



IMPACT OF OIL PRICE SHOCKS ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

Volatility in oil prices has impacted negatively on various macroeconomic variables in the country. Consequently, this paper aims to investigate the impact of oil price shocks on economic growth in Nigeria, using time series data from 1980 to 2021. The findings indicate that the Structural Vector Autoregression in the short-run showed that, Economic Growth is positively related to Capital Stock and Labour Force while negatively related to Real oil Price, Real Effective Exchange Rate and Inflation Rate. While in the Long-run Economic Growth is positively related to Capital Stock, Labour Force and Real Effective Exchange Rate, while Real Oil Price and Inflation Rate are negatively related to Economic Growth. The structural impulse response indicates that Economic Growth responded positively to Capital Stock and Labour Force all through the periods. Real Oil Price has a negative impact on Economic Growth in all the period. Real Effective Exchange Rate however has a negative impact on Economic Growth throughout the periods. Inflation Rate has a positive impact in the first and second period but declined and was negative all through the long run. The Exponential Generalized Autoregressive Conditional Heteroskedasticity result showed that increase in negative shocks in oil price reduces Economic Growth. The result of Granger Causality show that both unidirectional and bidirectional between the variables exist except for ROP to REER, ROP to RGDP, INFR to RGDP, INFR to CAP, REER to LAB and REER to ROP that have no causation this concluded that oil price shocks do not granger-cause Real GDP. This study recommended that the government should effectively use Monetary and Fiscal Policy to control inflation and oil price, the real effective exchange rate should be reinforced.

Keywords: Oil Price Shocks; Economic growth; SVAR; EGARCH

1.0 Introduction

Given the crucial function oil performs in developing modern economies, steadiness of petroleum prices has grown to be a critical issue for the development of oil-importing and exporting economies. Over four (4) decades, the worldwide economic structures have witnessed recurrent oil price shocks, which have distinctly stimulated and changed the international perceptions of the oil price-macroeconomic relation. Oil price shocks are sudden and unforeseeable (outside the control of authorities) event. It is a deviation from a regular and a normal trend that is unexpected (Akinleye, 2013). These can be influenced by war or natural calamity; this has an effect on a country's economy and requires response or adjustment. Thus, oil prices have witnessed intense shocks and this has consequences on economic growth. In the aspect of price, it's well known that crude oil is the world's most irregular and unsteady product (Suleiman, 2019). The communication mechanisms which oil prices have impacted on actual economic activity encompass both supply and demand channel. The supply and demand side effects are related to the reality that crude oil is a fundamental input to production and as a result, an increase in oil price leads to an increase in production costs. Also, there are lots of issues in the country with regards to oil price adjustment which in fact affect the economy and the well-being of the people adversely. The

upward adjustments of oil price in Nigeria have caused inflation, excessive cost of living, and unequal allocation of income hence, oil prices shocks have economic consequences; these consequences differ largely across different countries and their rank. Less-developed oil-exporting countries of the world are prone to oil price shocks than developed countries (Adeniyi, 2020).

Thus, the 2024 petroleum subsidy removal triggered oil price in Nigeria and the global fall in the demand for oil in 2020 which was influenced by the pandemic placed economic stress on oil-exporting countries, while the surplus demand for oil in the path of the first and second oil crises in 1973 and 1979 had an unfavourable effect on oil-importing countries (Ogundipe, 2022). Conversely, the issues that enclose oil price shocks, its impacts and consequences on economic growth have continued to bounce up and produce controversies amongst economic researchers. Some researchers (Rentschler, 2019; Ceylanet et al 2020) are of the view that oil price shocks promote economic growth in Nigeria. Others argue that it undermines economic growth in Nigeria (Rentschler, 2019; Dogah, 2020). Correspondingly, the country has enormously depended on crude oil which has triggered several macro-economic (economic growth, capital stock, labour force, real effective exchange rate and inflation rate) shocks and challenges in the economy (Mehrara, 2022). Thus, the variables assumed to be key factors underlying economic growth namely; the capital stock, labour force, oil price, effective exchange rate and the inflation rate. Therefore, analyzing the impact of oil shocks on economic growth in Nigeria, by considering oil prices, capital stock, and labour force is an important determinant that is open to research. Hence, the following sections can be found in this study; section one introduction and discloses the topic on which the studies performed. It itemizes the rationale of the research and the issue which the research tends to address. The second section is the Literature Review and the section three describes the methodology of the study in expressions of technique of estimation; model specification, tools of analysis in finding statistical link among the variables. Section four reports the data and presents the empirical results with discussion. Section five ends with the conclusions and recommendations.

2.0 Literature Review

2.1 Conceptual Literature

2.1.1 The Concept of Oil Prices Shocks

There have been several shocks in oil prices; Hamilton (2009) maintain that oil prices change in response to either geopolitical or economic events, which suggests that oil prices change due to supply disruptions (supply-side shocks) or economic growth decline (demand-side shocks). Supply-side shocks are driven by events such as the Arab Spring in 2010 and the Syrian unrest in 2011 respectively. Such shocks lead to major oil production disruptions, which are not accommodated by a similar reduction in the demand for oil and thus, drive oil prices to higher levels. Similarly, demand-side shocks are related to oil price changes which are influenced by movements in the global business cycle. Conversely, the global economic recession during the Global Financial Crisis of 2007-2009 and the 2024 subsidy removal led to the collapse of oil prices, as the reduction of oil demand was not accompanied by a reduction in the supply of oil.

2.2 Theoretical literature

This study employs Asymmetric theory of oil price shocks to model the influence of oil price shocks on economic growth adopted from Kiani, 2000. The Asymmetric theory posit that oil price shock in a fluctuation surroundings may tend to have negative impact on GDP and by modifications the theory posit that production input (labour and capital) are determinant of economic growth. Thus, the theory capture oil price shocks and explain the relation of many

economic variables changes over time and are be replaced with new ones in investigating the behaviour of these variables (Rentschler, 2019).

2.3 Empirical Literature

Hanna and Josephine (2015) using VAR approach, examined the impacts of oil price shocks on economic growth of Organization of Petroleum Exporting Countries and non-Organization of Petroleum Exporting Countries in the world spanning from 1980 to 2008. This shows that economic growth indicates identical responses to oil price shocks and concluded that OPEC countries simply shows a sensitive aspect to oil price shocks at the same time as non-OPEC nations. Similar to the findings of Hanna and Josephine (2015), Ceylanet et al (2020) also examined the impact of oil price shocks on the economic growth of a number of net-exporting and net-importing nations on Middle Eastern and North African countries, in the period 1980-2015, and used VAR approach. Their findings revealed that oil price shocks have a positive impact on the outputs of Algeria, Iran, Iraq, Kuwait, Libya, Oman, Qatar, Syria and the United Arab Emirates, the greater numbers of the countries are OPEC nations, apart from Oman and Syria which are non OPEC countries. In a related study, Ngow and Phang (2019) examined the relationship among oil price fluctuations and economic growth in ten sub-Saharan African countries in the world, during the period 1980 – 2010, using VAR technique. The study found a positive influence in oil price, inflation, exchange rate, import and export on economic growth within the selected oil exporting economies. Their empirical findings also reveal that, there is a long-run relationship exists in the studies. Similarly, Alezzee (2019), using the Error Vector Correction Mechanism, during the period 1980 to 2005. Reports that exchange rate, inflation, oil prices have a positive influence on RGDP in Bahrain. The study also found out that long-run relationship is observed among; the growth of actual GDP, oil prices, and actual exchange rate.

Similar to the findings of Hanna et al (2019), Ceylan and Dogan (2010) investigate how oil price shocks affect the output growth of a number of selected Middle East and North Africa countries via the VAR technique. Their finding reveal that the rises in oil price is positive and significantly influenced exchange rate, inflation rate, export and outputs of Oman, Qatar, Syria, the United Arab Emirates, Algeria, Iran, Iraq, Kuwait and Libya. They discovered that oil supply fluctuations are associated to decrease output growth but the impact of oil demands shocks on output are positive. In a related finding of Ceylan et al (2010), Cashin et al. (2016) also examined the effect of oil price shocks on the MENA economies (US, Europe and China) from the period of 1980 to 2012. While using an Autoregressive Distributed Lags (ARDL) modeling to make estimation of oil Price, Exchange Rate, Import and inflation on Chinese economy. Their findings reveal a significant impact on MENA countries. Similar to the finding of Cashin et al. (2016), Usama and Normee (2019) examined the effect of oil price fluctuations on the real exchange rate of the United Arab Emirates (UAE). While using VECM technique, their findings show that there is a long-run correlation among the real exchange rate of Dirham in oppose to dollar and the oil price, GDP per capita, they also found out that oil price is positively related and has a long-run relationship with the real exchange rate and that when oil prices rises, it will eventually depreciate United Arabs Emirate dirham. Their Granger causality test showed that all the variables granger cause the real exchange rate in a short term also, 28.2% of the disequilibrium is adjusted and corrected within a period of a year. Rebecca (2019) reveal the dynamic consequences of oil price shocks on the output of the major producing industries of 6 OECD nations in the world using VAR technique for all of the economy of OECD. The study discovered that the system of responses in oil price shocks on manufacturing output varies between the four European Union nations in line with a certain thought which are Italy, Spain, France and Germany, although extensively related within the United Kingdom and the United States. This shows an indication or facts across industry with diverse in characteristics of oil fluctuations consequence between the European

Union nations. Fawehinmi, (2021) examined the econometric analyzing of how Nigeria's standard of living has impacted oil income. Time series annual data and quasi-experimental research design technique were used in the study's analysis. Time series data underwent tests for co-integration and stationary behaviour. The result shows a strong link between Nigeria's level of living and oil income. Ogbonna and Appah (2021) examines the impact of petroleum price on Nigerian economy from 2000 to 2019 utilizing oil price, petroleum profit tax/royalties, and oil price as the explanatory variables and the gross domestic product, per capita income, and inflation as the explained variables. Their research demonstrates that oil revenue has a strong and significant correlation with GDP and per capita income, but only a positive and insignificant correlation with inflation. In a similar vein, petroleum price and royalties have a negative and insignificant link with inflation but a positive relationship with the gross domestic product. Additionally, a positive but insignificant correlation was discovered between oil price and inflation, per capita income, and the gross domestic product.

Adebayo, (2019) using VAR technique, examined the impact of oil price shocks on output in Nigeria during the period (1990 to 2015). The results reveal that, increase in oil price shock positively influenced economic growth of Nigeria after a period of some months, while the decrease in oil price is associated with a decrease in actual output instantly. Dogah (2020) examined the effects of oil price fluctuations on macro economy of Ghana oil importing economy during the period 1975 to 2016. While using VAR approach and cointegration technique of Johansen Co-integration, the results show that oil price fluctuations impacted significantly negative on economic growth and economic activities in Ghana. Rentschler (2019) investigates the consequence of oil price instability in numerous nations, consisting of advanced, developing, importing and exporting nations in the period 1985 to 2013. These countries consist of Germany, India, Japan, the Republic of Korea, Malaysia, and United States. While using VAR model, the study finalized that a rise in the price of oil volatility will have a negative effect for the economies of oil-exporting and importing nations.

2.3.1 Summary of Previous Finding and Research Gaps

This chapter reviewed the theoretical literature relevant to the link between oil price shocks and economic growth, followed by discussions of empirical findings related to the studies. The theoretical literature adopted is asymmetric theory which explains how oil price shocks influence economic growth. Empirical studies on the impact of oil price shocks on economic growth are reviewed. This study employs the model of Kiani (2000) with specification to Nigeria to examine the study. Most of the studies show that oil price shocks are likely to affect GDP negatively in the short-run and positively in long-run. There are numbers of studies on the impact of oil price shocks on economic growth such as; Hanna and Josephine, (2015), Ceylanet et al.(2020), Ngow and Phang (2019), Ceylan and Dogan (2010), leading to lack of consensus and inconclusive debate. They assumed homogeneity in oil price change across the global economy. The norm of asymmetry based studies lies in the use of time series analysis and for the fact that countries react differently to changes in oil prices do not mean that countries with similar experience, would behave in the same manner (Kilian & Hamilton, 2009). Hence, there is need to account for heterogeneity. In the theoretical standpoint, a number of studies (Kiani, 2000; Kilian, 2009; Rentschler, 2019; Lim and Ngow, 2019; Cashin et al., 2016; Fawehinmi, 2021; Ogbonna and Appah, 2021; Adebayo, 2019) based on their theoretical claims on asymmetric theory. More so, this study incorporated more variables that is production input which are used in the commencement of production stage mainly on capital stock and labour force which are believed to have influence on economic growth in Nigeria.

In the Methodological standpoint, (Hanna & Josephine, 2015; Ceylanet et al., 2020; Cashin et al., 2016; Adebayo, 2019; Rentschler, 2019; Oyeyemi, 2019), employed VAR, ARDL and OLS approach to investigate the impact of oil price shocks on economic growth. Their analysis has not shown structural explanations and does not structure inference in analyzing the study. This study adopts SVAR which recognizes shocks. Similarly, their studies employed ARCH and GARCH in modelling shocks involving asymmetric of oil price shocks and economic growth. This means that they consider the absolute value of the change in predicting the volatility and ignore their sign in order to solve this problem; this study adopted EGARCH approach and unit root test with structural breaks of Zivot and Andrew (1992). To examine the structural effect of oil price shocks on economic growth in Nigeria, this study filled the identified gap.

3.0 Research Methodology

3.1 Sources of data

This study used secondary data. A time series data from 1980 – 2021 are sourced from the Central Bank of Nigeria Statistical bulletin and World Bank Development Database.

3.2 Justification of Variables and Measurement

Economic growth is a proxy of Real Gross Domestic Product (RGDP) and it is the dependent variable. It measures the adjusted value for price changes (i.e. inflation or deflation). While capital stock is a measure of Gross Fixed Capital Formation (CAP), Labour force is a measure of labour participating rate (LAB), Real Oil price (ROP) is measured base on the international price of crude oil. However, Inflation (INFR) is measured as inflation rate, while Real Effective Exchange Rate (REER), it is measures by taking the average of the bilateral exchange rates. The RGDP is the main indicator that is used in this research for measuring economic growth, while the other variables are included to capture some of the most important transmission channels through which oil prices shocks affect economic growth. Following the studies of (Dogah, and Adeniyi, 2020) RGDP is an effective measure of Economic growth (Adebayo, 2019). The capital stock and labour force are relevant in this study as it reflects the increase in business investment which in turn increases the level of gross domestic product (Adebayo, 2018). Real oil price, in order to arrest the uncertainty inborn in the macroeconomic variables, it requires initialling and capturing the actual oil price. Since Nigeria exports her crude oil to countries in the world, there is need to adopt real effective exchange rate in the study. It is essential to investigate on the impacts of oil price shocks on economic growth, using inflation to gauge price variation.

3.3 Model Specification

This study employs Kiani model, the model therefore in its concise form;

$$y = Y(Z1, Z2, Z3, Z4, Z5) \text{ --- (1)}$$

Where Y is the Real GDP, z1 is the real effective exchange rate, z2 is the consumer price index (CPI), z3 is the real government spending, z4 is the real government revenues, z5 is the real stock price, z6 is the real crude oil prices. This study modify the model by excluding real government spending, real government revenue and real stock price and incorporated capital stock, labour force to the model. By modifications, it is specify as:

$$GDP = \beta_0 + \beta_1 CAP_t + \beta_2 LAB_t + \beta_3 ROP_t + \beta_4 REER_t + \beta_5 INFR_t + \mu_t \text{ --- (2)}$$

Where: RGDP is real gross domestic product, CAP is a capital stock, LAB is a Labour force, ROP is the real oil price; REER is real effective exchange rate; INFR is inflation rate and β_1 β_2

$\beta_3 \beta_4 \beta_5$ are the coefficient of relative independent variables. While: β_0 is the intercept and u_t is the error term which represents the variables that are not captured in the model.

3.4 Tools of Analysis

3.4.1 Descriptive Statistics

It helps to ascertain the trend of relationship among the variables employed in this study. A simple trend model using descriptive statistics can be explained as follows:

$$RGDP = \beta_0 + \beta_1 t + \epsilon_t \text{ ----- (3)}$$

β_0 is the intercept (RGDP-intercept) when $t = 0$. β_1 is the slope coefficient of the trend. T is the time period (TYM). $RGDP$ is the estimated value for time t based on the model. ϵ_t is the random error of the time trend.

3.4.2 Stationarity Test

Unit root test is conducted for getting unbiased estimate and for further justification of applying SVAR (Kim, 2007). This technique is performed to capture structural shocks in the study.

3.4.3 SVAR Modeling

Base on equation (2) using SVAR. Model, Structural (p)-process is defined as:

$$AZ_t = A_0 + C(L)Z_{t-1} + B\epsilon_t \text{ ----- (4)}$$

A structural shock and the others in their reduced form (A ($k \times k$) matrix) and ϵ_t is the Structural noise which are uncorrelated and identically normally distributed.

3.3.4 Granger Causality Analysis

The Granger causality model is: $RGDP_t = C_{1t} + \sum_{i=1}^k \pi_{1i} RGDP_{t-1} + \sum_{i=1}^k \theta_{1i} CAP_{t-1} + \sum_{i=1}^k \delta_{1i} LAB_{t-1} + \sum_{i=1}^k \varphi_{1i} ROP_{t-1} + \sum_{i=1}^k \alpha_{1i} REER_{t-1} + \sum_{i=1}^k \rho_{1i} INFR_{t-1} + \epsilon_{1t}$ -- (6)

4.0 Data Analysis and Presentation

4.1 Descriptive Statistics Results

Table 1: Summary of Descriptive Statistics (1980-2021)

	RGDP	CAP	LAB	ROP	REER	INFR
Mean	13.51590	4939143.	66844325	43.98738	2.043476	1.162779
Median	13.41784	4618550.	64108652	31.30000	2.000014	1.110104
Maximum	13.86559	9768573.	1.04E+08	113.6600	2.720788	1.848234
Minimum	13.20982	1024575.	39053407	12.80000	1.610505	0.673680
Std. Dev.	0.290034	2590126.	19712043	29.72284	0.278703	0.289244
Skewness	0.309137	0.187611	0.349946	1.00398	0.889862	0.778528
Kurtosis	1.526716	1.755839	1.962178	2.874222	2.906398	2.945604
Jarque-Bera	4.467448	2.955274	2.742115	7.083580	5.558313	4.247917
Probability	0.107129	0.228176	0.253838	0.02896	0.062091	0.119557
Sum	567.6678	2.07E+08	2.81E+09	1847.470	85.82601	48.83672
Sum Sq.						
Dev.	2.169537	2.75E+14	1.59E+16	36221.34	3.184699	3.430138
Observations	42	42	42	42	42	42

Source: Author's Computation using E-views 10

The Jarque-Bera is a test for normality of the distribution where the null hypothesis is that the distribution of the sample is a normal one. If the probability value of the Jarque-Bera test is significant, then the null hypothesis is rejected which says that the sample is not normally distributed. Thus, the Jarque-Bera result indicated that the null hypothesis is strongly accepted for all the distribution except real oil price and real effective exchange rate which are significant in the probability value. Hence, the variables can be described to be normally distributed in the following order (from the highest to the lowest): capital stock, labour force and inflation rate except for real oil price and real effective exchange rate. The skewness result showed no skewness in some of the variables. This means that, the variables have a long right tail. Moreso, this analysis is inconclusive; a more detailed examination was carried out in the section below, where the applied variables are examined for unit root.

4.2 Unit root Results of Zivot and Andrew Test

This study test if there is a unit root using Zivot and Andrew unit root test.

Table 2: Zivot and Andrew Unit Root Test Result

Variables Series	t-statistics	Structural Break Location	Structural Break Years	Structural Order	Integration
LOGRGDP	-6.153593	A	2006	I (1)	
LOGCAP	-7.693194	A	2001	I (1)	
LOGLAB	-5.133989	B	2009	I (1)	
LOGROP	-3.533281	A	2005	I (1)	
LOGREER	-5.324777	B	1990	I (1)	
LOGINFR	-7.304823	A	1989	I (1)	

Sources: Authors Computation Using Eview 10

Note: Structural Break location: A = Intercept, B = Trend, C = Trend and Intercept.

The lag lengths for the ZA is chosen by using AIC

The result of Table 2 account for the present of structural breaks in the variables. The impact of oil price shocks on economic growth identified significant incidences of structural breaks in the years; 2006, 2001, 2009, 2005, 1990, and 1989; all the break dates were found to be significant and all the variables are found to be stationary at level which is shown by the t-statistics of the different variables.

4.3 The Cointegration Test Result

This study apply the cointegration test developed by Pesaran et al. (2001) to determine the existence (or not) of a long-run relationship between the variables. The lag selection criterion gives strategies that are utilized to decide the number of lags to carry out the estimation of cointegration and SVAR model. Therefore, this study used three lag. This is because the choice of the number of lags depends on the perception of selecting the designated lag that has the possible of lowest value. The cointegration test results are reported in Table 3. The calculated F-statistics of the joint null hypothesis that there is no long-run relationship between the variables is 8.0326, a value that is greater than the higher bound of the 95 percent critical value interval (2.726 and 4.3.057). This implies the rejection of the null hypothesis that no long-run relationship exists between the variables, and this study concluded that there is evidence of cointegration between the variables. This result agrees with the findings of Dogah and Adeniyi, (2020).

Table 3: Bounds Test of Cointegration Result

Significant Levels	Critical Values	
	Lower Bound	Upper Bound
10%	2.309	3.507
5%	2.726	3.057
1%	3.656	5.331
Computed F-Statistics	8.0326**	K=5

Source: Author's Computation using E-views 10. Note: critical values are obtained from Pesaran and Shin (2001); *Notes:* ** denotes statistical significance at the 5% level; k is the number of repressors

Table 4: Result of Structural VAR Estimates Result on Short- run pattern

Variable	Coefficient	Std. Error	z-Statistic	Prob.
LOGCAP (C1)	0.550873	0.064038	8.602324	0.0000
LOGLAB (C2)	8.488338	1.538804	5.516191	0.0000
LOGROP (C3)	-0.369461	2.278387	-0.162159	0.8712
LOGREER(C4)	-1.451105	1.078992	-1.344871	0.1787
LOGINFR (C5)	-2.082526	3.118636	-0.667768	0.5043

Source: Author's Computation Using R- software

The result of Table 4 shows RGDP shock consist of capital stock C(1), labour force C(2), real oil price C(3), real effective exchange rate C(4), inflation rate C(5). The result showed that RGDP is positively related to capital stock and labour force while it is negatively related to real oil price, real effective exchange rate and inflation rate. This showed that in the short-run, RGDP is positively related to capital stock and labour force while negatively related to real oil price, real effective exchange rate and inflation rate. From the above result, it indicates that this study reject the assumption that RGDP is the most endogenous variable in the model which cannot be affected by the shocks to all other variables in the model but instead the above result shows that it was affected by shocks from real oil price (C3), real effective

exchange rate (C4) and inflation rate (C5). The two variables (CAP and LAB) are significant at 1% level.

Table 5: Structural VAR Estimates Result of Long- run pattern matrix:

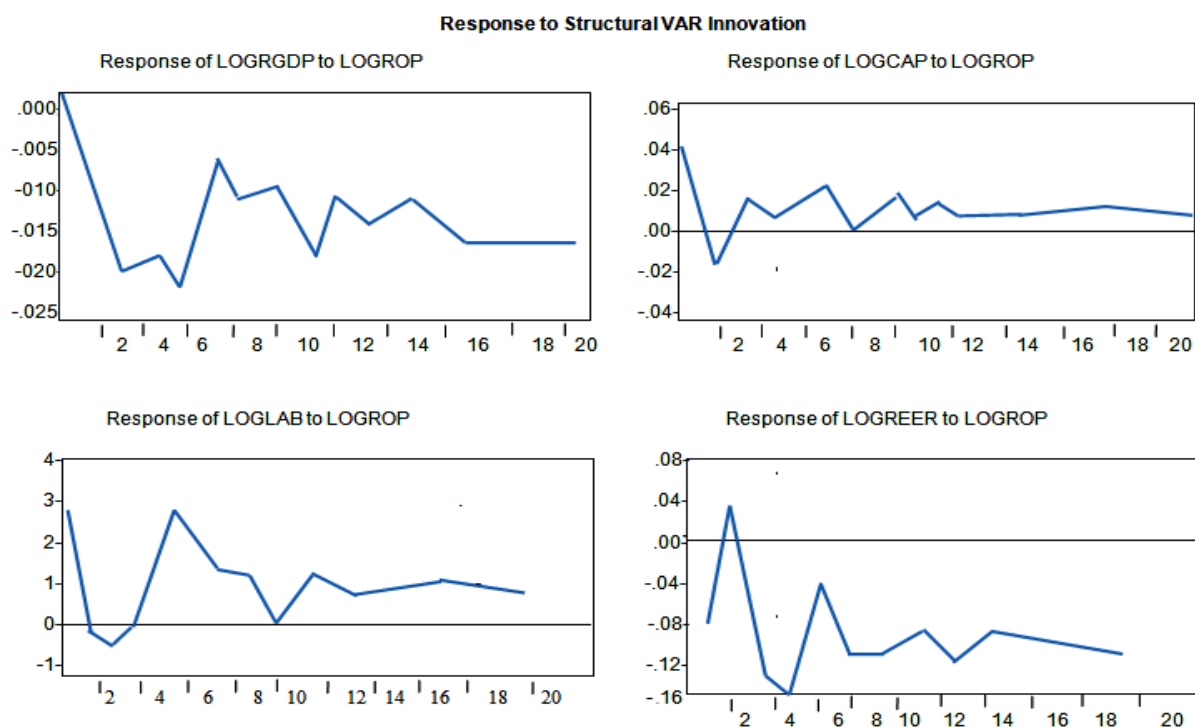
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C(1) LOGRGDP	0.421095	0.046502	9.055387	0.0000
C(2) LOGCAP	0.183805	0.020298	9.055381	0.0000
C(3) LOGLAB	0.345735	0.066996	5.160515	0.0000
C(4) LOGROP	-78.65320	52.08286	-1.510155	0.1310
C(5) LOGREER	0.352508	0.038928	9.055384	0.0000
C(6) LOGINFR	-0.002437	1.036905	-0.002350	0.9981

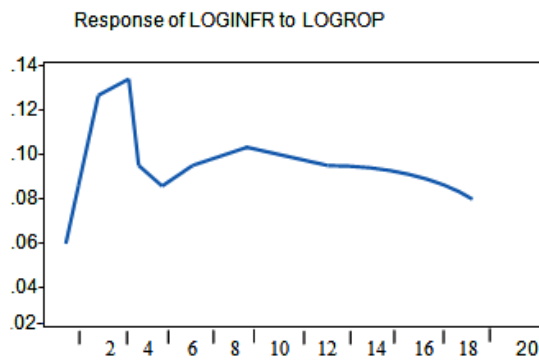
Source: Author's Computation Using R-Software.

Log likelihood -204.1219, significant at 1%, levels

The result of Table 5 shows that RGDP shock has recently affected Capital stock, labour force and real effective exchange rate given that C(1) is statistically significant at 1% level given p-value (0.0000). Thus, RGDP is positively related to Capital stock Labour force and real effective exchange rate in recent times. This means that RGDP is positively related to capital stock, labour force and real effective exchange rate in recent time. While real oil price and Inflation rate are negatively related to Real GDP. This study agrees to the hypothesis at 1% level of significance that a capital stock, labour force and real effective exchange rate have a long run effect on economic growth of Nigeria. Thus, Capital stock, labour force and real effective exchange rate have long run effect on economic growth in Nigeria. These results agree with the findings of (Rentschler, 2019; Ceylanet et al 2020) which says that it undermines economic growth in Nigeria.

4.4 Structural Impulse Response





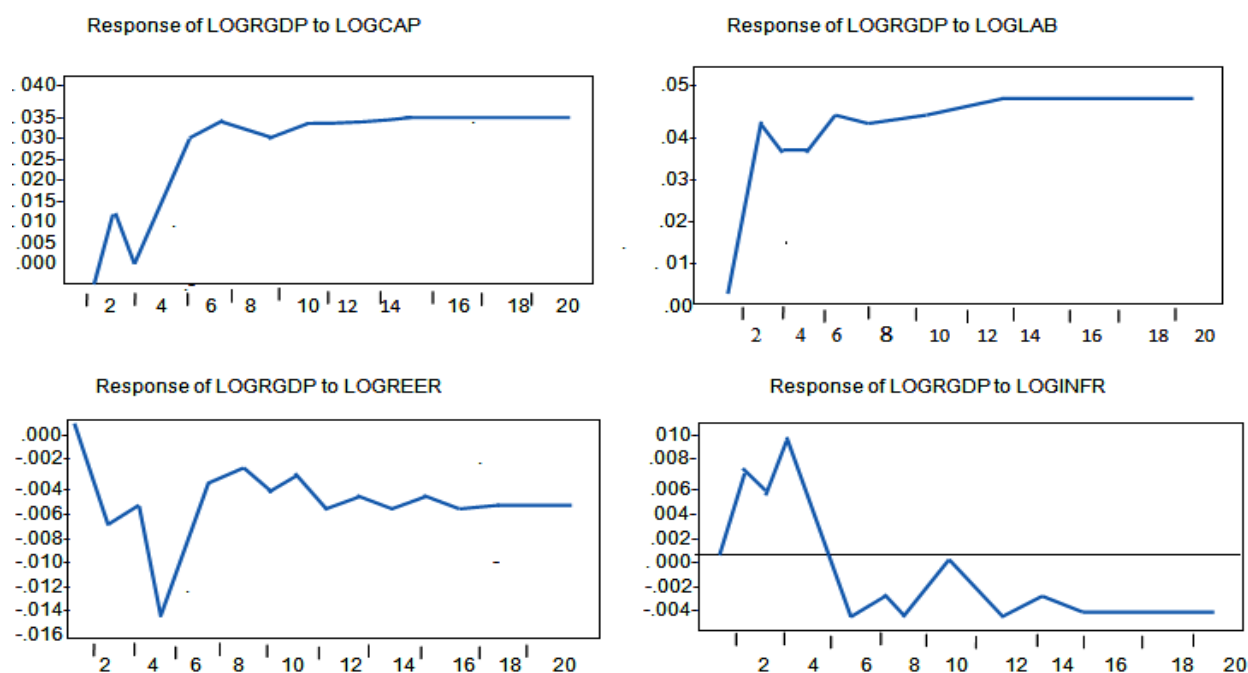
Source: Author’s Computation Using R-software

Figure 4.1: Structural Impulse Responses of RGDP, CAP, LAB, REER and INFR to Oil Price Shocks

4.5 Responses of RGDP to oil price shocks

The response of oil price shocks to RGDP is insignificant and negative in all the periods. Other variables in the model which includes capital stock, labour force, real effective exchange rate and inflation rate all responded to a shock in oil price. Capital stock to oil price shock is shown to be positive initially in the first period but was negatively impacted in the second period it maintained a positive magnitude from the third period, and also all through the long run. Labour force to oil price shock was seen to be partly negative and partly positive in the first five periods, while in the long run it was positive all through. The responses of real effective exchange rate to oil price shock was seen to be declining and mostly negative in the first five periods, and also negative in the long run. The response of inflation rate to oil price shock is positive in the first period to oil price and impacted positively all through the periods. The findings imply that positive impact exist between oil price shock and labour force, and Inflation rate were seen to be mostly correlated with oil price in the future periods, while real effective exchange rate is seen to be negatively correlated with the oil price shock in all the periods. The implication of this finding implies that oil price shock impacts positively on labour force, and inflation. It confirms that the oil price shock has contributed to inflation rise in the country.

4.6 Responses of RGDP to Shocks in CAP, LAB, REER and INFR



Source : Author 's Computation Using R-software

Figure 4.2: Structural Impulse Response of RGDP to Shocks in CAP, LAB, REER and INFR

The result of real GDP to capital stock, labour force, real effective exchange rate and inflation rate, so as to know how real GDP reacts to innovations in CAP, LAB, REER and INFR in the model. Real GDP responded gradually with an increasing positive impact to capital stock, and labour force all through the periods. While real effective exchange rate was seen to have negative impacts all through the periods. Inflation rate had initial positive impact in the first and second period but declined and was negative all through the long run. The result of structural variance decomposition is result is similar to the impulse response result. This result is not conformity with the findings of (Rentschler, 2019; Ceylanet et al 2020) whose findings reveal that oil price shocks promote economic growth in Nigeria.

Table 6: Result of Estimated EGARCH (1, 1) Model

Conditional Mean Equation				
Variable	Coefficient	Std Error	z-Statistics	Prob.
C	5.522036	0.000233	23725.09	0.0000
Conditional Variance Equation (loght)				
β_0	6.428729	0.000924	6960.022	0.0000
β_1	1.157499	0.120973	9.568218	0.0000
Θ	-2.320402	0.539499	-4.301031	0.0000
Φ	3.538022	0.645879	5.477838	0.0000

Source: Author's Computation Using Eview 10

The presence of ARCH effect further justified the use of EGARCH approach in examining the impact of oil price shocks on economic growth in Nigeria. Table 6 shows that the mean equation represent the average shocks of the oil price. The coefficient of the asymmetric (θ) term is negative (-2.320402) and statistically significant at 1% level. In the exponential terms it indicates bad news has larger effect on the volatility of the shocks than good news. By

implication, the negative coefficient of the parameter θ in estimation of EGARCH model shows that the impact of negative oil price shocks on economic growth, lead to larger price volatility, than positive shock.

Table 7: Granger Causality Tests Result

Null Hypothesis:	Obs	F-Statistic	Prob.
LOGCAP does not Granger Cause LOGRGDP	42	3.97894	0.0423
LOGRGDP does not Granger Cause LOGCAP		0.92682	0.5343
LOGLAB does not Granger Cause LOGRGDP	42	7.75259	0.0009
LOGRGDP does not Granger Cause LOGLAB		0.58383	0.6027
LOGROP does not Granger Cause LOGRGDP	42	0.54621	0.8312
LOGRGDP does not Granger Cause LOGROP		0.73988	0.4768
LOGREER does not Granger Cause LOGRGDP	42	0.38075	0.8757
LOGRGDP does not Granger Cause LOGREER		7.03290	0.0242
LOGINFR does not Granger Cause LOGRGDP	42	0.02820	0.9849
LOGRGDP does not Granger Cause LOGINFR		0.10474	0.9682
LOGLAB does not Granger Cause LOGCAP	42	2.57695	0.0920
LOGCAP does not Granger Cause LOGLAB		1.46724	0.2540
LOGROP does not Granger Cause LOGCAP	42	1.93604	0.1462
LOGCAP does not Granger Cause LOGROP		0.23623	0.8404

Source: Author's Computation Using Eview 10

Table 7 result shows that capital stock, labour force, real effective exchange rate, inflation rate, granger cause real GDP and labour force, capital stock, real oil price, inflation rate granger cause labour force in unidirectional causation. This study rejects the null hypothesis that no causation exist between the variables. However, the direction of causality running between real effective exchange rate and capital stock, inflation rate and real oil price, inflation rate and real effective exchange rate are bidirectional. Thus, the results accept the null hypothesis that the variables granger-cause each other in two ways. Also, there is no causation between real oil price and real GDP, real oil price and capital stock, inflation rate and capital stock, real effective exchange rate and labour force, real effective exchange rate and real oil price which means that real oil price don't granger cause each other That is, no directional relationship was found for the specification of oil price shock to real GDP. This means that oil price shocks have a negative impact on economic growth in Nigeria.

5.0 Conclusions

This study examines the impact of oil price shocks on economic growth in Nigeria and their causality using annual time series dataset from 1980 to 2021. This study has tested for unit roots, applied SVAR, EGARCH and Granger causality test to examine the impact of oil price shocks and economic growth in Nigeria. Therefore, the conclusion of this study is stated as follow: The result revealed that the response of oil price shocks to real gross domestic product is negative in all the period. Also, the result of EGARCH; the result shows that the negative effect of oil price shocks have more significant impact on real gross domestic product than positive effect. While real effective exchange rate has negative impacts all through the periods. It is concluded that oil price shocks decrease economic growth in all the period in

Nigeria. On the other hand, the long-run relationship between capital stock and labour force responded positive to economic growth all through the periods. By implication, an increase in capital stock and labour force stimulates economic activity and therefore increases economic growth in the country. On the contrary, inflation responded negatively in the long run. By implication, an increase in price will decrease demand of a product. Finally, the granger causality results show both the unidirectional and bidirectional causality running between the variables and there is no causation between real oil price and real GDP, real oil price and capital stock, inflation rate and capital stock, real effective exchange rate and labour force, real effective exchange rate and real oil price. This concluded that oil price shocks have no variation to real gross domestic product

5.1 Recommendation

The following are recommendation of this study: 1. monetary policy and fiscal policy should be reinforced to allow inflation to be maintained within a target range. Oil price shocks inevitably lead to high rates of inflation. 2. The real effective exchange rate, there is need to avoid naira depreciation in international market. The naira need to be protected with all measures since the real effective exchange rate significantly influences economic growth.

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