Article

Oil Trading Products and Economic Growth in Nigeria: A Disaggregated Case

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Abstract
The impact of crude oil trade on economic growth has sustained a lasting debate on the Nigerian economic stage given the relevance of oil in the revenue generation capacity of the country since the advent of oil. This study examines the impact of crude oil traded goods on economic growth using annual data from 1986-2019. The study adopts the Error correction model (ECM) technique and the empirical findings from the ECM indicate that importation of automotive gas oil was significant and negatively related to economic growth in Nigeria. On the contrary, premium motor spirit import impacts economic growth positively and quite significantly in the period under review. Other variables-dual purpose kerosene and liquefied petroleum gas are also revealed to have negative and positive relationship on economic growth in Nigeria respectively, though not significant at 5% significant level. Similarly, the study further finds that oil export exhibits a hugely significant impact on economic growth in Nigeria in the period under study. Based on these findings, we recommend among others that: the Nigerian government should revamp the existing refineries to encourage domestic production to meet up with the domestic demand for petroleum products, especially for PMS. We also recommend the diversification of the economy into other oil products as well as addressing the twin issues of oil theft and insecurity in the oil-producing delta region of the Nigerian federation.

Keywords
Economic growth, import, export, oil trading products, premium motor spirit

Introduction

The oil trading sector of the Nigerian economy is very important to the development of the economy just like in other resource-endowed countries of the world. Nigeria is a natural resource abundant country and as such, over five decades, the country's oil subsector has grown phenomenally because both production and exports have increased enormously since the commencement of

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commercial production in 1958 (Akinlo, 2012). The huge revenues from oil, of course, presented net wealth and thus provided opportunity for increased expenditure and investment; however, the engorged revenues complicated macroeconomic management and has thus made the economy highly oil dependent. In spite of the huge rents from oil, the economy still grapples with many problems including high and rising unemployment rate, declining manufacturing production, high and rising level of poverty and poor infrastructural development. Apart from the increased share of oil in GDP composition between 1960 and 2009, total oil export became the main commodity in the export basket of the country within this period and Nigeria's crude oil exports have appeared to be on a continuous rise (OPEC 2020).

On the other hand, demand for the same petroleum products has been import reliant as the production capacity of the four Nigerian refineries namely; Warri refinery, Port Harcourt refinery I and II, and Kaduna refinery do not meet domestic demand and in most part records zero production. Hence, Nigeria depends on oil imports for its domestic consumption. Statistics from National Bureau of Statistics (NBS), 2020 have shown that imports of Premium Motor Spirit (PMS) which happens to be one of the main products of petroleum is estimated to increase geometrically by the year 2025. Contrariwise, the trade in Automotive Gas (AGO) and Liquefied Petroleum Gas (LPG) is estimated to increase dramatically and as such economists are projecting an increase in the use of LPG as a substitute for the use of firewood in low-income homes in the face of increase in development and improved standard of living.

Ironically, despite the colossal receipt from oil export which has remained the main stalk of revenue for the country, no significant change has occurred in terms of steady economic growth and standard of living of its citizens. The import of the same product seems to erode the positive impact in terms of balance of trade that oil-export would have had on the economy. The abysmal performance of the Nigerian economy in the face of huge rents from oil has left many to question the impact of oil trade in the Nigerian economy and thus raised interest on the relevance of oil in the growth and development discourse. Stemming from the above problems, this study seeks to provide answers to the following questions:

i. Do oil trading products impact economic growth of Nigeria?
ii. What impact do oil exports and imports have on economic growth?

This study thus fills the gap in knowledge by empirically examining the impact of oil trade (both import and export) of the disaggregated petroleum goods like AGO, PMS, Dual purpose kerosene (DPK) and LPG on economic growth in Nigeria. It attempts also to identify the component that contributes to or

otherwise impedes economic growth in Nigeria as well as to determine the component of trade (that is, import and export) that contributes the most to economic growth. This study is significant because earlier studies in this subject area focused more on export trade of oil products (Adedokun, 2012; Abayomi, Adam and Alumbugu, 2015; Ibrahim & Ahmad, 2019; and Hurri, Muhammad Jamal & Majid, 2019), a few others were concerned about the effect of price instability of petroleum products. Some other studies that examined both trade components used import and exports in their aggregate terms to examine their effects on economic growth in Nigeria (Ogbonna, 2015; Tombofa & Karimo, 2014). This study is also relevant for extraction of policy implications that will be useful to appropriate policy makers, the government and for further research since the researchers are not aware of any study purporting to have addressed this issue for the Nigerian economy within the given time frame.

Trend of Oil Trading Petroleum Products in Nigeria

Nigeria's trade in oil appears to be bi-directional in export and import of petroleum products including AGO, PMS, DPK, LPG among others. This implies that despite the massive crude oil deposit, a huge chunk of the domestic demand of the products is met through imports making oil trade the largest commodity in the country's trade basket. For instance, AGO import has maintained steady growth with export of the same product occurring intermittently. Import of AGO stood at 2.3 thousand Barrels per day (bpd) in 1986, increasing steadily to 6.9 thousand bpd in 1987 and continued on that same trend for years. In 2007 for example, AGO stood at a whopping 22 thousand bpd. However, Nigeria recorded zero import of AGO in the following years; 1990, 1991, 1999, 2009 as well as 2010 (NNPC, 2017). These zero imports can be explained by the other trade component of export, seeing that exports increased in those particular years. It can be deduced from the foregoing, that domestic production was able to cater for demand but not as much as to begin export immediately in 1990. Export, however, commenced with one thousand bpd in 1991, three thousand bpd in 1992 rising dramatically to four thousand bpd in 1997.

More recent data show that the importation of AGO declined for the second consecutive year in 2018 to 26.7 million barrels (mb) per day from 26.9 mb in 2017. Also, AGO importation in 2016 was 29.3mb. This indicates AGO importation dropped by 9% in two years. However, comparing a five-year historical growth trend in the importation of AGO, Nigeria recorded a 22% increase in AGO importation between 2014 and 2018. In 2014, the total volume of AGO imported stood at 21.89mb, while it rose to 26.7 mb in 2018 (BP, 2019). Premium Motor Spirit also known as petrol has the highest demand among all the refined petroleum products as most vehicles and machines including household power generators in the country run on the product. The demand for the product is expected to grow from 305.59mb in

2015 to 400.51mb by year 2025 according to NNPC (2019). Nigeria has, however, had major shortfalls in meeting up with its domestic need for the product, therefore, depending mostly on imports for its domestic consumption. Nigeria for instance imported 140mb of PMS in 2008, imports rose to 163mb in 2010 and a subsequent decrease to 142mb, and 137mb in 2011 and 2012 respectively. Nigeria's importation of PMS finally hits the 126.68mb mark in 2018. In the last quarter of 2018 alone, Nigeria imported 33.336mb of PMS. Data for the four quarters in 2018, as released by the NBS, shows that the country importation rose sporadically. According to the NBS report (2019), Nigeria imported 108mb of PMS in 2017, compared to the new figure of 126.68mb in 2018. This indicates that PMS importation increased by 16% year-on-year; 2017 and 2018. PMS importation stood at 166,362mb in 2014, and then increased to 166,991mb in 2016 (NBS, 2018).

Meanwhile, DPK import rose again in 2018, after dropping for the 4th consecutive year. Data shows that DPK importation increased to 3,381.4bpd in 2018 after the importation dropped for the 4th consecutive year to 2,138.54bpd in 2017. That is, DPK importation increased by 58% year-on-year in 2018. However, within the last five years, DPK Importation declined by 82%. In 2014, the total volume of DPK imported was 18.43 million bpd, while it stood at 3,381.4 million bpd in 2018. (This day Business, 2013). Nigeria had an estimated 200.4 trillion cubic feet (Tcf) of proved natural gas reserves (equivalent to 356,927,643, 784.79 Billion barrels) by the end of 2019, according to the Oil & Gas Journal (2020). Nigeria has the largest natural gas reserves in Africa. According to estimates by EIA, Nigeria produced 1.6 Tcf (2846, 972,170,686.46 in billions of barrels) of dry natural gas (or marketed natural gas production) in 2019, (World Reserve Survey Table, 2020) Nigeria's natural gas industry is also affected by the same security and regulatory issues that affect the crude oil industry.

A significant amount of Nigeria's gross natural gas production is either re–injected or flared. Some of Nigeria's oil fields lack the infrastructure to capture the natural gas produced with oil, known as associated gas. According to recent data by the World Bank's Global Gas Flaring Reduction Partnership (GGFR, 2020), Nigeria flared about 261 billion cubic feet (Bcf) (46,486,085,343.23 billion barrels) of natural gas in 2018, making Nigeria the seventh–largest natural gas flaring country in terms of annual natural gas flaring volume. (Kelli and Holland, 2020). In December 2019, Nigeria Liquefied Natural Gas (NLNG) reached financial close, or its final investment decision, to add a seventh train to its existing facility, adding about 365Bcf (65,009,276,437.85 billion barrels), thus increasing the total capacity of the facility to 1.4Tcf. (249,350,649,350.65 billion Barrels). The expansion project was initially proposed in 2005 but encountered numerous delays. NLNG

expects the project to be completed by 2024, and it will be operated by Shell (25.6%), and the other shareholders are NNPC (49%), Total (15%), and Eni (10.4%) (NLNG, 2020). Nigeria exports natural gas primarily as liquefied natural gas (LNG). Nigeria began exporting LNG in 1999 when the first two trains at the Bonny Island facility were completed. However, both infrastructure and demand constraints are challenges to exporting primarily by pipeline to neighboring countries (IHS Markit, 2018). According to the latest estimates in BP's 2019 Statistical Review of World Energy, Nigeria exported about 982 Bcf (174, 901,669,758.81 Barrels) of LNG in 2018, ranking Nigeria as the world's fifth–largest LNG exporter, behind Qatar, Australia, Malaysia, and the United States. Nigeria's LNG exports accounted about 6.5% of LNG traded globally. Spain was the largest importer of Nigeria's LNG in 2018, importing about 146 Bcf (26003710575.14 barrels) of Nigeria's LNG, followed by India (143 Bcf) (25469387755.1 barrels), and France (126 Bcf) (2244158441.56 barrels) (British Petroleum, 2019).

Nigeria is the most densely inhabited country with a probable population of 200 million people according to the National population commission (NPC, 2017). It possesses 28 percent of African upheld oil reserves, second after Libya, and it is the top producer of African crude oil, producing 24 percent of 2010 African oil production equaling 2.4 million barrels per day (bpd) (Adegbite, 2015; Nigerian National Petroleum Corporation NNPC, 2017). At the same time, Nigeria's share in world production remained almost constant around 3 percent. Nigeria ranks among the top 12 world producers of oil according to British Petroleum Statistical Review of World Energy, 2011. Over the last four decades, crude oil has become Nigeria's top export commodity. The share of oil in Nigerian export peaked at 97 percent in 1984 and has not been less than 90 percent since, while its share in gross domestic product (GDP) has ranged between 6 percent and 9 percent in recent years between 2017 and 2019. Its lowest share in recent years was in 2015 when it recorded abysmal contribution of only 2.8 percent and 3 percent in 2015 and 2016 respectively (World Bank Indicator, 2019).

Literature Review

From the global scene, studies of how aggregate petroleum products consumption impact key macroeconomic variables have been undertaken for various countries. Rao and Parikh analyzed the demand for petroleum products in India; Zaman et al. (2012) assessed the factors affecting the commercial consumption of electricity products in Pakistan; Lu (2009) found a stable long run relationship among the total energy consumption, population, gross domestic product (GDP) and urbanization level in China; and Pirlogea and Cicea (2011) assessed petroleum products consumption and economic growth in the European Union. These studies applied econometric analysis to assess the response of petroleum product consumption to key socioeconomic factors and found varying effects. From the Nigerian perspective, there is little

literature on the empirical estimation of petroleum imports especially on the disaggregated approach based on historical data. Iwayemi, Adenikinju and Babatunde (2010) applied error correction modeling to estimate aggregate petroleum demand, using a series of four simultaneous equations. They estimated petroleum product demand elasticities for petrol, diesel, and kerosene, focusing on how the independent variables (GDP, prices, and a lag of consumption quantity) integrate to affect the long-run demand equilibrium for individual products as well as aggregate petroleum products. On the overall, their study found petroleum products to be price and income inelastic.

Abayomi, Adam and Alumbugu (2015) tested the economic impact of oil exportation on Nigerian economy from 1970–2012. The study employed the VECM and impulse response for the analysis. The result obtained shows that there exists a long run relationship between the dependent variable and the explanatory variables. From the import angle, Ogbonna (2015) investigated whether it is the import-led or export-led growth hypothesis that holds for Nigeria. In other words, the study seeks to examine the economic growth impact of import and export trade as well as to ascertain the component of trade that drive growth more. The Johansen testing approach to co-integration and the standard desk top pairwise Granger-causality test technique were adopted to achieve this objective. The co-integration test results demonstrated that a long-run relationship exists between economic growth and decomposed import variables in Nigeria. Particular categories of interest in this study were Food & Life Animal, Manufactured Goods, and Machinery & Transport Equipment as the trio constitute over 75 percent of aggregate import bills during the period under review. Evidence from the pairwise granger causality tests, contrary to expectation, suggests that import-does not promote growth in Nigeria. From the export-led angle, some studies conducted in Nigeria and Indonesia found the exports of oil and gas do not to matter for economic growth as it supposed. This thus implies that export of oil and gas do not trigger economic growth (Adedokun, 2012 and Hurri, Muhammad Jamal & Majid, 2019). Momodu (2017) on the other hand attempted to show how limiting oil dependency has been for the growth process, which is measured by gross domestic product (GDP). The result revealed a positive correlation between oil dependency and GDP growth but it's been affected by a lack of diversification and the fluctuations in world oil price. He attributed the volatility of the economic growth to the fluctuations in oil price, meanwhile the lack of sustained growth is a consequence of the lack of diversification. Therefore, it was concluded that there is a need to introduce policies which promote diversification from the oil sector into the non-oil sector, especially the manufacturing sector, so as to experience a sustained economic growth.

From a general perspective, Tombofa and Karimo (2014) attempted to quantify the relationship between international trade and overall economic performance in Nigeria, the results showed a positive relationship between economic growth, export performance and import penetration. However, growth was negatively related to financial deepening. Further results showed that export performance and financial deepening were more important to Nigeria's growth than import penetration over the period 1981-2012. Furthermore, Ibrahim and Ahmad (2019) examined the comparative dynamic impact of oil and non-oil export compositions on the economic growth Nigeria, using VAR based approach on a Time series data set for the period 1975-2015. Findings from the paper indicate that the oil export composition has significantly greater impact on the Nigerian economic growth in the short run, while non-oil export composition has significantly positive long-run impact on the economy. Also, external shocks to both oil and non-oil compositions evoke positive response from the GDP. It is concluded that the nature of the export compositions matters in attaining the long run stability of Nigerian economy. Efforts towards diversifying the exports through non-oil exports promotion and trade liberalization policies were therefore recommended. From the transmission channel angle among others, Okungbowa and Abhulimen (2021), examines how energy consumption and supply can impact industrial productivity from a disaggregated approach and found the existence of a positive relationship between petroleum consumption, coal consumption, energy price, physical capital stock, and industrial output. Coal, energy price and physical capital were also found to impact industrial output significantly. However, an inverse relationship exists between industrial output, Natural gas, electricity, and human capital.

Methodology and Model Specification

Theoretical Framework

This study is rooted on the extended version of endogenous technological progress known as product variety model, advanced by Aghion and Howitt (1992) and the comparative cost advantage of David Ricardo. According to Aghion and Howitt (1992), the product variety model postulates that economic growth is a consequence of the expansion of specialized intermediate variety of products. The product variety model does this by insisting that growth is driven by innovations that lead to the introduction of new varieties. They summarized their assumption as follows; "Productivity growth is driven both by increased specialization of labour that works with an increasing number of intermediate inputs and by the research spillovers, whereby each new innovator benefits from the whole existing stock of innovations. The basic product variety model can be characterized into the interactions of three (3) sectors – the research sector –produces research outputs, intermediate goods sector –buys research output from research sector and produces intermediate goods (inputs for final

sector) and the final goods sector – combines labour and intermediate goods to produce the final good (Mare, 2004). It is the interaction of the roles of these three sectors that mitigate the problem of diminishing returns in modeling long-run economic growth. This theory is particularly relevant to this study based on the argument of many economists who contend that the oil subsector of the economy has the capacity to drive growth. They support their argument by saying an improvement and a revamp of refineries, increase in daily production output and development of local content brought about by research and development as portrayed by the endogenous growth model will catapult growth in the economy. The theory similarly lays emphasis on innovation of a product and in this case, the traded petroleum products of Premium Motor Spirit, Automotive Gas, Liquefied Petroleum Gas, Dual Purpose Kerosene etc. They further argue that most of the value-added bye products of petroleum which would have engineered domestic growth are forfeited due to export of crude and import of finished products. Therefore, linking this theory with our research will mean the research and development of petroleum product and the increase in the variety of petroleum products manufactured, imported and exported would lead to a significant growth in the economy.

According to the comparative cost advantage of David Ricardo, a country will export those commodities in which its comparative production costs are less, and will import those commodities in which its production costs are high. The country thus, economizes in the use of resources, obtaining for a given amount thereof a larger total income than if it attempted to produce everything itself. David Ricardo stated a theory that other things being equal a country tends to specialize in and exports those commodities in the production of which it has maximum comparative cost advantage or minimum comparative disadvantage. Similarly, the country's imports will be of goods having relatively less comparative cost advantage or greater disadvantage. Ricardo employed the concept of opportunity cost in pushing forward his analysis as he used the example of cloth and wine in driving home his theory.

Model Specification

The model for this study assumes an underlying relationship between some oil trading products and how they can influence the level of economic growth following Iwayemi et al. (2010) and Hurri et al. (2019). For a country like Nigeria that is blessed with immense natural and human resources yet exports primary products like crude oil and imports a large volume of the refined petroleum products, our model was extended by disaggregating the oil products and also to split the trade into imports and exports to determine how

the various products whether imported or exported can influence economic growth in Nigeria. Thus, the model is specified as:

the model is specified as:

$$RGDP = \alpha_0 + \alpha_1 \text{AGO} + \alpha_2 \text{PMS} + \alpha_3 \text{DPK} + \alpha_4 \text{LPG} + \alpha_5 \text{MNSS} + \alpha_6 \text{GFCF} + \alpha_7 \text{FDI} + \alpha_8 \text{EXPRT} + \delta ECM_{(t-1)} + \varepsilon_{1t} \quad (3.1)$$

Where: RGDP = Real Gross Domestic product, AGO = Automotive gas oil, PMS = Premium Motor Spirit, DPK = Dual Purpose kerosene, LPG = Liquefied Petroleum Gas, MNSS = Money supply, GFCF = Gross fixed capital formation and, EXPRT = Oil Export.

A-priori Expectation $\alpha_0 \neq 0 \quad \alpha_{i<0}$ *i=1-4 and* $\alpha j > 0, j = 5 - 8$

Method of Analysis

This study adopts the co-integration and error correction techniques in estimating the impact of oil product imports and exports on economic growth model. The co-integration and error correction methodology [ECM] was selected due to its ability to correct deviation between the short-run and long-run empirical relationship between the variables. Prior to Adopting the Error correction technique, the data were subjected to some preliminary tests such as stationarity and co-integration tests. The stationarity test involves the testing of the variables used in regression analysis for the presence of unit root. The importance of stationarity of time series used in regression borders on the fact that a non-stationary time series may not generalize to other time periods apart from the present. And as such forecasting with such time series will be erroneous in practice. Moreover, regression of a non-stationary time series on another non-stationary time series may produce spurious result. The augmented dickey Fuller (ADF) test is employed in order to analyze unit roots. Co-integration test is useful in identifying whether there exists a stable long term economic relationship among the variables in the model. The test is carried out using Johansen *and Juselius* (1990) approach. If the calculated trace and maximum Eigen values are larger than the critical values, the null hypotheses of no co-integration will be rejected and we concluded that there is evidence of a long-run relationship between the variables at that level. The existence of co-integration signifies long-run relationship between the variables.

Empirical Analysis/Discussion of Findings

Unit Root Test

The Augmented Dickey-Fuller stationarity tests results of the variables are present in Table 1.

Table 1: Augmented Dickey Fuller Test

Variables	First Difference		Second Difference	
	ADF-STATS	Critical Value (5%)	ADF-STATS	Critical Value (5%)
RGDP			-6.010773	-2.960411
AGO	-7.444170	-2.960411		
DPK			-4.99136	-2.991878
PMS	-6.350360	-2.957110		
LPG			-5.133457	-2.957110
GFCF			-8966981	-2971853
EXPRT	-6.350360	-2.957110		
MNSS			-7.823243	-2.963972

Source: Author's computation, 2021

The table 1 shows that the variables are stationary at different levels of integration mostly after first and second difference. Hence, none of the variables was stationary at the level form. AGO, EXPRT and PMS were found to be stationary at first difference while RGDP, DPK, GFCF, LPG and MNSS were all found to be stationary at second difference. Therefore, the variables have different orders of integration.

Co-integration Test

The results of the co-integration test are as follows in Table 2 below.

Table 2: Johansen Co-integration Test results: unrestricted co-integration Rank Test Showing Trace and Maximum Eigenvalues

Hypothesized No. of CE(s)	Eigen Value	Trace Statistics	Prob**	Max-Eigen Statistics	Prob**
None*	0.971468	367.2313	0.0000	106.7017	0.0000
At most 1*	0.932148	260.5296	0.0000	80.71299	0.0000
At most 2*	0.859479	176.8166	0.0000	58.87187	0.0001
At most 3*	0.798911	120.9448	0.0000	48.12027	0.0006
At most 4*	0.663522	72.82449	0.0001	32.67664	0.0101
At most 5*	0.650213	40.14785	0.0023	31.51295	0.0012

Source: Author's computation, 2021

Trace test and Max-Eigen Statistics indicates 6 co-integrating equations at the 0.05 level and *Denotes rejection of the hypothesis at the 0.05 level

The result of the co-integration test in table 2 shows that both the Trace statistics and Maximum-Eigen statistics confirm the existence of 6 co-integrating equations each among the variables of interest at 5% level of significance. Since the variables are co-integrated, this satisfies the existence of long-run relationship among the variables. Therefore, an error correction model is then presented to integrate both the long run and short run dynamics.

Error Correction Model Regression Results

The estimation result is presented in Table 3 below.

Table 3: Error Correction Estimate

Dependent Variable: RGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	405.2252	232.4956	1.742937	0.0975
D(AGO)	-62.16052	24.29568	-2.558501	0.0192
DPMS	39.04339	11.54295	3.382446	0.0031
D(LPG)	9.678216	63.36750	0.152732	0.8802
D(DPK)	-86.89894	31.17791	-2.787196	0.0117
D(GFCF)	0.001233	0.000267	4.624553	0.0002
D(FDI)	-350.9789	92.43329	-3.797105	0.0012
D(MNSS)	0.415978	0.145384	2.861239	0.0100
D(EXPRT)	1.88E-08	7.74E-09	2.432700	0.0250
D(RGDP(-1))	0.423053	0.120621	3.507276	0.0024
ECM(-1)	-0.248374	0.124063	-2.0019997	0.059
R-squared	0.8302			
Adjusted R-squared	0.7408			
Prob(F-statistic)	0.9884(0.000)			
Durbin-Watson stat	1.8548			
Diagnostic Tests		**Statistics**		
Serial correlation LM test		1.345053(0.2869)		
Heteroskedasticity		0.807658(0.6246)		

Source: Author's computation, 2021

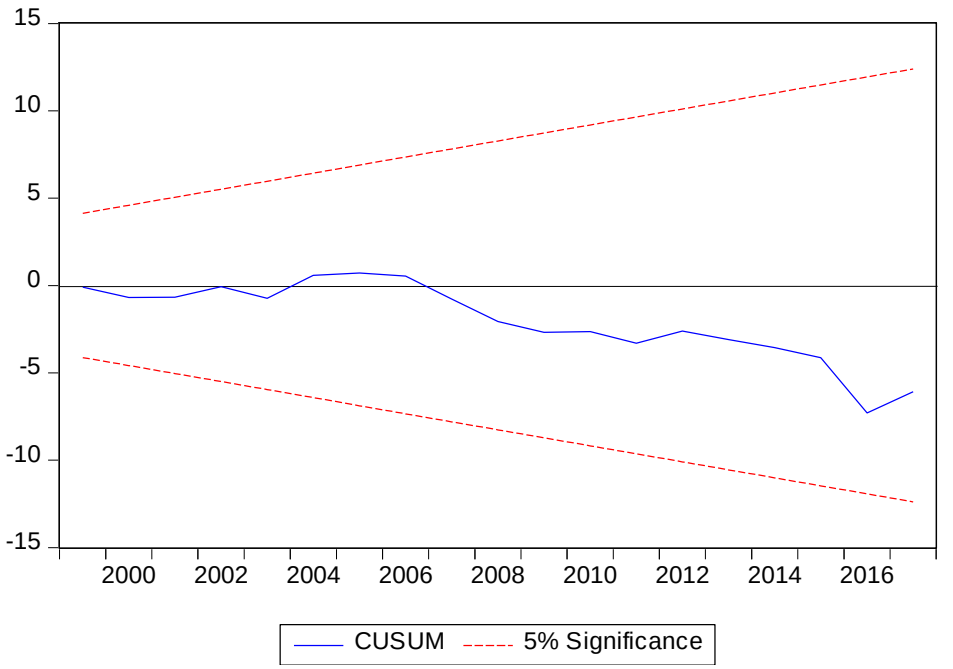
From table 3 above, the coefficient of determination is 0.83 while the adjusted R-squared is approximately 0.74. This implies that 83 percent of the variations in RGDP can be explained by all the explanatory variables (PMS, LPG, DPK, AGO, EXPRT, FDI, GFCF, MNSS). This is immensely a good fit as merely about 17 percent of the systematic variation is left unexplained in the model but captured by the error term effect. The F-statistic shows that the model is statistically significant at the 5% level of significance judging from its probability value of 0.000. This implies that the overall model is significant in

explaining the variations in Real Gross domestic product. The Durbin-Watson Statistic of 1.85 which is approximately 2 reveals the absence of autocorrelation in the short run. Both the serial correlation and Heteroskedasticity Tests accept the Null hypotheses thereby signifying the absence of autocorrelation and heteroskedasticity problems judging by their probability values of 0.2869 and 0.6246 which happened to be greater than 0.005. The CUSUM test is significant at 5% level of significance as it ranges between the acceptable regions. Given the soundness of goodness of fit as analysed above, we can thus rely on the estimated parameters of the variables.

Hence, the result of the estimation is interpreted as follows: the importation of AGO was found to maintain a statistically significant negative relationship (at 5% level of significance) with real gross domestic product. This result further supports the a priori expectation, the result explicitly shows that ceteris paribus, a unit increase in import of AGO will translate into a decrease in Real Gross domestic product by about 62.16 units. Moreover, the result revealed that, premium motor Spirit import value was positive and statistically significant (at 1% level of significance) in its impact on real gross domestic product. This finding however negates our theoretical a priori expectation since; an increase in the import of premium motor spirit is expected to bring about a decrease in real gross domestic product in the economy. The result explicitly implies that, a unit increase in the import of PMS will bring about a corresponding increase in real gross domestic product by 39.043 units. This could be attributed to the usefulness of PMS in other sectors like industries that can translate into growth.

Nevertheless, the importation of Dual-purpose kerosene as well as the importation of Liquefied petroleum gas were found to be negatively and positively associated with real gross domestic product in Nigeria respectively. More to the above point, they were both found to exhibit a statistically insignificant impact (at 5% level of significance). The findings for DPK confirmed our theoretical a priori expectation while that of LPG negates the a priori expectations. Dual purpose kerosene met the expected sign hence, an increase in the import of DPK would cause a decline in real domestic product. Specifically, a unit increase in DPK would cause a fall in RGDP by 86.89 units. Contrary, a unit increase in the importation of LPG would result to 9.68 units increase in RGDP. Additionally, oil export as a variable was found to be positively and statistically significant (at 5% level of significance) in defining real gross domestic product in Nigeria. This finding completely satisfies our a-priori expectation as shown by several theoretical and empirical constructs; to buttress this, a unit increase in export of crude oil products would cause real gross domestic product to increase by 0.000000018 units. Going by the coefficient value oil export though highly significant but its contribution to growth is negligible. As well, gross fixed capital formation, a variable for domestic investment with money supply were found to be positively and statistically significant at 1% level of significance in driving real gross

domestic product in Nigeria. This result met the a-priori expectation because; an increase in gross fixed capital formation, tend to foster economic activities and hence real gross domestic product. In the same vein, it was found that an increase in money supply would bring about an increase in real gross domestic product. FDI and economic growth appeared to be negatively related but significant in driving growth. The coefficient of one period lagged error correction term (ECM (-1)) is correctly signed. On the other hand, it indicates that, about 24.8% of the previous year shocks in real gross domestic product is however offset every 12months, and this is also significant at 1 per cent level as evidenced by the resultant t-ratio.



Summary of Findings/Policy Implication

From the error correction model estimation, automotive gas oil was found to be significant and negatively related to economic growth in the Nigeria, which is indicative of the fact that an increase in the import of automotive gas oil leads to a decrease in economic growth in the country. Contrarily, premium motor spirit import was discovered to impact on economic growth positively and quite significantly during the period under review. Dual purpose kerosene and liquefied petroleum gas were also revealed to have negative and positive

impact relationship on economic growth in Nigeria respectively, even though this impact was found to be insignificant on economic growth. This result therefore confirms the empirical results obtained both by Abila (2014), Ogbonna (2015) and Belal et al. (2021) for PMS and LPG and negate that of AGO and DPK. Trading of crude oil products in form of export was found to be positively associated with economic growth in Nigeria. The above findings corroborate the result obtained by Abayomi et al. (2015) that oil export boosts economic growth in Nigeria and negates those of Adeniyi (2012) and Hurri et. al. (2019). Furthermore, it was observed that all the petroleum products that form the largest component of oil trade namely; automotive gas oil and premium motor spirit variables happen to be statistically significant in impacting economic growth which suggest that the aforementioned variables are useful for policy formulation. That is, the statistically significant variables possess a high controllability on economic growth.

Some policy lessons can be drawn from the findings of the study. The study recommends first, based on the negative result of the import of automotive gas oil and dual-purpose kerosene on economic growth in Nigeria, government should revamp and focus on the production of the products domestically and work towards exporting the excess refined products. Second, the refurbishment of the four refineries in the country to produce up to full capacity to meet up local demand and subsequent export would foster greater economic gain as indicated by this study and several other empirical findings. Third, policies towards diversification of Nigerian economy should be formulated, so as to reduce overdependence on oil revenue and pressure on our local currency. The issues surrounding oil theft, illegal refineries, fuel scarcity and subsidy should be addressed as this continues to drain the economy of substantial revenues. Particularly, it has become an issue of concern to many Nigerians as some have opined those illegal refineries should be legalized to boost oil supply, create employment opportunities in the country and as well save the environment from further pollution. This study therefore recommends that attention should be given to the challenge as the issue of illegal oil bunkery has continued unabated despite efforts by government. Empowerment of those involved in this illegal oil dealings could mean the development of local content in the production of crude oil.

Conclusion

The study investigates the impact of crude oil trading products on economic growth in Nigeria. The error correction model technique is used for the estimation of the findings. The results from the analysis reveal that the variables (AGO, PMS, GFCF and MNSS) employed, are found to be statistically significant and impact on economic growth in Nigeria. However, dual purpose kerosene and liquefied petroleum gas are found to be non-statistically significant to economic growth in Nigeria. Additionally, real gross domestic product as the explained variable, shows any deviation from

equilibrium due to changes in the explanatory variables will be corrected in about 2.5 months (24.5%). This therefore, calls for proper monitoring of the importation of refined crude oil products into Nigeria especially automotive gas oil as it significantly leads to a decrease in economic growth in Nigeria. Also, the development of local content as well as the refurbishment of the moribund refineries to ensure full capacity utilization as this will cater for domestic demand and curb the conundrum of import subsidy which has remained an issue of both political and economic controversy.

From the foregoing, it is obvious that oil trading products have great implication for economic growth of the nation in concern but this may not be directly annexed but through some indirect mechanism. In the light of this, there will be need for further researchers to go through the indirect routes such as domestic investment, manufacturing/industrial productivity to examine how the oil trading productions can influence economic growth. Also, further area of interest could be conducting a comparative analysis to ascertain the component of the petroleum product that have the largest impact on economic growth.

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