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Impact of Oil Price Bubble and Economic Growth in Nigeria

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Abstract. The study examined the impact of oil price bubble on economic growth in Nigeria for the period of 1990-2020. Secondary data was collected from World development indicators and CBN statistical bulletin. Descriptive statistics, unit root test, co-integration test, granger causality test, variance decomposition and vector autoregressive model were conducted. Findings revealed that oil price bubble does not have significant effect on economic growth in Nigeria. The study recommended that there is need for policymakers to concentrate on policies that will fortify/balance out the macroeconomic structure of Nigeria with specific emphasis on diversification of the national income base as a means of limiting dependence on oil. Also, after an oil shock, appropriate fiscal policy should be utilized to stabilize Nigerian domestic economy and as exporter and importer of oil, the government of Nigeria needs to set up more refineries and ensure that the current ones are in great condition of repair to reduce the importation and bend the accumulations of the instability.

Keywords: Oil Price Bubble, Economic Growth, Nigeria

1. Introduction

The relationship between oil price changes and macroeconomic activities have continued to attract the attention of researchers and policy makers across the globe. This is as a result of the observed overwhelming importance of crude oil worldwide. Researchers and scholars see oil price changes as important determinants that control macroeconomic activities and, eventually, stock market indices in different parts of the world (Siddique, 2014). The much attention currently given to oil price changes is justified by the imperative roles that oil prices play in the modern economy. This arises from the revelation by several studies that the price of crude oil, which is the primary fuel for industrial activities, plays a significant role in determining the shape of countries' economic and political developments (Siddique, 2014; Berk). It performs such function by influencing aggregate indicators directly and, also, impacting operational costs and revenues. Cunado and Garcia (2003) as well as Cologni and Manera (2008) project oil price changes as a variable which impacts significantly on domestic price levels, gross domestic product, investment and savings. Consequently, irregular price movements in the energy markets have become an issue of serious concern among both economists and policy-makers (Eksi, Senturk & Vildirim, 2012).

The impacts of crude oil price changes on economic variables have been a controversial but fascinating topic over the past years. The controversy stems from the fact that different and divergent results have been obtained amidst the dire necessity to reduce the negative results of oil price oscillations on the economy (Elias, 2020). Many questions have continued to be asked concerning the direct and indirect relationships between these variables. In an effort to unravel this, many researchers have used several measures in different dimensions to examine this trend. All of these arise from the fact that the impact of the oil price changes varies from country to country depending on whether the country is an importer of oil or an exporter of oil. The magnitude of the direct effect of a given oil price increase depends on the share of the cost of oil in national income, the degree of dependence on imported oil and the ability of end-users to reduce their consumption and switch away from oil (Elias, 2020). In Nigeria, where oil is the major source of income to

the country, its price significantly shapes the economic status of the country.

Crude oil price increased on the average from US$ 24.36 per barrel in 2002 to US50.59 per barrel in 2005. This rising trend in the price of crude oil in recent years reached a record nominal high of US$ 109.45 in mid 2012 and recorded a sharp drop to US$69.78 a barrel in 2018 and went further down to US$50.3 in 2020. After which, it jerked up a little bit to US$65.62 in 2021 (CBN 2021). This performance has generated increasing concerns about its macroeconomic implications for many countries. As it were, Nigeria is highly vulnerable to fluctuations in the international oil market despite being the 14th largest oil producer in the world. This is due to the fragile nature of the Nigerian macroeconomics and the heavy dependence on crude oil proceeds. Nigeria is presently going through an economic recession partly brought about by the Corona virus pandemic and a slump in the global price of oil, its' primary export product. This study is motivated by the fact that Nigeria relies heavily on crude oil export revenues; representing about 90.0 per cent of total earnings and on an average of 70.0 per cent of government revenues in annual budgets. The distortion in the price of crude oil is bound to affect the pace of economic growth in Nigeria.

2. Review of Literature

2.1 Conceptual Clarifications and Theoretical Underpinnings

Oil price bubbles are predominantly defined as price fluctuations resulting from changes in either the demand or supply side of the international oil market (Wakeford, 2006). These changes are unexpected and unpredictable and have been traditionally traced through the supply-side disruption. Oil price volatility creates uncertainties in terms of firm profitability, valuations and investment decisions. Considered from one perspective, oil is an essential input for industries that consume petroleum products made from crude oil. For companies not involved in the oil industry, increasing oil prices increase business costs. In the absence of an offsetting increase in revenues, increasing such costs would result in a reduction in profits. Viewed from another angle, oil is an essential output for oil exploration and production companies. For such companies, an increase in oil price is a potential increase in profits. For this reason, oil price changes play an important role in the strategic investment decisions of the oil exploration and production companies. Soyemi et al. (2017) propose that, among the several basic global commodities, crude oil occupies a peculiar position because every country, one way or another, relies on it either as a producer or a consumer. Consequently, fluctuations in crude oil price ultimately affect the global economy. Kilian (2009) asserts that the price of crude oil is influenced by changes in global crude oil supply, aggregate demand for all industrial commodities, and oil specific demand. A boost in crude oil price leads to a reduction in domestic demand and stock prices. For oil exporters such as Oil Mineral Producing Countries (OPEC), the reverse is the case. According to Angelidis, Degiannakis and Filis (2015), oil price changes exerts significant effects on stock markets through a number of channels apart from affecting the world economy. They explain that oil price changes possess incremental ability in predicting the state of the stock market.

2.2 Empirical Review

Ikechi, and Anthony (2020) examined the study made use of secondary data covering the period from 1990 to 2019. The Augmented Dickey-Fuller unit root test was used for preliminary analysis; ordinary least square (OLS) regression analysis was used for short-run estimates. A combination of Johansen Co-integration test, Vector Auto Regression analysis, Granger causality test, Variance Decomposition, Impulse Response tests and the ARCH/ GARCH modelling techniques were used for long run estimation All the tests helped to confirm the integrity of our models. The findings of the study indicate that, in the short run, there was sufficient evidence to show that oil price changes have a significant effect on economic growth. For the long run test, the Trace statistics and Max Eigenvalue tests point to a case of non-integration.

Agbo and Nwankwo (2019) examined the effect of oil price volatility on the volatility of Nigeria's market capitalization. The study used monthly frequency data for the period from January, 1997 to December 2016. Average monthly inflation and exchange rates were introduced in the model as control variables. The results suggest that oil price volatility has a positive and weak effect on the volatility of market capitalization.

Kelikume and Muritala (2019) examined the impact of oil price on African stock markets. With quarterly data from five selected oil producing countries with stock market presence, from Q1:2010 to Q4:2018. The study deployed dynamic panel analysis technique for a model consisting of stock returns, real gross domestic product growth rate, exchange rate and OPEC basket price. One of the the findings show

that an adverse effect of oil prices existed on stock markets in Africa that the negative impact is attributable to fragmented and underdeveloped capital markets.

Afees and Salisu (2017) examined the relationship between oil and stock markets in 13 countries by using a nonlinear panel autoregressive distributed lag model over the period 2000-2015. The study found that there is a positive relationship between changes in oil and stock prices for both oil-exporting and oil importing countries. However, they found that the former exhibit a larger impact.

Ebele (2015) examined the consequence of oil price instability on the economic growth of Nigeria between 1970 and 2014. The study utilized an aggregate demand framework that cautiously linked investigative variables rather than only debating productivity performance by oil price and a collection of variables, as was the case with other analysts. The Engel-Granger test for cointegration and Granger Representation equation were conducted to analyse the connection between oil price instability and the growth of the economy. The analysis indicated that oil price instability has an adverse influence on Nigerian economic growth, although; oil revenue and oil reserves positively influence the economy.

Akinlo and Emmanuel (2014) examined the relationship between changes in oil prices and market capitalization over the period 1981-2011. The study used the vector error correction modelling approach to carry out the analysis. The results suggest a long-run relationship between oil price, exchange rate and market capitalization. A unidirectional causality runs from oil price change to stock market capitalization. The study found that impulse response function shows that oil price has a temporary positive impact on stock market capitalization and that market capitalization is very dependent on oil price fluctuation.

2.3 Theoretical Framework

Following the earlier studies, we base our model on the theoretical underpinning of the Arbitrage Pricing Theory (APT), which assumes the following linear relationship:

$$ri = \lambda i + \beta iR + \varepsilon i \quad \ldots\ldots (1)$$

Where ri denotes the return on asset i, λi represents the unconditional expected return, R is the vector of different risk factors, βi is the vector measuring the response of asset return to each risk factor and εi is the error term for residual effect of the returns. Nonetheless, our study limits the different risk factors to only oil price shocks. Hence the reduced form of the above APT depicted in Eq. (1) is as follows:

$$ri = \lambda i + \beta ip + \varepsilon i \quad \ldots\ldots (2)$$

Where p denotes oil price shocks measured by sudden changes in oil prices. However, recent studies conclude that the effect of oil price shocks on the Nigeria private sector could be asymmetric: negative oil price shocks do not have an equivalent effect with positive oil price shock (Salisu & Isah, 2017). Hence, we decompose the oil price shocks into positive oil price shocks and negative oil price shocks, thus modifying the above equation (2) as follows:

$$ri = \lambda i + \beta ip^{+} + \beta ip^{-} + \varepsilon i \quad \ldots\ldots (3)$$

Where p+ measures the positive oil price shocks and p measures the negative oil price shocks.

3. Research Methodology

This research employed the following methods for analysis: Descriptive Statistics, Unit Root test, Co-Integration test, granger causality test, variance decomposition and vector autoregressive model.

3.1 Data description

The study utilised secondary data sourced from, world development indicators and CBN statistical bulletin for the period 1990 to 2020. In this study, gross domestic product was used to proxy economic growth while fluctuation in oil price per barrel, kerosene pump price fluctuation, diesel pump price fluctuation and petrol pump price fluctuation were used to proxy oil price bubble

3.2 Model specification

The baseline model estimated for this study is presented as follows:

$$GDP = f(FOPPB, KPPF, DPPF, PPPF) \quad \ldots\ldots (4)$$

This model was adopted from Antony, Charles and Kevin, (2018) and Akan, and Agbogun (2021). The function in equation (1) is transformed to natural logarithms as follows

$$CRP = \beta_0 + \beta_1 FOPPB + \beta_2 KPPF + \beta_3 DPPF + \beta_4 PPPF + U \quad \ldots\ldots (5)$$

Where:

GDP = Economic growth

FOPPB = Fluctuation in oil price per barrel

KPPF = Kerosene pump price fluctuation
DPPF = Diesel pump price fluctuation
PPPF = Petrol pump price fluctuation
β_0 = constant, β_0, β_1. . . β_4 = the coefficients of the regression equation
U = Stochastic error term.

3.3 Aprioiri Expectation

Theoretically, the coefficient will take the following outcome:
$\beta_1 > 0$, $\beta_2 > 0$, $\beta_3 > 0$, $\beta_4 > 0$. Thus, real oil price fluctuation proxies should have a positive effect on gross domestic product which is a proxy for economic growth.

3.3.1 Unit root test

The estimation of variable-series that are non-stationary will thus lead to estimates that are spurious and thus render the coefficients unreliable for policy prescription and usage. This entails that the investigation will thus carry out the conventional unit root tests on each of the variables to be used in this analysis. The stationarity test will be carried out with the application of Augmented-Dickey Fuller Statistic. The test involves the estimation of the following regression equation. $^{a}xt = a + bt\ x\ dxt\text{-}1 + \Sigma t$ (3)

Where x is the variable under consideration. Thus the ADF unit root test states that **Ho:** b = O and Hi: b<O, where the ADF statistic was compared with the observed Mackinnon critical values. A series that exhibits a stochastic trend will not be stationary and cannot be forecast far in the future. Stationary series will constantly return to a given value and no matter the starting point, in the long-run, it is expected to attain the value.

Given an auto-regressive AR (I) process as follows: $Yt = m + PYt\text{-}1 + \Sigma t$, where m and P are parameters and Σt, is the white noise assumption. Y is a stationary series if $-1<P<1$. However, the above description is valid only if the series is an AR (1) process. (Dickey & Fuller, 1981). A non-stationary series could be made stationary by differencing once or twice.

3.3.2 Co-integration test

In this research, the Johansen (1991) co-integration method was adopted. A non-stationary series could be made stationary by differencing once or twice. This is called an integrated series. It could be integrated of order I which is often denoted as 1(1) or order 2 represented by 1(2). The stationary linear combination of the variables under consideration is called co-integration equation. Variables are co-integrated implies that they share a long –run relationship and will move closely together over time, meaning that the differences between such variables are stable over time and there is some degree of convergence in the long-run.

Testing for unit root is a formalization approach of differencing. The analysis and testing for unit roots naturally lead to the theory of co-integration (Iyoha & Ekanem, 2002). This is because, co-integration deals with methodology of modelling non-stationary time series variables and the idea rests on the fact that even though two time series variables may not themselves be stationary, a linear combination of two non-stationary time series are said to be co-integrated.

4. Empirical Results and discussion

This section begins with the descriptive statistics and correlation matrix analysis of the various variables used in estimating our regression model. Also, the unit root test, co-integration test and granger causality test were conducted. The Vector error correction model was conducted. Furthermore, diagnostic tests such as Cholesky VAR normality residual tests, Serial correlation and Heteroskedasticity test were conducted to ascertain the credibility of our model.

4.1 Descriptive Statistics

Table 4.1: Descriptive Statistics

	GDP	DPPF	FOPB	KPPF	PPPF
Mean	41974648	79.09935	55.80581	83.50319	64.09135
Median	37474949	48.00000	50.30000	50.00000	65.30000
Maximum	81363026	334.8750	116.8800	414.6590	192.9320
Minimum	19199060	0.500000	0.550000	0.400000	0.630000
Std. Dev.	21059893	90.78474	35.43453	110.5167	54.73270
Skewness	0.452521	1.318776	0.363925	1.727573	0.722804
Kurtosis	1.768575	3.868904	1.844953	4.951602	2.595020

Jarque-Bera	3.016696	9.960911	2.407537	20.33959	2.911145
Probability	0.221275	0.006871	0.300061	0.000038	0.233267
Sum	1.30E+09	2452.080	1729.980	2588.599	1986.832
Sum Sq. Dev.	1.33E+16	247256.1	37668.19	366418.0	89870.04
Observations	31	31	31	31	31

Source: Author's computation (2022) using Eviews

The table above shows the descriptive statistics of the variables used in estimating our regression model. It is revealed that credit to the private sector (GDP) has an average value of 41974648 with a standard deviation of 21059893. Diesel pump price fluctuation (DPPF) is seen to have an average value of 79.09 and a standard deviation of 90.78. Fluctuation in oil price per barrel (FOPB) was seen to have an average value of 55.80 with a standard deviation of 35.43. Kerosene pump price fluctuation (KPPF) was seen to have an average value of 83.503 with a standard deviation of 74.18141. Petrol pump price fluctuation (PPPF) is seen to have an average value of 46.31557 with a standard deviation of 46.71955.

4.2 Correlation matrix

Pearson Correlation depicts the strength of linearity among variables under investigation. Thus the result of our Pearson correlation is given in table 4.2 below.

Table 4.2: Correlation matrix

Variables	GDP	DPPF	FOPB	KPPF	PPPF
GDP	1.000000	0.923293	0.600600	0.877855	0.901779
DPPF	0.923293	1.000000	0.438798	0.943061	0.907126
FOPB	0.600600	0.438798	1.000000	0.257335	0.436805
KPPF	0.877855	0.943061	0.257335	1.000000	0.898628
PPPF	0.901779	0.907126	0.436805	0.898628	1.000000

Source: Author's computation (2022) using Eviews

Table 4.2 above reveals the correlation between the variables used in the model. It is seen that fluctuation in oil price per barrel, kerosene pump price fluctuation, diesel pump price fluctuation and petrol pump price fluctuation have a positive correlation with credit to the private sector which is a proxy for the Nigerian private sector.

4.3 Unit Root Test

Most time series data are not usually stable in nature; hence they are most times not suitable for forecasting purposes. Thus, the need arises to check the stationary status of the data used. This test was carried out using augmented dickey-fuller ADF test and Phillip-perron test.

Table 4.3: unit root test result

Variables	**ADF Levels**	**ADF First diff**	**ADF Second diff**	**PERRON Levels**	**PERRON First diff**	**PERRON Second diff**
GDP	0.787498 (0.9920)	-1.931032 (0.3142)	-7.791875 (0.0000)	2.803832 (1.0000)	-1.805665 (0.3704)	-12.43437 (0.0000)
DPPF	1.714666 (0.9994)	-4.521708 (0.0012)	-3.481623 (0.0192)	5.372374 (1.0000)	-4.535816 (0.0012)	-19.54229 (0.0001)
FOPB	-1.387747 (0.5749)	-5.031788 (0.0003)	-6.970731 (0.0000)	-1.387747 (0.5749)	-5.019290 (0.0003)	-21.44456 (0.0000)
KPPF	4.692430 (0.0000)	-0.622685 (0.8495)	-8.707778 (0.0000)	9.411118 (1.0000)	-3.329304 (0.0226)	-14.35016 (0.0000)
PPPF	-0.827843 (0.7965)	-7.970517 (0.0000)	-7.226164 (0.0000)	-0.118985 (0.9384)	-10.02793 (0.0000)	-37.86082 (0.0000)

Source: Author's Computation (2022) using Eviews

The table above shows the unit root result of the variables used in the model. It is revealed that using ADF test all the variables were not stationary at levels. However, all the variables became stationary after second difference. Also, using Philip-Perron test, all the variables were not stationary at levels but they all became stationary at second difference.

4.4 Co-Integration test

It is important we consider the relationship among macroeconomic variables in the long-run. If a long run relationship exists among the variables then policy formulation will be reliable based on the perceived relationship among them. Against this backdrop, the Johansen integration test was conducted to examine the presence of long-run relationships among the variables.

Table 4.4: Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalues)

Null hypothesis	Trace Statistics	Maximum Eigenvalue
R=0	74.69317**	27.65392
R=1	47.03924	24.90411
R=2	22.13514	12.85521
R=3	9.279927	9.225240
R=4	0.054687	0.054687

Source: Author's computation (2020) using Eviews; ** significant at 5%,

From table 4.4 above, it is observed that trace test statistic indicate one co-integrating equation at 5% level of significance while the Max-Eigen value test indicates no co-integrating equation. Based on the evidence above, we can safely accept the null hypothesis (Ho) which says that there are no co-integrating vectors. Thus, we can conclude that a long run relationship does not exists among the variables.

4.5 Granger-Causality Test

Since impact analysis does not suggest causal relationship, the Granger causality test is employed to determine the causal link between maternal mortality rate, income inequality, health investment, incidence of HIV and literacy rate in Nigeria. The granger causality result is presented in table 4.5 below

Table 4.5: Granger causality test

Null Hypothesis	Observations	F-Statistic	Prob.
DPPF does not Granger Cause GDP	29	0.07395	0.9289
GDP does not Granger Cause DPPF		2.12800	0.1410
FOPB does not Granger Cause GDP	29	0.34560	0.7113
GDP does not Granger Cause FOPB		3.17934	0.0596
KPPF does not Granger Cause GDP	29	0.11998	0.8875
GDP does not Granger Cause KPPF		0.93052	0.4081
PPPF does not Granger Cause GDP	29	0.15513	0.8572
GDP does not Granger Cause PPPF		5.79659	0.0088
FOPB does not Granger Cause DPPF	29	0.19980	0.8202
DPPF does not Granger Cause FOPB		0.56288	0.5769
KPPF does not Granger Cause DPPF	29	3.97853	0.0322
DPPF does not Granger Cause KPPF		1.17448	0.3261
PPPF does not Granger Cause DPPF	29	0.89335	0.4225
DPPF does not Granger Cause PPPF		4.11352	0.0291
KPPF does not Granger Cause FOPB	29	2.10529	0.1437
FOPB does not Granger Cause KPPF		1.20700	0.3166
PPPF does not Granger Cause FOPB	29	0.07004	0.9325
FOPB does not Granger Cause PPPF		0.00777	0.9923
PPPF does not Granger Cause KPPF	29	0.41064	0.6678
KPPF does not Granger Cause PPPF		4.82091	0.0174

Source: *Author's computation (2022) using Eviews*

The result revealed a unicausal relationship between credit to the private sector and diesel pump price fluctuation. Unicausal relationship between credit to the private sector and fluctuation in oil price per barrel. A unidirectional relationship exists between Petrol pump price fluctuation and Kerosene pump price fluctuation.

4.6 Regression Result and Interpretation

Table 4.6: **Vector Autoregressive Model (GDP)**

Variable	Coefficient	Std. Error	t-Statistic	probability
Constant	515314.8	631600.9	0.815887	0.4252
D(DPPF(-1))	2594.686	6697.500	0.387411	0.7030
D(DPPF(-2))	-1568.690	7447.223	-0.210641	0.8355
D(FOPB(-1))	-261.0848	9704.532	-0.026903	0.9788
D(FOPB(-2))	5890.969	11120.07	0.529760	0.6028
D(KPPF(-1))	-900.2096	9649.610	-0.093290	0.9267
D(KPPF(-2))	1695.600	8363.421	0.202740	0.8416
D(PPPF(-1))	2853.995	6898.838	0.413692	0.6840
D(PPPF(-2))	-1644.094	6789.917	-0.242138	0.8114
R-square	0.99	N/A	N/A	N/A
F-stat/Prob	2256.5/0.0000	N/A	N/A	N/A

Source: *Author's computation (2022) using Eviews*

The table above shows the result of the vector error correction model estimation. According to the result, first and second period lag of diesel pump price fluctuation (DPPF) have positive and negative effect on economic growth. First and second period lag of fluctuation in oil price per barrel (FOPB), have negative and positive effect on economic growth respectively. First and second period lag of kerosene pump price fluctuation (KPPF), have negative and positive effect on economic growth. Lastly, first and second period lag of petrol pump price fluctuation (PPPF) have positive and negative effect on economic growth. The individual variables are not significant at 5% level. However, the f-statistic shows that the overall model is significant at 1% level while the R-square value of 0.99 shows that all the independent variables can jointly explain 99% variation in economic growth in Nigeria.

4.7 The Cholesky VAR normality residual tests

One of the requirements of regression model is that the error terms of the observations are normally distributed. The study employed the Cholesky (Lutkepohl) test to ascertain this. The results are presented below table

Table 4.7: Cholesky VAR normality test

Component	Test criterion	Joint chi-square	Probability
5	Skewness	45.12713	0.000
5	Kurtosis	117.2741	0.000
5	Jarque-Bera	162.4012	0.000

Source: *Author's computation (2022) using Eviews ** Chi-square test significant at 5%*

Results from Table 4 show that the residuals are normally distributed as the Skewness, Kurtosis and Jarque-Bera statistics passed the chi-square test at 1%.

4.8 Serial correlation and Heteroskedasticity test

A variety of diagnostic tests were carried out to further ascertain the credibility of the model. The model was tested for autocorrelation (Breusch-Godfrey serial correlation LM test), and VEC Residual Heteroskedasticity test

Table 4.8: Serial correlation and Heteroskedasticity test

Test	Value	Probability
Chi-sq (Heteroskedasticity)	304.1815	0.4219
LM-Stat (serial correlation)	14.37762	0.9547

Source: *Author's computation (2022) using Eviews*

Considering the null hypothesis of "there is autocorrelation", the result in table 5 above indicates that the probability value of (0.9547) is not statistically significant which rejects the null hypothesis and accept the alternate hypothesis of "there is no auto correlation. Also, given the null hypothesis that "the variables are Heteroskedastic" the result in table 5 above reveals that the probability value of (0.0.4219) rejects the null hypothesis and accept the alternate hypothesis of "the variables are Homoskedastic. Therefore, residuals are serially uncorrelated, homoskedastic and normally distributed which means the model is valid and can be used for policy recommendations.

4.9 Forecasting Error Variance Decomposition

To further examine the short-run dynamic properties of the model, the forecast error variance decomposition (FEVD) was examined. Akinbobola (2012) believed that the statistical efficiency of the coefficients estimates from Vector Error Correction Model (VECM) cannot be guaranteed, hence most scholars resort to the interpretation of dynamic simulations of Forecasting Error Variance Decomposition (FEVD). The FEVDs is presented in Table 4.9 below.

Table: 4.9: Forecasting Error Variance Decomposition

Period	GDP	DPPF	FOPB	KPPF	PPPF
1	100.0000	0.000000	0.000000	0.000000	0.000000
2	99.51414	0.264560	0.005047	2.08E-06	0.216249
3	99.06176	0.508243	0.238846	1.76E-06	0.191146
4	98.41169	0.895906	0.522129	0.031753	0.138521
5	97.66183	1.428947	0.739602	0.061186	0.108439
6	96.90181	2.058574	0.881480	0.077191	0.080950
7	96.20848	2.673832	0.963222	0.093988	0.060478
8	95.63921	3.204048	0.994877	0.115330	0.046537
9	95.19199	3.646269	0.984701	0.140208	0.036836
10	94.83921	4.018548	0.944692	0.167582	0.029972

Source: *Author's computation (2022) using Eviews*

In Table 4.9 the FEVD for the variable gross domestic growth (GDP) for ten periods is presented. Analysis revealed that the variance of CRP is principally driven by own shock. In the period 1, GDP accounted for 100% of its own variance. However, its variance decreases consistently throughout the period until the 10^{th} period to 94.8%. One variable that made significant impact on GDP are DPPF, FOPB and KPPF. By the tenth period, DPPF, FOPB and KPPF contributed 4.0%, 0.94% and 0.167% to GDP respectively. However, PPPF made insignificant contribution to the variance of GDP, which stood at 0.029% by the tenth period.

5. Discussions and Policy Recommendations

This paper examined the effect of oil price bubble on economic growth utilizing annual time series data for the period of 1990 through 2020. The study revealed that first and second period lag of diesel pump price fluctuation (DPPF), fluctuation in oil price per barrel (FOPB), kerosene pump price fluctuation (KPPF) and petrol pump price fluctuation (PPPF),which are proxies for oil price bubbles do not have significant effect on the Nigerian economy as they were not statistically significant at 5% level. Hence, an oil price bubble is not sufficient in influencing the Nigerian economic activities. The result supports the findings of Oriakhi and Osaze (2013) which stated that oil price does not affect economic growth directly. Also, the result supports the findings of Akpan (2009) which stated that there is a marginal effect on the economic growth due to instability in oil price. Ismail and Adegbemi (2013) also found that oil price shock does not directly contribute to output in Nigeria. Lastly, the findings of Ikechi, and Anthony (2020) indicate that, in the short run, there was sufficient evidence to show that oil price changes have a significant effect on economic growth while for the long run test, the trace statistics and max eigen value tests point to a case of non-integration.

The non-significance impact of oil price bubble on economic growth could be as a result of the influence of the policy variables in stimulating growth in the short run, hence re-directing the impact of oil price shocks in Nigeria. The result of variance decomposition indicated that diesel pump price fluctuation (DPPF) and fluctuation in oil price per barrel (FOPB) are the largest source of variation in GDP apart from self-shock. The contribution of the other oil price bubble proxies (kerosene pump price fluctuation (KPPF) and petrol pump price fluctuation (PPPF)) is minimal compared to that of (DPPF) and (FOPB).

All the variables used for estimating our model were found to stationary at second difference. The LM serial correlation result shows that the model has no sign of serial correlation which means the assumption of the linearity of the model has not been violated because of the superiority of the autocorrelation test in accepting of alternative hypothesis. Also, the Vector Normality test is also considered to show if the model is normally distributed. From the estimation result the Skewness, Kurtosis and Jarque-Bera statistics values which are significant at 1 percent also corroborates the normality assumption of

the specified model. Another test considered by this study is the vector heteroskedasticity test confirms each of the specified equations has a constant variance.

The findings have implications for the Nigerian government. There is need for policymakers to concentrate on policies that will fortify/balance out the macroeconomic structure of Nigeria with specific emphasis on diversification of the national income base as a means of limiting dependence on oil. Also, after an oil shock, appropriate fiscal policy should be utilized to stabilizes Nigerian domestic economy and as exporter and importer of oil, the government of Nigeria needs to set up more refineries and ensure that the current ones are in great condition of repair to reduce the importation and bend the accumulations of the instability. Lastly, to guarantee the growth desire of Nigeria, appropriate accountability and corporate administration ought to be cultured as centre values by all partners.

6. Conclusion

This study assessed the impact of oil price bubble on Nigerian economic growth. Using the VAR model, annual time series data for the period 1990 to 2020 was obtained from the CBN statistical database and utilized in this study. The study assesses the following variables: Real Gross National Income, Inflation Rate, Real Government Expenditure, Real Oil price and Real Effective Exchange Rate, while the estimation comprises the unit root, co-integration, Vector autoregressive model, variance decomposition and Granger causality. Based on the results of empirical analysis, it was ascertained that there was sufficient evidence to indicate that oil price changes does not have significant effect on economic growth in Nigeria. The trace statistics and the max Eigen value test also indicate a case of no co-integration. Thus, the study attests to the fact that the relationship between oil price bubble and economic growth in Nigeria is unstable and insignificant in the long run. In conclusion, it can be said that oil price bubble does not drive economic growth in Nigeria.

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