11}INR_{t-1} + \beta_{12}INR_{t-2} + \Upsilon_{11}GOIL_{t-1} + \Upsilon_{12}GOIL_{t-2} + \varphi_{11}POIL_{t-1} + \varphi_{12}POIL_{t-2} + \mu_{1t} \quad \text{...................... equation 4}$$

$$GOIL_t = \beta_{20} + \beta_{21}INR_{t-1} + \beta_{22}INR_{t-2} + \Upsilon_{21}GOIL_{t-1} + \Upsilon_{22}GOIL_{t-2} + \varphi_{21}POIL_{t-1} + \varphi_{22}POIL_{t-2} + \mu_{2t} \quad \text{........................ equation 5}$$

$$POIL_t = \beta_{30} + \beta_{31}INR_{t-1} + \beta_{32}INR_{t-2} + \Upsilon_{31}GOIL_{t-1} + \Upsilon_{33}GOIL_{t-2} + \varphi_{31}POIL_{t-1} + \varphi_{33}POIL_{t-2} + \mu_{2t} \quad \text{........................ equation 6}$$

Where

$\beta_{10}, \beta_{20}, \beta_{30}$ = constant.

$B_i, \Upsilon_j, \varphi_m$ = short-run dynamic coefficients of the model.

μ_{it} = error term, impulse or shocks

4. Results

Table 1: Summary Statististics of GOIL, INTR and POIL

Sample: 2009M01 2020M12

	GOIL	INTR	POIL
Mean	1675.085	3.829653	741.2440
Median	1790.880	4.055000	693.6850
Maximum	2506.110	7.320000	1248.550
Minimum	900.0000	0.790000	483.4900
Std. Dev.	396.8513	1.327690	169.2079
Skewness	-0.066755	-0.018897	1.048617
Kurtosis	2.080697	3.060844	3.546031
Jarque-Bera	5.177661	0.030782	28.17922

Probability	0.075108	0.984727	0.000001
Sum	241212.3	551.4700	106739.1
Sum Sq. Dev.	22521201	252.0749	4094280.
Observations	144	144	144

Figure 1: Time plots for Raw Data on Interest Rate

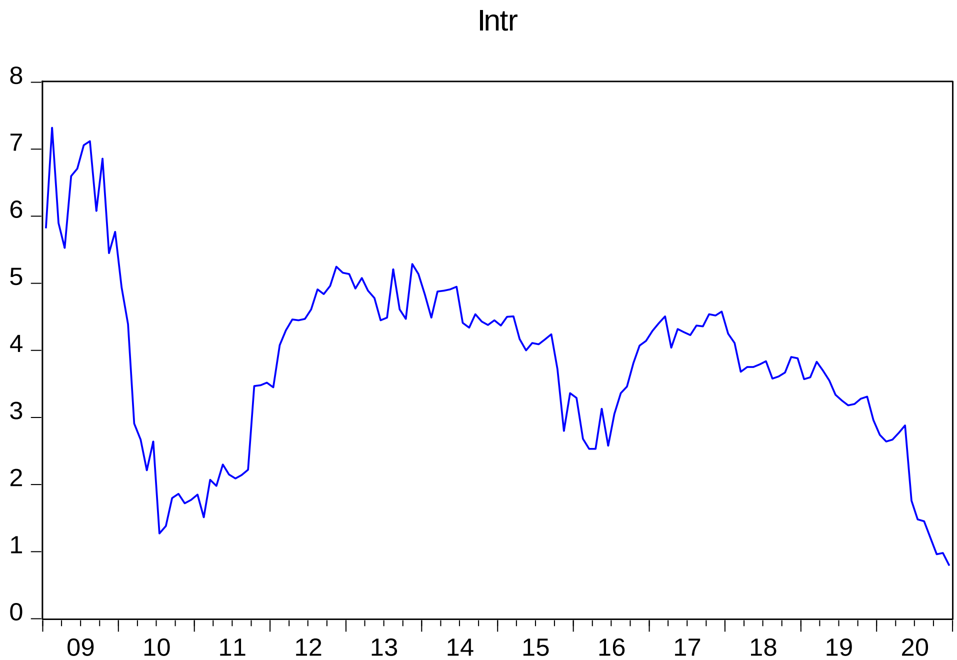


Figure 2: Time plot for Raw Data on Groundnut oil

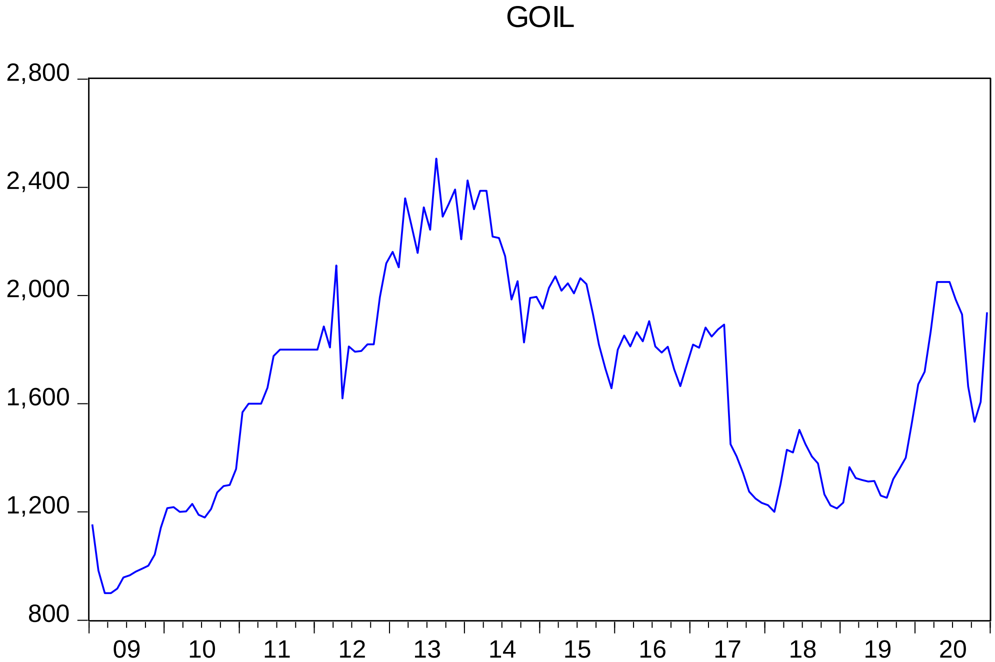
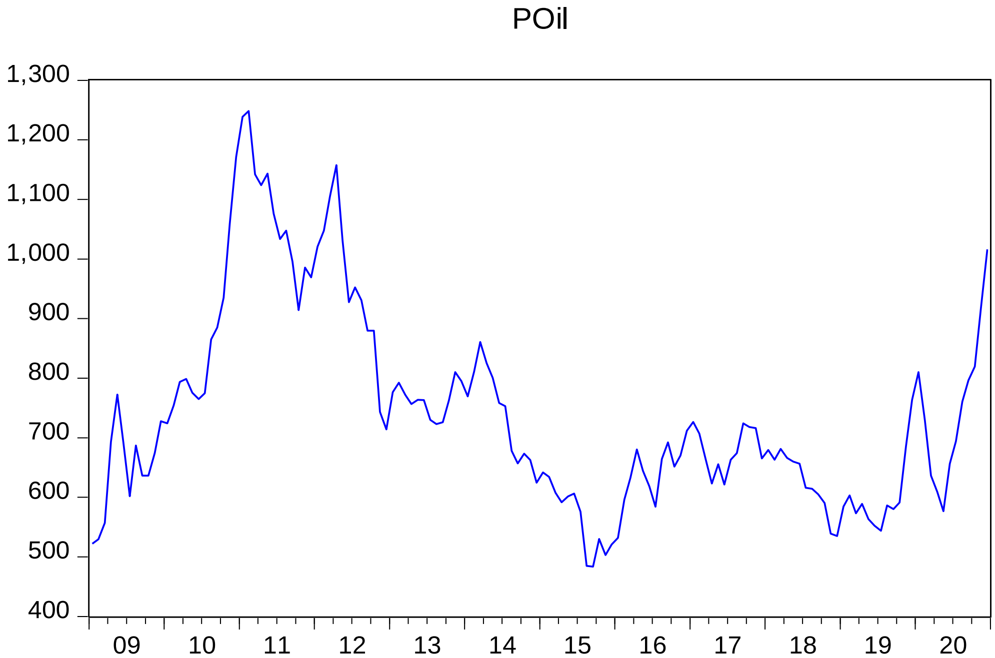


Figure 3: Time Plot for Raw Data on Palm Oil



The time plots shown in figure 1 to figure 3 are indications that all the variables fluctuate within the period of the study, the variables do not follow a steady pattern in the movement of the series. Therefore, they are time invariant (non-stationary).

Figure 4: Time Plots for The Difference on INTR

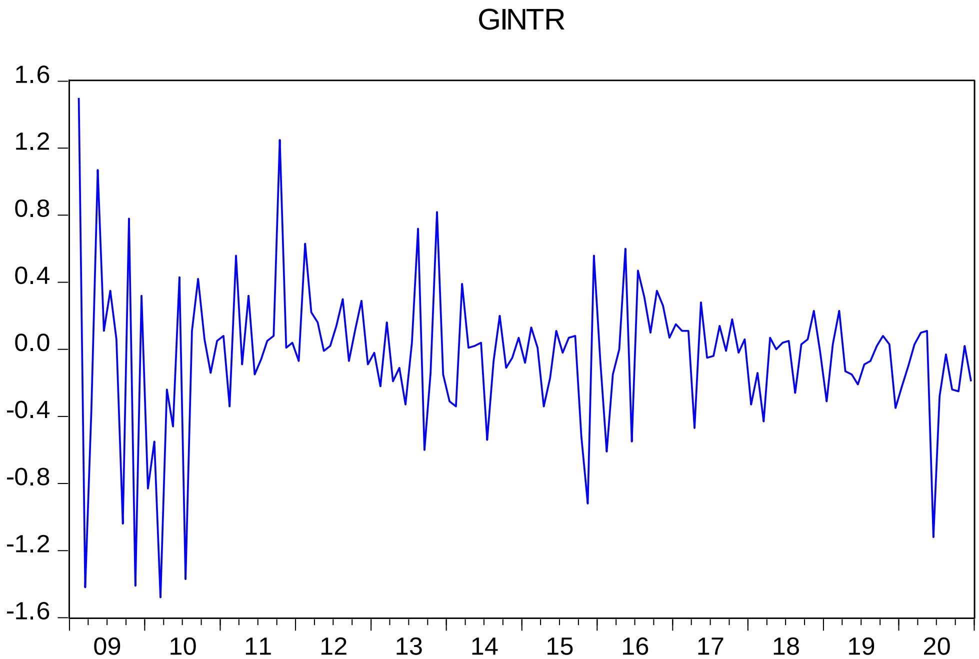


Figure 5: Time Plots for The Difference on GOIL

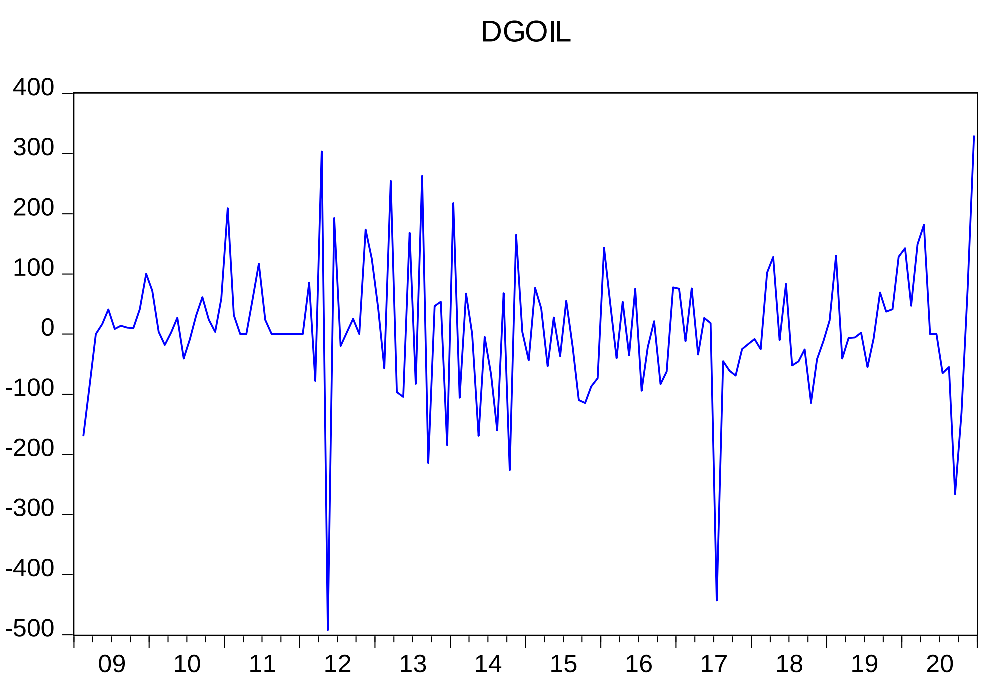
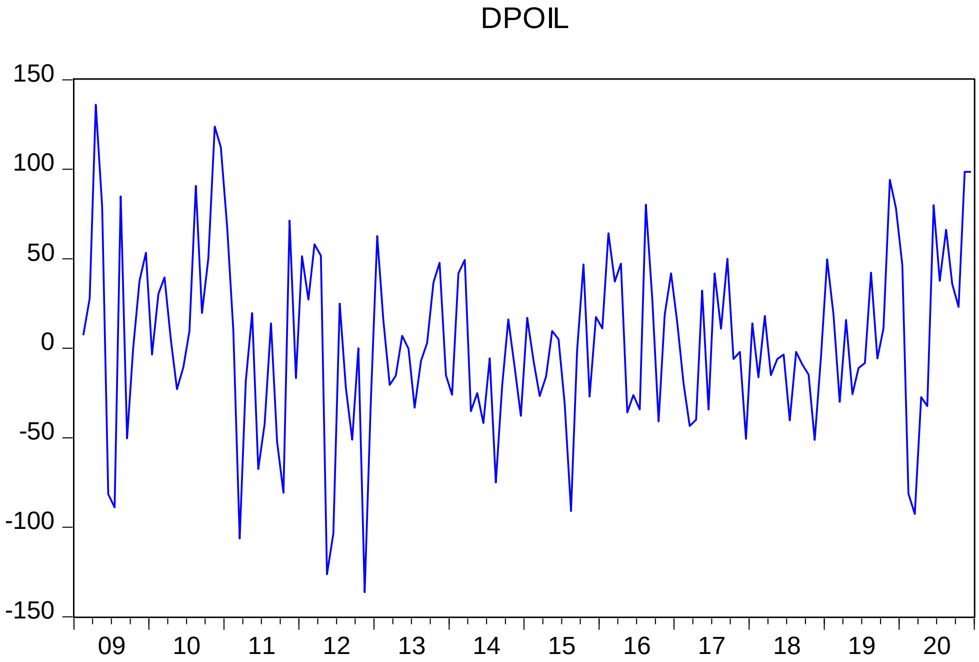


Figure 6: Time Plots for The Difference on POIL



The time plots shown in figure 4, figure 5 and figure 6 are indications that all the variables are de-trended. The variables vary within the zero (0) mean and at constant variance, showing that the variables are stationary with the evidence of clustering volatility.

Table 2: Unit Root Test

At Level							At first difference						
Var.	ADFT	C.V (5%)	Prob.	PPT	C.V (5%)	Prob.	ADFT	C.V (5%)	Prob.	PPT	C.V (5%)	Prob.	order of intg.
Intr	-2.480421	-2.882279	0.1224	-1.846482	-2.881685	0.3568	-14.72198	-2.881830	0.0000	-14.29387	-2.881830	0.0000	I(1)
Goil	-1.881685	-2.8821685	0.3397	-1.819128	-2.881685	0.3568	-13.86761	-2.881830	0.0000	-13.55672	-2.881830	0.0000	I(1)
Poil	-2.182075	-2.881830	0.2138	-1.982894	-2.881685	0.2941	-8.774864	-2.881830	0.0000	-8.774864	-2.881830	0.0000	I(1)

Intr = Interest rate, Goil = Groundnut oil, Poil = Palm oil,

ADFT = Augumented Dickey Fuller Test, PPT = Philip Peron Test, C.V = Critical Value

Table 1 is the result of unit root test. Most time series are inherently non-stationary and may cause spurious or biased estimation. The results obtained shows that at level, all the variables had unit root (non-stationary) as the probability value (p-value) is greater than 5% level of significance.

Then, at first difference, all the variables had no unit root (stationary) as the probability value (p-value) is less than 5% level of significance.

Table 3: Lag length Order

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2090.306	NA	4.70e+09	30.78391	30.84816	30.81002
					23.91396	23.76140
1	-1596.673	958.2284	3773000.	23.65696	*	*
		19.48244	3704021.	23.63829		
2	-1586.404	*	*	*	24.08804	23.82105
3	-1581.386	9.296581	3929507.	23.69686	24.33936	23.95795
4	-1577.321	7.353745	4229311.	23.76942	24.60467	24.10885
5	-1568.560	15.46077	4250684.	23.77294	24.80093	24.19069
6	-1559.923	14.86113	4282980.	23.77827	24.99902	24.27435
7	-1553.362	10.99777	4453158.	23.81415	25.22765	24.38856
8	-1545.390	13.01308	4539474.	23.82927	25.43552	24.48201

Note: * indicates lag order selected by the criteria, LR = Likelihood Ratio,

FPE = Final Prediction Error, AIC = Akaike Information Criterion, SC = Swartz Criterion,

HQ = Hanna Quinn.

Table 3 is the result of the VAR lag order selection criteria for the model. Hence, the study adopted AIC of lag 2, which is the best fitted for the model. Then, the model is specified as:

VAR Model Specification (Eviews 10): LS 1 2 INTR GOIL POIL

INTR = C(1,1)*INTR(-1) + C(1,2)*INTR(-2) + C(1,3)*GOIL(-1) + C(1,4)*GOIL(-2) + C(1,5)*POIL(-1) + C(1,6)*POIL(-2) + C(1,7)…………. equation 7

GOIL = C(2,1)*INTR(-1) + C(2,2)*INTR(-2) + C(2,3)*GOIL(-1) + C(2,4)*GOIL(-2) + C(2,5)*POIL(-1) + C(2,6)*POIL(-2) + C(2,7)………… equation 8

POIL = C(3,1)*INTR(-1) + C(3,2)*INTR(-2) + C(3,3)*GOIL(-1) + C(3,4)*GOIL(-2) + C(3,5)*POIL(-1) + C(3,6)*POIL(-2) + C(3,7)………… equation 9

This is an indication that 21 parameters would be estimated. The square of the number of variables multiplied by the number of lags plus the number of variables $[(3^2)2+3] = 21$

Table 4: Johansen Co-integration

Hypothesized No. of CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	Prob.**	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None*	0.069506	23.25989	29.79707	0.2335	10.1576	21.13162	0.7297
At most 1	0.054239	13.10233	15.49471	0.1111	7.862942	14.26460	0.3928
At most 2	0.36477	5.239391	3.841466	0.0221	5.23931	3.841466	0.0221

Max-eigen value test and Trace test indicates no co-integration at 5% level.

Table 4 is the result of Johansen co-integration test. The trace statistic indicates no co-integration as the value of the trace statistic 23.25989 is less than the critical value of 29.79707 and the probability value (0.2335) is greater than 5% level of significance. Also, the max-eigen statistic indicates no co-integration as the value of max-eigen statistic 10.1576 is less than the critical value of 21.13162 and the probability value (0.7297) is greater than 5% level of significance. Therefore, there exists a short-run relationship between the interest rate, groundnut oil and palm oil.

Vector Autoregressive Results of the Concurrent Coefficients

Table 5: Vector Autoregressive Estimate

Sample (adjusted): 3 144
Included observations: 142 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	INTR	GOIL	POIL
INTR(-1)	0.779276	-8.729500	-11.54330
	(0.08010)	(21.7257)	(9.35437)
	[9.72898]	[-0.40180]	[-1.23400]
INTR(-2)	0.188510	6.386217	4.864277
	(0.08151)	(22.1091)	(9.51944)
	[2.31267]	[0.28885]	[0.51098]
GOIL(-1)	2.43E-05	0.768947	-0.034934
	(0.00032)	(0.08637)	(0.03719)
	[0.07632]	[8.90259]	[-0.93936]
GOIL(-2)	7.71E-05	0.183884	0.022061
	(0.00032)	(0.08555)	(0.03684)
	[0.24446]	[2.14936]	[0.59891]
POIL(-1)	-0.000286	0.148377	1.193564

	(0.00073)	(0.19677)	(0.08472)
	[-0.39430]	[0.75406]	[14.0878]
POIL(-2)	0.000742	-0.036620	-0.252372
	(0.00072)	(0.19512)	(0.08401)
	[1.03115]	[-0.18768]	[-3.00398]
C	-0.434184	12.27613	93.41292
	(0.25760)	(69.8702)	(30.0838)
	[-1.68551]	[0.17570]	[3.10509]
R-squared	0.908450	0.927045	0.926420
Adj. R-squared	0.904382	0.923802	0.923149
Sum sq. resids	21.58000	1587640.	294328.5
S.E. equation	0.399815	108.4449	46.69273
F-statistic	223.2685	285.9080	283.2879
Log likelihood	-67.72101	-863.3465	-743.6896
Akaike AIC	1.052409	12.25840	10.57309
Schwarz SC	1.198118	12.40411	10.71880
Mean dependent	3.791056	1683.621	744.2788
S.D. dependent	1.292969	392.8602	168.4323

VAR Model: Substituted Ceofficients:
INTR = 0.78INTR(-1) + 0.19INTR(-2) + 2.4GOIL(-1) + 7.71GOIL(-2) - 0.0003POIL(-1) + 0.0007POIL(-2) - 0.43
R^2 = 0.91, DW = 1.82

GOIL = - 8.73INTR(-1) + 6.39INTR(-2) + 0.77GOIL(-1) + 0.18GOIL(-2) + 0.15POIL(-1) - 0.04POIL(-2) + 12.28

R^2 = 0.93, DW = 1.91

POIL = - 11.54INTR(-1) + 4.86INTR(-2) - 0.03GOIL(-1) + 0.02GOIL(-2) + 1.19POIL(-1) - 0.25POIL(-2) + 93.41

R^2 = 0.93 DW = 1.91

Table 6: Roots of Characteristic Polynomial

Root	Modulus
0.951247 - 0.067368i	0.953630
0.951247 + 0.067368i	0.953630
0.950062	0.950062
0.279620	0.279620
-0.220970	0.220970
-0.169420	0.169420

No root lies outside the unit circle.

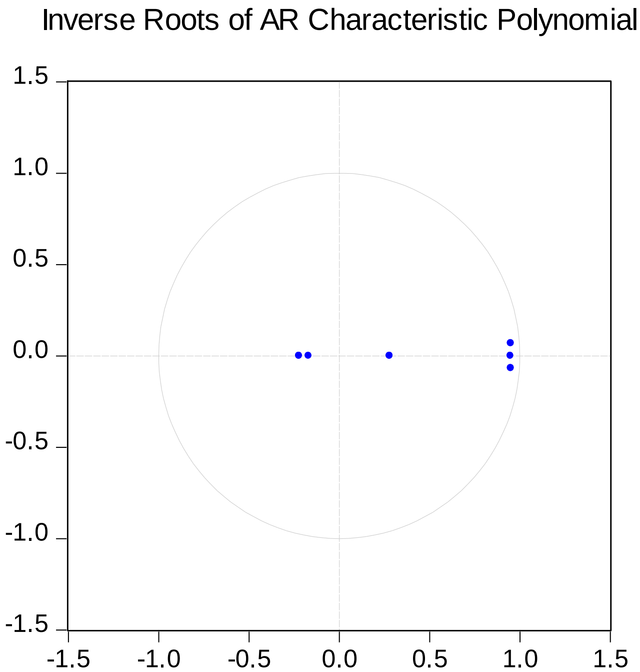


Table 7: Granger Causality/ Block Exogeneity Wald Tests

Dependent variable: INTR

Independent varibles	Chi-sq	Df	Prob.
GOIL	1.355370	2	0.5078
POIL	4.956014	2	0.0839
All	7.408977	4	0.1158

Dependent variable: GOIL

Independent variables	Chi-sq	Df	Prob.
INTR	0.228380	2	0.8921
POIL	3.735592	2	0.1545
All	4.817262	4	0.3066

Dependent variable: POIL

Independent variables	Chi-sq	Df	Prob.
INTR	5.103785	2	0.0779
GOIL	2.121609	2	0.3462
All	7.441264	4	0.1143

The granger causality test presented in table 7 shows that as interest rate is dependent, prices of groundnut oil does not granger cause prices of palm oil and prices of palm oil does not granger cause prices of groundnut oil at lag 1 and lag 2 as their probability values are greater than 0.05.

Also, as prices of groundnut oil is dependent, interest rate does not granger cause prices of palm oil and prices of palm oil does not granger cause interest rate at lag 1 and lag 2 as their probability values are greater than 0.05.

More so, as prices of palm oil is dependent, interest rate does not granger cause prices of groundnut oil and prices of groundnut oil does not granger cause interest rate at lag 1 and lag 2 as both probability value is greater than 0.05.

Table 8: Variance Decomposition Result

Period	S.E.	INTR	GOIL	POL
Variance Decomposition of INTR:				
1	0.3998I5	100.0000	0.000000	0.000000
.				
.				
10	0.954387	92.37713	0.988270	6.634600
Variance Decomposition of GOIL:				
1	108.4449	0.849209	99.15079	0.000000
.				
.				
10	254.3578	0.837233	92.25637	6.906395
Variance Decomposition of POIL:				
1	46.69273	2.070756	0.571315	97.35793
.				
10	146.7654	15.05227	1.346631	83.6011

Variance Decomposition

Variance Decomposition of Interest Rate

The first section of table 6 shows that in the short run, the response of interest rate due to its own shock is 100%. The table as well shows that a shock in the price of groundnut oil and palm oil can respectively cause 0.00% and 0.00% fluctuations in the interest rate. However, in the long run, the response of interest rate due to its own shock is 92.38%. The fluctuations in the interest rate due to the impulse in prices of groundnut oil and palm oil are 99% and 66% respectively. Therefore, interest rate is a strong endogenous.

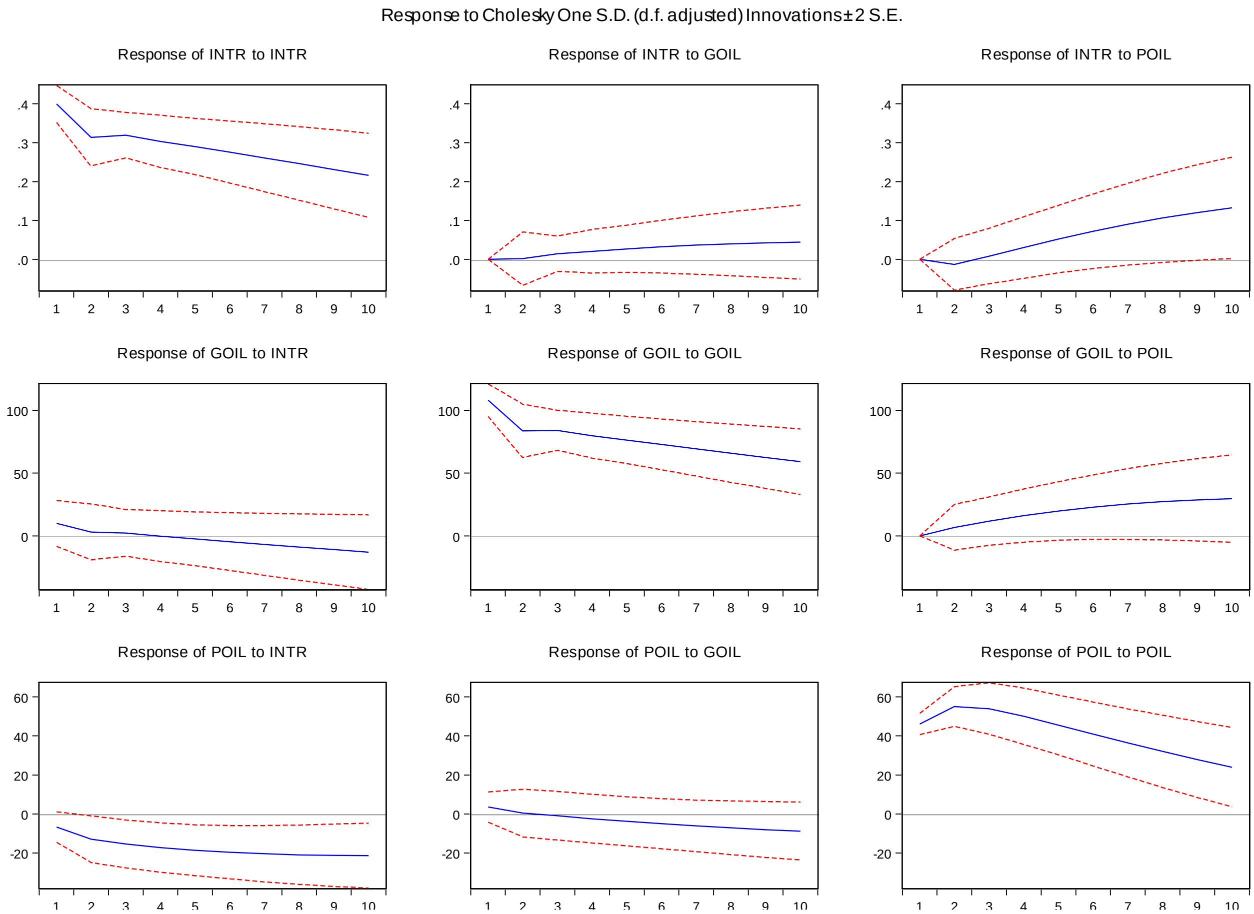
Variance Decomposition of Groundnut Oil

The response of prices of groundnut oil in the short run due to its own shock as shown in the second section of table 6 indicates 99%, The shock in interest rate and prices of palm oil can respectively cause 85% and 0.00% fluctuations in the prices of groundnut oil. However, in the long run, the response of prices groundnut oil due to its own shock is 92%%. The fluctuations in the prices of groundnut oil due to impulse in interest rate and prices of palm oil are 84% and 69% respectively. Hence, prices of groundnut oil flaunt a strong endogeneity with other variables.

Variance Decomposition of Palm Oil

The fluctuations in the prices of palm oil in the short run due to its own shock as specified in the third section of table 6 shows 97%. The shocks in interest rate and prices of groundnut oil can respectively cause 2.07% and 57% fluctuations in the prices of palm oil. Therefore, in the long run, the response of prices of palm oil due to its own shock is 83%. The fluctuations in the prices of palm oil due to impulse in interest rate and other variables were strongly exogenous.

Figure 8: Impulse Response Graph



Impulse Response of Interest Rate

The first row of figure 6 above shows that the response of interest rate to shocks to interest rate, price of groundnut oil and palm oil. Interest rate had an immediate and positive response to own shocks, but does not have an immediate or nor positive response to shocks in the prices of groundnut oil and palm oil.

Impulse Response of Prices Groundnut oil

The second row of figure 6 above shows the response of the price of groundnut oil to shocks to all the study variables. Groundnut oil had an immediate and positive response to own shocks, hence does not have an immediate response to shocks in the price of interest rate and palm oil.

Impulse Response of Prices Palm oil

Row 3 of figure 6 shows the response of price of palm oil to shocks to all the study variables. Palm oil had an immediate and positive response to own shocks, though did not have an immediate response to shocks in interest rate and price of groundnut oil.

5. Discussion of Results

The substituted coefficients of the VAR model is a depiction of the detailed VAR estimated output. From the estimated output, the coefficients of determination (R^2) of the models were 0.91, 0.93 and 0.93 for interest rate, groundnut oil and palm oil respectively, suggesting that the dependent variables were largely influenced by the independent variable. The VAR estimates shows that interest rate, prices of groundnut oil and palm oil were significantly and positively affected by their own first and second lags. The Durbin Watson statistics were 1.82, 1.91 and 1.91 for interest rate, groundnut oil and palm oil respectively, in this case, we can say that there is absence of serial correlation. Also, the system analysis, especially the Wald statistics shows that both lags of each variable were jointly affecting each other significantly. However, the above VAR result satisfy the stability condition as no root lies outside the unit root circle as shown in the graph of the inverse roots of the characteristic polynomial in figure7 below. The modulus also is less than one but greater than zero as shown in table 4.

6. Conclusion

From the period under study, the combined lags of interest rate, prices of groundnut oil and palm oil significantly caused its own shocks. But the impulse response and variance decomposition analyses shows that some of the study variables have minimal fluctuation. However, the study prohibited the response of interest rate to existing shocks in the prices of groundnut oil and palm oil as well proscribed the volatile nature (fluctuation) of interest rate to the occurring impulse in the prices of the groundnut oil and palm oil. The granger causality test showed significant influence on each of the study variables by its combined lags. Therefore, the causality between the interest rate and the prices of the study commodities were significant and uni-directional since their shocks have shown to be the major and significant determinants of impulse. Hence, it is recommended that there should be inclusion of lags of the dependent variable as independents for economic modelling, particularly for a multivariate model. Therefore, government should always regulate these variables, more specially the interest rate while the prices of the commodities should be made stable.

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