International Journal of Intellectual Discourse (IJID)
ISSN: 2636-4832 Volume 5, Issue 3. September, 2022

The impacts of exchange rate and oil price on non-oil trade

Rabiu Maijamaa[1] Umar Bala[2] & Auwal Yahaya[3]

[1]Nigerian National Petroleum Corporation Retail Ltd.
[2&3]Department of Economics, Faculty of Social Sciences,
Bauchi State University, Gadau Nigeria.

Corresponding Email: umarbala@basug.edu.ng

Abstract
This study investigates the impacts of exchange rate and oil price on non-oil sub sector of the Nigerian economy. Autoregressive distributed lag (ARDL) was used to estimate the short-term and long-term impacts. The study found that exchange rate significantly influenced non-oil trade. The oil price has no significant impact on non-oil trade while the control variables, population and real gross domestic product (GDP) are found to be significant influencing the non-oil export. The results were robust using three different dynamic methodologies, fully modified OLS, Dynamic OLS and Canonical Cointegrating Regression (CCR). Accordingly, policy-makers should be cautious when devaluating has it been shown that exchange rate devaluation will not in favor to boost the non-oil export. Additionally, the government can encourage the available population to improve the non-oil trade especially the agricultural sector.

Keyword: Exchange rate, non-oil trade, oil price, population, real GDP

1. Introduction

Nigerian economy depends on crude oil proceeds, and has a close tie with the oil market to the extent that the country's economy is seen as mono-cultural, where crude oil incomes accounted for a reasonable share of the foreign exchange earnings; hence the role played by oil price in determining the worth of the Nigerian Naira in the foreign exchange market cannot be over emphasized (Onakoya & Agunbiade, 2020). Over dependence of the economy on oil price volatility which are usually beyond the control of the local authority due to external oil market influence; the country's economy is exposed to external shocks that are truly affecting all other economic sectors in the country particularly non-oil sectors such as agriculture, mining, manufacturing and construction industry (Ngo, 2021).

The influence of oil price fluctuation and exchanges rate on the Nigerian economy particularly agriculture is apparently evident from the sharp decline of crude oil price that led the country's economy sliding into recession where food prices and other agricultural product prices skyrocketed from the first quarter of 2016 through to second quarter of 2017 (Abubakar, 2018). As Sertoglu (2017) revealed in his study, Nigerian economy was predominantly agricultural-based before the independence and immediately after the independence, and with production of oil during 1970's, the food production and exports of agricultural product like Groundnut began to witness a decline in favor of imports which make the country to be depended more on exchange rate and US dollar. Hence, agricultural sector received less attention by the government (Abed et al., 2016). For some years, the neglect has continued though government has at intervals brings out policies to revive the sector, not much success has been

observed. The dependence of the Nigerian economy on oil exposes Nigeria to external shocks because any changes on the oil price from the international market poses an opportunity or threat to the Nigerian economy (Abubakar, 2019)

Agricultural products markets and crude oil prices are fundamental determinants of the economic performance of the country's economy. More significantly, crude oil prices as an essential commodity in the world markets, have a considerable impact on a wide range of economic sectors such as money market, and not only on the non-oil sector even the oil sector itself affected direct and indirect through various transmissions (Hung, 2021). For individual Economies, agricultural commodity prices have remarkable impacts on welfare and plan implementations more precisely, if the differences in rates of agricultural products involved an adjustment in crude oil prices, and crude oil prices is a substantial input for transportation and processing in the agricultural sector (Sertoglu, Ugural & Bekum, 2019). The recent increase in agricultural products prices may expose manufacturers and consumers to additional risk, giving upsurge to a significant stress, especially in food-insecure for developing countries like Nigeria. Therefore, policymakers must recognize the connectedness between the three sectors better to take on a practical set of policy instruments to maintain the product prices stability in the market (Hung, 2021).

The study offers the monetary authorities with a better understanding of the dynamism between oil price, exchange rate, and the agricultural product markets which goes a long way in aiding better decision on making effective policy, particularly for the Nigeria economy where oil plays a major role in influencing all other sectors of the economy.

2. Literature Review

Adewuyi and Akpokodje (2010) assessed the impact of trade liberalization on trade flow in Nigeria using Ordinary Least Squares (OLS) and Generalized Method of Moment (GMM) methods and found that better performance was observed during trade liberalization period than before trade liberalization period with the exception of oil price. Keho (2016) studied the relationship among trade openness and foreign direct investment (FDI) and carbon dioxide emissions from 1970 to 2010 in ECOWAS Countries. The result revealed the evidence of environmental Kuznets curve for four countries where the effect of FDI on CO_2 emissions is contingent on trade openness. Ijishar (2019) studied the impact of trade openness on economic growth among ECOWAS countries from 1975 to 2017. The study applied Pooled Mean Group (PMG) and Mean Group (MG) estimators. Positive and significant long run impact of trade openness on economic growth in ECOWAS countries was observed. In the case of Nigeria, Ajayi & Adedeji (2020) examined the relationship between trade openness, growth, and environmental degradation using ARDL from 1960-2017. The result also validates the existence of EKC hypothesis in Nigeria as trade openness and growth aid environmental degradation in both the short-and long run. In the case of Chinese economy, Mohsen & Chua (2020) investigated the impact of trade openness on GDP over the 1980-2018 period. The result from impulse response functions, variance decomposition and Granger causality tests, indicates positive relationship among GDP, trade openness.

Ezike & Ogege (2012) Reported that negative relationship exists between trade policies and non-oil sector using correlation analysis and OLS in their investigation for the impact of trade policy on non-oil exports in Nigeria. But Igue & Ogunleye (2014) showed that depreciation of exchange rate has no significant favorable impact on trade balance in Nigeria via the Marshall-Lerner (ML) condition. Al-Mawali, Hasim, & Al-Busaidi (2016)

quantified the impact of oil sector on the Oman economy for the period of 30 years using simulation analysis. The simulations indicate that oil sector has a significant and positive impact country's gross domestic product. Algahtani (2016) investigated the effect of oil price shocks on Saudi's economic activity using data from 1970 to 2015 and employed vector autoregressive (VAR) and vector error correction model (VECM). Positive and significant relationship between oil prices and country's GDP was revealed in the long run. With the aid of ARDL method, Bello Zoramawa, Ezekiel, & Umar (2020) assessed the non-oil sector's contribution to the economic growth in Nigeria from 1981 and 2019. Significant negative relationship between non-oil exports and economic growth in the long run for manufacturing and solid mineral except for agricultural export. In the Republic of the Congo from 1985 to 2015, Nelson, Gladice, Rivel, & Yirong (2020) studied the impact of exports on the non-oil sector economic growth using descriptive approach. The results showed that non-oil exports harm economic growth. Joseph, Ifunanya, & Patrick (2021) showed that different region translates into another distortion on non-oil export in their investigation on the effect of exchange rate policies on non-oil export in Nigeria.

From the review of the existing literature on the related topic written by different scholars from the different part of the world, it can be seen that majority of the topic written none of them have taken direct the impact of exchange rate and oil price on non-oil export in the case of Nigeria to the base our knowledge as well as the available literature that we lay our hands on. Therefore, this serves as the literature gap that the study wants to fill by utilizing the annual data from 1995 to 2019 based on the availability of data on most of the variables employed in this study.

3. Methodology

The Autoregressive Distributed Lag Model (ARDL) was used to explain the short run and the long run relationship between exchange rate, oil price and non-oil trade in Nigeria. The ARDL has numerous advantages over other techniques of cointegration. One of the major advantages in this technique is that it can be applied irrespective of whether the variable is I(0), I(1) or fractionally cointegrated (Pesaran and Pesaran, 1997). It is therefore devoid of pretesting problem, and applicable to small sample size ranging from 30 to 80 observations (Narayan, 2005).

Model Specification

$$NOEX = f(EXR, OP, RGDPP, POP)$$

In econometric form,

$$NOEX_t = \beta_0 + \beta_1 EXR_t + \beta_2 OP_t + \beta_3 RGDPP_t + \beta_4 POP_t + \mu_t$$

If we transform it in to a log form, we have;

$$lnNOEX_t = \beta_0 + \beta_1 lnEXR_t + \beta_2 lnOP_t + \beta_3 lnRGDPP_t + \beta_3 \mathrm{POP} + \mu_t$$

Where;
$NOEX$ = Nonoil Export
EXR = Exchange Rate
OP = Oil Price
$RGDPP$ = Real Gross Domestic Products Per Capita
POP = Population Growth
β = Parametric Expression
μ = Error Term

Another advantage of the model is that it takes sufficient number of lags to capture the data generating 50 processes in general to specific modeling framework (Laurenceson & Chai, 2003) Furthermore, the error correction model (ECM) can be derived from ARDL through a simple linear transformation (Banerjee, Dolado, Galbraith, & Hendry, 1993) ECM integrates short-run adjustments with long-run equilibrium without missing long run information. Moreover, the sample properties of ARDL approach are far greater to that of the Johansen and Juselius's cointegration technique (Pesaran & Shin, 1999) ARDL approach has been generally used in research work and in some analyses related to this research, such as (Bahmani-oskooee & Hegerty, 2013; Bala & Tahir, 2016; Hardi, Dawood, & Syathi, 2021)

ARDL Bounds Test for Cointegration

Where is the intercept parameter are the short run slopes parameters to be estimated, are the longs run slopes parameters to be estimated, is the optimum lag length, represent the change parameter Σ represent the summation sign and is the error term. The optimum lag is chosen by Akaike Information Criterion (AIC) and Schwartz Bayesian Criterion (SBC) for small sample; compare the F-statistics with the critical bounds by (Pesaran, Shin, & Smith, 2001) for large sample. The decision with regards to the existence of cointegration relationship is given in the statement below:
F-stat > F-critical: Reject null hypothesis = cointegrated
F-stat < F-critical: Fail to reject null hypothesis = Not cointegrated
F-stat = F-critical: Inconclusive
The satisfaction of cointegration leads to both the long run and short run estimation. In estimation by OLS based on re-parameterization of long run model, ECT represents the potential retreats from the long run equilibrium (Baharumshah, Mohd, & Ahn, 2009) is the adjustment coefficient.

Data source

The study employed secondary monthly statistical data on transportation price using Composite Consumer Price Index (CPI Base Period: November 2009=100), real GDP per capita, Population and petroleum pump price, non-oil trade and exchange rate. All the data were obtained from World Development Indicators of World Bank, CBN websites and CBN Annual Statistical Bulletin, 2020. The study uses the availability of data from 1981 to 2019. All variables are expressed in the natural logarithm.

4. Results and Discussion

This study carried out descriptive analysis in order to understand the fundamental characteristics of the data. Data for the period between 1981 and 2019 were used in the study. The data had 39 observations. All the variables had data available for the entire study period and were available from the reliable sources. Table 1 presents the descriptive statistics.

Table 1 Descriptive Statistics

	NOEX	EXR	OP	POP	GDPP
Mean	348.6403	94.25879	44.39718	1.28E+08	1774.713
Median	29.16000	102.1052	28.88800	1.22E+08	1581.562
Maximum	3207.020	306.9206	114.1500	2.01E+08	2563.900
Minimum	0.200000	0.610025	12.77100	75440502	1324.297
Std. Dev.	618.4665	92.86517	31.26822	37303059	445.5466

Skewness	2.844751	0.806529	1.014734	0.372052	0.578729
Kurtosis	12.81125	2.846207	2.786634	1.960311	1.706165
Jarque-Bera	209.0256	4.266615	6.766936	2.656294	4.897291
Probability	0.000000	0.118445	0.033930	0.264968	0.086411
Sum	13596.97	3676.093	1731.490	4.99E+09	69213.82
Sum Sq. Dev.	14535029	327709.7	37152.66	5.29E+16	7543449.
Observations	39	39	39	39	39

From the Table 1, non-oil sub-sector had a mean of 348.6403 with and values ranging from a minimum of 0.200000 to a maximum of 3207.020 with a standard deviation of 618.4665. A standard deviation of 618.4665 indicated a low variation from the mean during the period under study. The average value for exchange rate was 94.25879 with a standard deviation of 92.86517 which indicates a slightly lower variation from the mean. The lowest values ranging from a minimum of 0.610025 to a maximum of 306.9206 during the period under study.

The averaged Oil price 44.39718 USD per barrel with a standard deviation of 31.26822 USD per barrel which showed a low variation from the mean. The lowest value of 12.77100 was recorded. The maximum value for oil price was 114.1500 USD per barrel recorded. Total population averaged 1.28E+08 during the study period with a low standard deviation of 37303059 indicating a low variation from the mean. The lowest value of total population recorded was 75440502 whereas the highest value recorded was 2.01E+08. Real GDP per capita mean was 1774.713 with a standard deviation of 445.5466 showing lower variation from the mean. The real GDP per capita values ranged from a minimum of 1324.297 to a maximum of 2563.900 within the study period. Skewness and kurtosis are included in this study to estimate the symmetry of the data. A skewness of zero (perfectly symmetrical around the mean) and a kurtosis of three imply perfect symmetry or normal distribution (Gujarat, 2009). All the variables with exception of non-oil sub-sector and oil price have skewness values of zero and kurtosis of close. Furthermore, a Jacque Bera test statistic was also used to test whether the data's skewness and kurtosis matches a normal distribution. A Jacque Bera statistic with a probability of less than 0.05 implies that the data for a variable is not normally distributed. Only non-oil sub-sector and oil price have probability of zero. This further confirmed that data was normally distributed with the exception of these two.

Unit Root Test

As mentioned in Chapter three, this study used the Augmented dickey fuller (ADF) and Philip Perron (PP) unit root tests to check for the presence of unit roots. The stationarity tests were conducted both at level and first difference using both intercept and intercept and trend. Table 2 presents the results.

Table 2 Unit Root Results

Variable		Augmented Dickey Fuller (ADF)		Philip Perron (PP)	
		Constant Without Trend	Constant With Trend	Constant Without Trend	Constant With Trend
NOEX	*I*(0)	-0.501904	-2.874338	-0.228544	-3.058906
	I(1)	-7.030267***	-6.988092***	-8.279592***	-11.04788***
EXR	*I*(0)	-2.119490	-1.277673	-2.288986	-1.267057
	I(1)	-5.200040***	-5.607568***	-5.200040***	-5.818618***
OP	*I*(0)	-1.023975	-2.341535	-1.023975	-2.341535
	I(1)	-5.763216***	-5.753356***	-5.754163***	-5.742472***
RGDPP	*I*(0)	0.026196	-1.512145	0.722357	-3.149753
	I(1)	-3.856879***	-3.764149**	-3.856879***	-3.764149**
POP	*I*(0)			1.458334	-0.651440
	I(1)	-4.845654***	-4.463719***	-1.524826	-1.779776

Note: i) The figure in parenthesis (…) represents the test of variable stationarity. Asterisks (***), represent critical values at 1%, level of significance, Asterisks (**), represent critical values at 5%, level of significance respectively. ii) the lags were automatically selected

From the ADF and PP unit root test results reported in Table 2, it is shown that all the series were not stationary at level and this make it impossible to reject the null hypothesis of non-stationary series but these variables became stationary after first differencing and this make it possible to reject the null hypothesis of non-stationarity series. Therefore, all the series are said to be integrated of order one or popularly known as I(1) variables.

Optimum Lag Selection Result

After knowing the integrating order of the series employed in the study and before estimating the ARDL bounds test, short-run and long-run models respectively, the study have determined the optimum lag lengths that are free from serial correlation and the result is given in Figure 1.

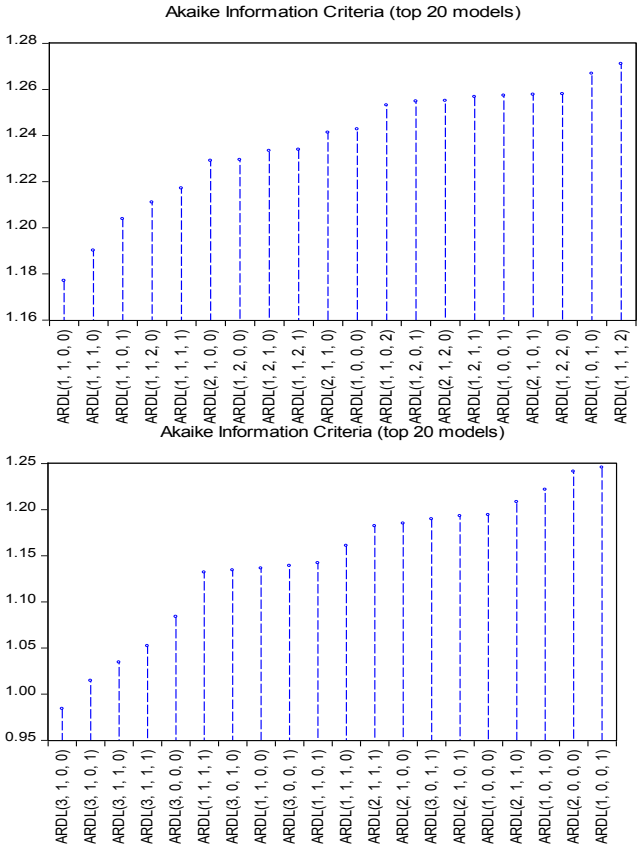

Figure 1 Lag Selection Criteria

Estimated lag lengths graphs using Akaike information criteria (top 20 models) indicated that ARDL (1,1,1,2) and ARDL (1,0,0,1) are the best lags combination for the estimated ARDL model equations.

Bounds Test Results

After knowing the optimum lags combination of the ARDL given in Figure 1, the here comes to the estimation of the long-run equilibrium relationship among the variables and the result of the estimation is given in Table 3. The bounds test estimation was done in two equations i.e., equation with real GDP and equation with population as control variables.

Table 3 ARDL Bound Test Results

Model	F – Statistics	Lag	Level Of Significance	Bound Test Critical Values (Constant Level)	
				I(0)	I(1)
$NOEX = f(OP, EXR, RGDPP)$	3.966208	2	10%	2.37	3.2
			5%	2.79	3.67
			2.5%	3.15	4.08
$NOEX = f(OP, EXR, POP)$	6.554535	1	1%	3.65	4.66

Source: Eviews computed ARDL bound test results

The results of the bounds test estimation reported in Table 3 revealed that all the variables under equation with real GDP and equation with population as control variables have cointegration relationship at 5% and 1% levels as indicated by their estimated F-statistic values of 3.9662 and 6.5545 which were higher than their lower

and upper bounds critical values at the respective levels of significance. Hence, all the series in the two models were cointegrated and therefore move together in the long-run.

ARDL Long Run Short Run Results

The objective of the study to determine the impact of impact of exchange rate and oil price on non-oil sub sector of the Nigerian economy. This was achieved by running autoregressive distributed lag model (ARDL) of non-oil sub-sector (NOEX) alongside oil price (OP), exchange rate (EXR), real GDP (RGDPP) and population (POP). The result of the estimated ARDL long run models were also presented in Table 4.

Table 4 ARDL Long Run Form

	Regressors	Coefficient	t-statistics
$NOEX = f(OP, EXR, RGDPP)$	$LEXR$	0.809222***	3.647369
	LOP	-0.139296	-0.236263
	$LGDPP$	2.489047**	2.062603
	C	-63.113260	-2.153998
		8.1303	
$NOEX = f(OP, EXR, POP)$	$LEXR$	0.315860**	2.197148
	LOP	0.224728	0.980277
	$LPOP$	7.015477***	6.190455
	C	-129.046010	-6.400405

From the first model in In Table 4, the estimated coefficient of exchange rate had positive and significant impact on non-oil sub-sector in the long run period. This is because exchange rate appreciation by one percent will bring about 0.8092 percent increase in the non-oil sub-sector of the Nigerian economy in the long run period. Moreover, the coefficient of oil price has negative but insignificant impact on the non-oil sub-sector of the Nigerian economy for the period of 1981 to 2019. But this finding supported the result of Bouchaour & Al-Zeaud (2012) who reported that oil price has no significant impact on non-oil sub-sectors in Algerian economy. In the second model, the estimated coefficient of exchange rate had significant positive impact at 5% level on non-oil sub-sector in the long run period. Since exchange rate appreciation by one percent is associated 0.3158% increase in the non-oil sub-sector of the Nigerian economy in the long run period. This also contradicts the result of (Imoughele & Ismaila, 2015) who reported appreciation in exchange rate has significant negative impact on non-oil sub-sector of the Nigerian economy. Again, the coefficient of total population has significant positive impact at 1% level of significant on non-oil sub-sector of the economy in the long run period. Particularly, increase in population by 1% will bring about 7.0154% increase in the non-oil sub-sector of the Nigerian economy in the long run. On the other hand, the coefficient of oil price is positive and insignificant in affecting the non-oil sub-sector in the long run for the period.

ARDL Short Run Result

In line with achievement of the second objective of the study which is to determine the impact of impact of exchange rate and oil price on non-oil sub sector of the Nigerian economy. The short run and error correction models were also estimated was further divided into two models as described in Table 4. The result of the estimated ARDL long run models were also presented in Table 4.

Table 5 ARDL Short Run Form

	Regressors	Coefficient	t-statistics
$NOEX = f(OP, EXR, RGDPP)$	$D(LEXR)$	-0.178884	-0.859089
	$D(LOP)$	0.093396	0.361574
	$D(LGDPP)$	2.060938	1.658947
	$CointEq(-1)$	-0.336973***	-3.795839
$NOEX = f(OP, EXR, POP)$	$D(LNOEX(-1))$	0.274955	1.713588
	$D(LNOEX(-2))$	0.431188***	2.890995
	$D(LEXR)$	-0.257211	-1.308166
	$D(LOP)$	0.229024	1.039519
	$D(LPOP)$	5.081417	1.457597
	$CointEq(-1)$	-0.703938***	-4.593820

From the short run result reported in Table 5, under the first model all the short run coefficients of the three in independent variables such as exchange rate, oil price and real GDP per capita were not statistically significance given their respective signs. However, the coefficient of error correction term has satisfied all the three conditions of being negative, less than one and significant. Therefore, the speed of convergence is at 33.69% every year within the study period.

Coming down to model two, the non-oil sub-sector lagged one was positive but statistically insignificant in affecting the dependent variable in the short run period. While the lagged two coefficient of the non-oil sub-sector was positive and statistically significant at 1% level of significance in affecting the dependent variable in the short run. On the other hand, the coefficients of exchange rate, oil price and total population were not statistically significant in affecting the dependent variable in the short run period. The coefficient of error correction model was statistically significant, less than one and negative which confirmed the presence of speed of adjustment at 70% every year in the model and is the further confirmation to the cointegration relationship in the model.

Robustness checks

The Johansen test for cointegration was engaged to serve as the robustness checks to cointegration relationship presented in the estimated models and the Johansen test for cointegration using both trace and max-eigen statistics were reported in Table 6 and 7.

Table 6 Results of Cointegration Based on Trace Statistics

Variables	λtrace (Trace statistics)				P *	r
	r = 0	r = 1	r = 2	r = 3		
$NOEX = f(OP, EXR, RGDPP)$	77.81759***	42.42480***	14.83785	1.078463	4	2
$NOEX = f(OP, EXR, POP)$	114.3983***	36.19230***	15.70721*	0.975587	3	2

: indicate significance at the 5%, levels. λtrace is the trace statistics value. *P* * indicate the optimal lag length based on AIC from the unrestricted VAR model. *r is the number of cointegration vectors based on Johansen's method.

The Johansen test for cointegration using trace statistic model as reported in Table 6 indicates that there is presence of two cointegration equations in both the two models as indicated by the asterisks. Hence, the result of the trace statistics model has further confirmed the existence of

cointegration relationships in the two models as reported in Table 3.

Table 7 Results of Cointegration Based on Eigenvalue Statistics

Variables	λmax (Eigenvalue statistics)				P *	r *
	r = 0	r = 1	r = 2	r = 3		
$NOEX = f(OP, EXR, RGDPP)$	35.39278***	27.58695***	13.75939	1.078463	3	2
$NOEX = f(OP, EXR, POP)$	78.20597***	20.48509**	14.73163	0.975587	2	2

: Indicate significance at the 5%, levels. λmax is the maximum eigenvalue statistics. *P indicate the optimal lag length based on AIC from the unrestricted VAR model. *r** is the number of cointegration vectors based on Johansen's method.

On the other hand, the Johansen test for cointegration using max-eigen statistic model as reported in Table 7 indicates that there is also a presence of two cointegration equations under the two models as indicated by the asterisks. Therefore, the result of the trace statistics model is also a further confirmation the existence of cointegration relationship in the two models as reported in Table 3. Dynamic ordinary least squares (DOLS), fully modified ordinary least squares (FMOLS) and canonical cointegration regression (CCR) were also estimated and their results were reported in Table 8 to serve as the robustness checks to the estimated long run ARDL result reported in the previous tables.

Table 8 Long run Models

	FMOLS	**DOLS**	**CRR**	**FMOLS**	**DOLS**	**CRR**
$LEXR$	0.7681*** (5.7334)	0.5856** (2.5856)	0.7612***	0.4799*** (2.7911)	0.5787** (2.3797)	0.4927** (2.6139)
LOP	0.0122 (0.0346)	-0.2511 (-0.4635)	-0.0016 (0.2980)	0.2980 (1.1282)	0.3349 (0.3536)	0.3201 (1.1059)
$LGDPP$	2.6766** (3.6457)	3.2702*** (2.8089)	2.7036*** (6.0494)	-	-	-
$LPOP$	-	-	-	6.0494*** (4.3132)	4.5274** (2.2273)	5.8994*** (3.7357)
C	-69.007*** (-3.8878)	-82.772*** (-2.9570)	-69.641*** (-111.90)	-111.90*** (-4.4897)	-86.957** (-2.0019)	-109.24*** (-3.8994)

Notes: Figures in parentheses are t-statistics values. *, ** and *** denote the level of significance at 10, 5 and 1 percent, respectively.

From Table 8, the estimated coefficient of exchange rate is positive and statistically significant under DOLS, FMOLS and CCR at different levels of significance in the first and the second models. While oil price coefficients were negative but insignificant under in the first model but became positive and still insignificant in the second model under DOLS, FMOLS and CCR. However, the coefficients of real GDP per capita and oil price in the first and second model were positive and statistically significant under DOLS, FMOLS and CCR estimators.

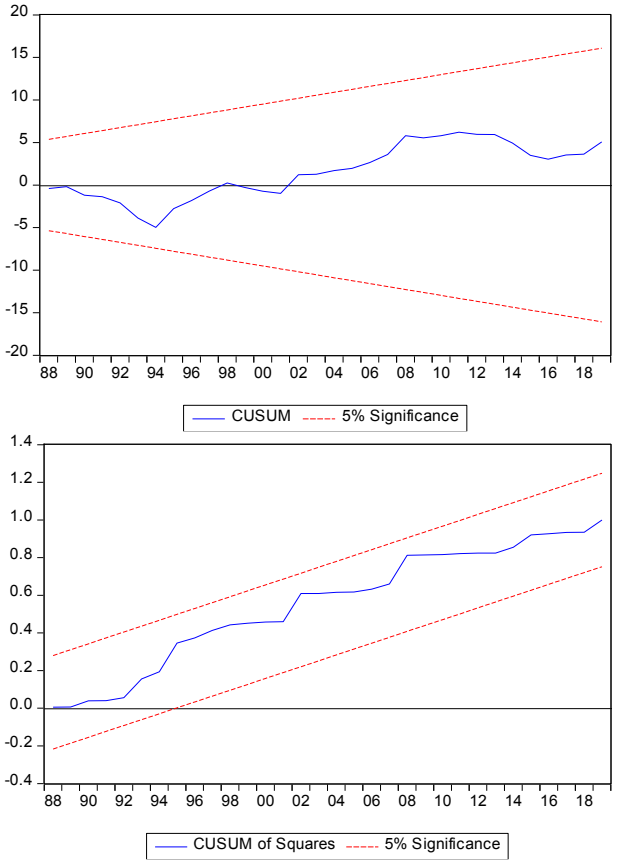

Figure 2 CUSUM and CUSUM square with Population

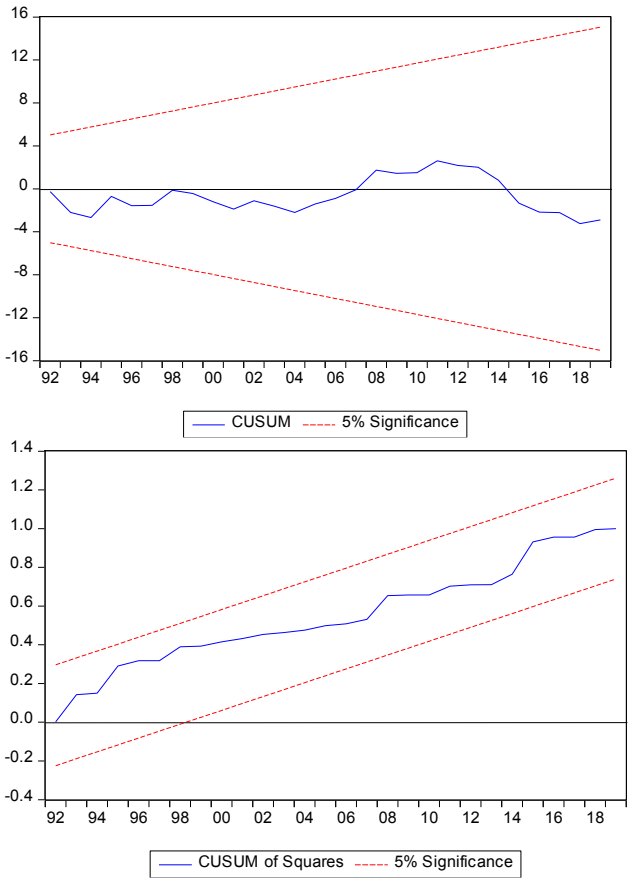

Figure 3 CUSUM and CUSUM square with real GDP

The stability test through CUSUM and CUSUMSQ indicated that errors were stable since the CUSUM and CUSUM of square lines were within the 5% significance boundaries in both Figure 2 and 3.

5. Conclusion and Recommendation

This study investigates the impacts of exchange rate and oil price on non-oil sub sector of the Nigerian economy. Autoregressive distributed lag (ARDL) was used to estimate the short- and long-term impacts. The study concludes that all the variables under equation with real GDPP and equation with population as control variables have co-integration at 5% and 1% levels as indicated by their estimated F-statistic values of 3.9662 and 6.5545 which were higher than their lower and upper bounds critical values at the respective levels of significance. Hence, all the series in the two models were cointegrated and therefore move together in the long-run. The study found that exchange rate significantly influenced non-oil trade. The oil price has no significant impact on non-oil trade while the control variables, population and real gross domestic product (GDP) are found to be significantly influencing the non-oil export. The results were robust using three different dynamic methodologies, fully modified OLS, Dynamic OLS and Canonical Cointegrating Regression (CCR).

The results recommend that policy-makers should be cautious when devaluating as it has shown that exchange rate devaluation will not in any way be favorable to boost the non-oil export. Additionally, government should encourage the available population to improve on the non-oil trade especially the agricultural sector since it is regarded as the most important non-oil sub sector in the country.

References

Abed, R.E., Amor, T.H., Nouira, R., & Rault, C. (2016), Asymmetric effect and dynamic relationships between oil prices shocks and exchange rate volatility: evidence from some selected MENA countries. *Topics in Middle Eastern and African Economies, 18(2)*

Abubakar, A. B. (2018). Does agricultural sector matter for the growth of an oil dependent economy? Empirical evidence from Nigeria. *Journal of Economic Policy and Research, 13(1): 119-131.*

Abubakar, A. B. (2019) Oil Price and Exchange Rate Nexus in Nigeria: Are there Asymmetries. *CBN Journal of Applied Statistics, 10(1), 1-28.* https://doi.org/10.33429/Cjas.10119.1/6

Adewuyi, A. O., & Akpokodje, G. (2010). Impact of trade reform on Nigeria's trade flows. *The International Trade Journal*, *24*(4), 411–439. https://doi.org/10.1080/08853908.2010.513642

Ajayi, P., & Adedeji, O. (2020). Growth, Trade Openness and Environmental Degradation in Nigeria. *Munich Personal RePEc Archive MPRA*, No. 100713.

Al-Mawali, N., Hasim, H. M., & Al-Busaidi, K. (2016). Modeling the impact of the oil sector on the economy of sultanate of Oman. *International Journal of Energy Economics and Policy*, *6*(1), 120–127.

Algahtani, G. J. (2016). The effect of oil price shocks on economic activity in Saudi Arabia: econometric approach. *International Journal of Business and Management*, *11*(8), 124–135.

Baharumshah, Z. A., Mohd, S. H., & Ahn, S. . (2009). On the predictive power of monetary exchange rate model: the case of the Malaysian ringgit/US dollar rate. *Applied Economics*, *41*, 1761–1770.

Bahmani-oskooee, M., & Hegerty, S. W. (2013). Exchange rate volatility and trade flows: a review article. *Journal of Economic Studies*, *34*(3), 211–255. https://doi.org/10.1108/01443580710772777

Bala, U., & Tahir, H. M. (2016). The Role of Trade Openness and Oil Price on Exchange Rate: ARDL Bound Testing Evidence from Nigeria. *Journal of Economic and Sustainable Development*, *7*(16), 153–161.

Banerjee, A., Dolado, J., Galbraith, J. W., & Hendry, D. F. (1993). Cointegration, error correction and the econometric analysis of non-stationary data: Advanced Texts in econometrics. *(Reprinted 2003). New York: Oxford University Press*.

Bello Zoramawa, L., Ezekiel, machief P., & Umar, S. (2020). An analysis of the impact of non-oil export on economic growth: Evidence from Nigeria. *Journal of Research in Emerging Markets*, *2*(1), 15–23.

Bouchaour, C., & Al-Zeaud, A. (2012). Oil price distortion and their impact on Algerian macroeconomic. *International Journal of Business and Management*, *7*, 99–114.

Ezike, J. E., & Ogege, S. (2012). Nigerian foreign trade policy: Its impact on non-oil exports. *Journal of Economics and International Finance*, *4*(8), 192–200. https://doi.org/10.5897/JEIF12.013

Gidigbi, M., & Bello, K. M. (2020). Petroleum subsidy reduction and poverty in Nigeria: A choice between maintainaning the subsidy or providing insfracturactural services equivalent to the deadweight loss. *Asian Development Perspectives*, *11*(1), 1–16.

Hardi, I., Dawood, T. C., & Syathi, P. B. (2021). Determinants Comparative Advantage of Non-Oil Export 34 Provinces in Indonesia. *International*

Journal of Business, Economics, and Social Development, *2*(3), 98–106. https://doi.org/10.46336/ijbesd.v2i3.137

Hung, N. T. (2021). Oil prices and agricultural commodity markets: Evidence from pre and during COVID-19 outbreak, Resources Policy, 73, https://doi.org/10.1016/j.resourpol.2021.102236.

Igue, N. N., & Ogunleye, T. S. (2014). Impact of real exchange rate on trade balance in Nigeria. *African Development Review*, *26*(2), 347–358. https://doi.org/10.1111/1467-8268.12086

Ijishar, V. U. (2019). Impact of trade openness on economic growth among ECOWAS countries:1975-2017. *CBN Journal of Applied Statistics*, *10*(1), 75–96.

Imoughele, L. E., & Ismaila, M. (2015). The impact of exchangerate on Nigerian non-oil export. *International Journal of Academic Research in Accounting, Finance and Management Sciences*, *5*(1), 190–198.

Joseph, A., Ifunanya, C., & Patrick, A. (2021). Effect of exchange rate policies on non-oil export in Nigeria. *JETMASE*, *3*(1), 105–117.

Keho, Y. (2016). Trade Openness and the Environment: A Time Series Study of ECOWAS Countries. *Journal of Economics and Development Studies*, *4*(4), 61–69.

Laurenceson, J., & C.H.. J Chai. (2003). Financial Reform and Economic Development in China. *Cheltenham, UK, Edward Elgar*.

Mohamed, B., & Abdulrahman, A. (2018). Oil and non-oil export and its impact on economic performance in Saudi Arabia. *International Journal of Energy Economics and Policy*, *11*(1), 88–02.

Mohsen, A. S., & Chua, S. Y. (2020). Trade Liberalization and Economic Growth in China. *Asian Journal of Economics and Business*, *1*(2), 169–184.

Nelson, O. N. F., Gladice, O. S., Rivel, B. P. D., & Yirong, Y. (2020). Impact of exports on economic growth in the non-oil sector in the Republic of Congo. *International Journal of Economics and Finance*, *12*(3), 1–46.

Ngo T. H. (2021). Oil prices and agricultural commodity markets: Evidence from pre and during COVID-19 outbreak, 73: 102236**.** https://doi.org/10.1016/j.resourpol.2021.102236

Odetola, T., & Etumnu, C. (2013). Contribution of agriculture to economic growth in Nigeria. *Annnual Conference of the African Econometrics Society*, (July), 1–18.

Onakoya, A. B., & Agunbiade O. A (2020). Oil Sector Performance and Nigerian Macroeconomic Variables. International Journal of Economics, Management and Accounting, 28(1), 35-62.

Oluwatayo, I. B., & Ukpe, henrietta U. (2015). Effect of petroleum pricing on agricultureal production in Nigeria: An error correction modeling approach. *International Journal of Agriculture and Enviromental Information System*, *6*(3), 17–28.

Pesaran, M. H., Shin, Y. (1999). An autoregressive distributed lag modelling approach to cointegration analysis. *Econometrics and Economic Theory in the 20th Century*, (FEBRUARY 1995), 1–31. https://doi.org/10.1017/CCOL521633230

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of Applied Econometrics*, *16*(3), 289–326. https://doi.org/10.1002/jae.616.

Sertoglu, K., Ugural, S. & Bekum, F.V. (2017), the Contribution of Agricultural Sector on Economic Growth of Nigeria. *International Journal of Economics and Financial Issues, 7(1), 541-551.*

Umaru, A., & Zubairu, A. A. (2012). Effect of Inflation on the Growth and Development of the Nigerian Economy: An Empirical Analysis. *International Journal of Business and Social Science*, *3*(10).