Trade Reforms and Export Supply in Nigeria

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Abstract

The aim of the research is to investigate the effect of trade reforms and export supply in Nigeria. The findings of this study shows that, except LINV, all the exogenous variables (LGDP, LEXR, LOPN, and DUM12) have significant positive effect on export supply ($t = 8.297, \rho < 0.05$; $t = 2.953, \rho < 0.05$; $t = 9.825, \rho < 0.05$; $t = 2.209, \rho < 0.05$) while LINV has significant negative effect on export supply ($t = -0.467, \rho > 0.05$). However, the reverse holds when the exogenous variables interact with the dummy variable for 2012 (DUM12). Specifically, when LGDP interacts with the dummy variable ($LGDP * DUM12$), there is a reduction in the export supply ($t = -3.29, \rho < 0.05$). Meanwhile, when LEXR and LOPN interact with the dummy variable ($LEXR * DUM12 \ and LOPN * DUM12$), there may be increase in the export supply ($t = 0.936, \rho > 0.05$; $t = 0.254, \rho > 0.05$). Meanwhile, when LINV relates to the dummy variable ($LINV * DUM12$), there is an increase in the export supply ($t = 3.908, \rho < 0.05$). As noted earlier, the dummy variable captures the effect of the trade reform on the export supply.

Keywords: Trade, Reforms, Export, Supply and Nigeria

Introduction

Trade is often considered the engine of development strategies in any nation because it can create job, expend market, and raise income. Generally, trade is a very important role for the economic development of a nation. However, in developing countries, the huge contribution trade performance economic development is enormous, going towards the essential fact that most element of development in the system such as raw materials, capital stock and technical knowhow are entirely imported because of adequate domestic supply. To promote export supply, the Nigeria economy considers trade as the major rock for growth. The proof in recent studies is mainly from the developing countries and rising markets possibly from developed countries.

Never the less, developing countries embarked on a wave of trade reform as many countries moved to open their own markets (Aitalohi, 2021).

Export is considered as a major factor that determines balance of payment position of a country. When the value of export of a country exceeds the value of its import, it will improve balance of

payment position (Godfrey & Cosmas 2014).Lack of important resources in some part of the world is one of the reasons that encouraged countries today to engage international trade transaction (Ramesh & Majed 2021).

Review of Literature

Theoretical Review

The so-called Heckscher-Ohlin theory explains the pattern of international trade as determined by the relative land, labour and capital endowments of countries: a country will tend to have a relative cost advantage when producing goods that maximize the use of its relatively abundant factors of production (thus countries with cheap labour are best suited to export products that require significant amounts of labour) This theory subsumes Ricardo's law of comparative costs but goes beyond is in linking the pattern of trade to the economic structure of trading nations. It implies that foreign trade is a substitute for international movements of labour and capita, which raises the intriguing question of whether foreign trade may work to equalize the -prices of all factors of production in all trading countries. Whatever the answer, the Heckscher-Ohlin theory provides a model for analyzing die effects of a change in trade on the industrial structures- of economies and, in particular, on the distribution of income between factors of production.

The Heckscher-Ohlin Trade Theory - consists of four principal theorems that have made contributions in the theory of trade opeaness, viz; The Heckcher-Ohlin trade theorem which is the basic theoretical foundation of trade liberalization, whereby the relatively capital-abundant countries export relatively capital-intensive commodities.

Even though the Heckscher-Ohlin Trade Theory postulate that countries with cheap labour are best suited to export products that require significant amounts of labour. However, not all empirical reviews are in conformity with this postulate. According to the classical theory of international trade, "free trade is the best policy" and it leads to the optimization of the world's resources through the international division of labour. Indeed, these theories long viewed international trade as the engine of economic growth and hence, as an engine of mutual economic gain among countries.

Empirical Review

There have been a several research works that have attempted to empirically analyze the relationship between Trade reforms and Export Supply.

Elijah and Ahmed (2019) examined trade liberalization as one of the drivers of economic development between 1986-2016, according to World Development Report, irrespective of under unfavourable or favourable environment open economies perform better compared with closed economy. The study findings revealed that trade liberalization did not cause growth during the period of the study. Agbo, Agu & Eze (2018) reviewed the impact of international trade on the economic growth of Nigeria in Enugu, Nigeria. The results of the study showed that there is a significant impact of export trade on the Nigerian economic growth. The study also revealed that there is no significant impact of import trade on the Nigerian economic growth

Adewuyi and Akpokodge (2010) reviewed the impact of trade reforms on Nigeria trade inflows. The study examines the impact of trade liberalization on Nigeria's trade flow. It covers the period from 1973 to 2006 and employs the Ordinary Least Squares (OLS) and Generalized Method of Moment (GMM) techniques. Results reveal among other findings that all categories of export except oil perform better during the trade liberalization period than before the trade liberalization period. Further analysis suggests that while the impact is significant enough to produce positive growth of manufactured exports, it is not so in the case of agricultural and aggregate non-oil exports. The results indicate that all categories of import experience improved performance during trade liberalization compared to the pre-liberalization period. However, the result suggests that in most cases the impact is not strong enough to turn the mean growth of imports positive. The study concludes that trade liberalization has not produced an impact that is significant enough to boost Nigeria's trade flows.

Methodology

Model Specification

This study centers on the effect of trade reforms on export supply in Nigeria. This is modeled in Equation (1).

$$EXPT = F(TRF) \tag{1}$$

where EXPT and TRF represent export supply and trade reform respectively. In an attempt to capture the effects of other variables influencing export supply apart from trade reforms, gross domestic product (GDP), exchange rate (EXR), investment (INV) and trade openness (OPN) are incorporated into the model. This yields Equation (2) below.

$$EXPT = F(TRF, GDP, EXR, INV, OPN) \tag{2}$$

The Equation (2) is re-specified in explicit form in Equation (3)

$$EXPT_t = \beta_0 + \beta_1 TRF_t + \beta_2 GDP_t + \beta_3 EXR_t + \beta_4 INV_t + \beta_5 OPN_t \qquad (3)$$

The logarithmic form of Equation (3) yields Equation (4) below.

$$LEXPT_t = \beta_0 + \beta_1 LTRF_t + \beta_2 LGDP_t + \beta_3 LEXR_t + \beta_4 LINV_t + \beta_5 LOPN_t \qquad (4)$$

Estimation Technique

The study makes use of Chow Test, Dummy Variable and Ordinary Least Squares techniques in achieving the objective of the study.

Data Source

The data for all but one of the variables are sourced from the Central Bank of Nigeria Statistical Bulletin (CBN, 2020). Since the data for trade reform are not available, the study utilizes dummy variable as a proxy for trade reform.

Data Analysis

The focus of this study is to examine the effect of trade reforms on export supply in Nigeria. Since data on trade reforms are not readily available, this study takes after Arslan & Wijnbergen (1993) to employ dummy variables to capture the effects of the possible structural breaks in the export supply regression model. Structural break refers to when an event (such as trade reform in this study) has affected the trend of a particular series (export supply in this study) or when movement in a particular series is distorted or truncated. The structural breaks are endogenously determined since the break dates are unknown. Thus, the graph of export supply is drawn in Figure 1 and the dates where the trend of the series witnesses noticeable bends are selected and subsequently subjected to the Chow test.
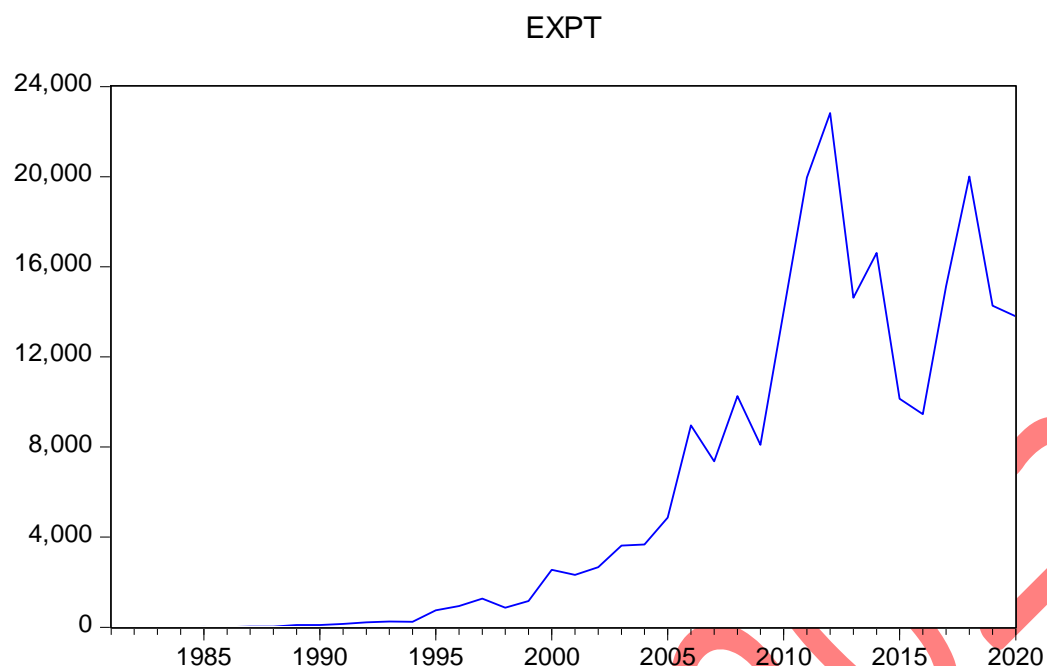
Figure 1: Trend of Export Supply in Nigeria

Based on Figure 1, there are noticeable bends in 1999, 2006, 2012, 2016, and 2018. Hence, the study carries out Chow Test in the various years. The Chow Test results are as summarized in the Table 1 – except for that of 2018 which indicates that the specification leads to singular matrix in at least one sub-sample. See Appendix 1 for the actual results of the Chow Tests. In three out of the four years (1999, 2006 and 2012), the F-statistic is significant, even at 1% level of significance. Hence, the study rejects the null hypothesis, and concludes that there are breaks at the specified breakpoints. However, in 2016, the F-statistic is not significant, even at 10% level of significance. Thus, the study accepts the null hypothesis in the case of 2016, and concludes that there is no break at the specified breakpoint.

Table 1: Chow Breakpoint Test of Export Supply			
Null Hypothesis: No breaks at specified breakpoints			
Variable	**Break Date**	**F-Statistic**	**P-value**
EXPT	1999	6.136*	0.0005
EXPT	2006	21.59*	0.0000
EXPT	2012	45.019*	0.0000
EXPT	2016	1.921	0.1202
*Note: * indicates 1% level of significance*			

In an attempt to carry out robustness check on the existence, or non-existence, of the structural breaks, this study subjects the regression result in Appendix 2 to the Recursive Stability Diagnostic Test by plotting the CUSUM of Squares to discover whether the plot deviates out of the 5% significant level boundary. The result of the CUSUM of Squares in Figure 2 depicts that the plot deviates out of the 5% significant level boundary. The fitted line is outside the 5% critical bound as there is instability from 2012 – indicating that structural break may be an issue there. The implication of this is that there are structural breaks indeed, just as reported in Table 1 earlier.
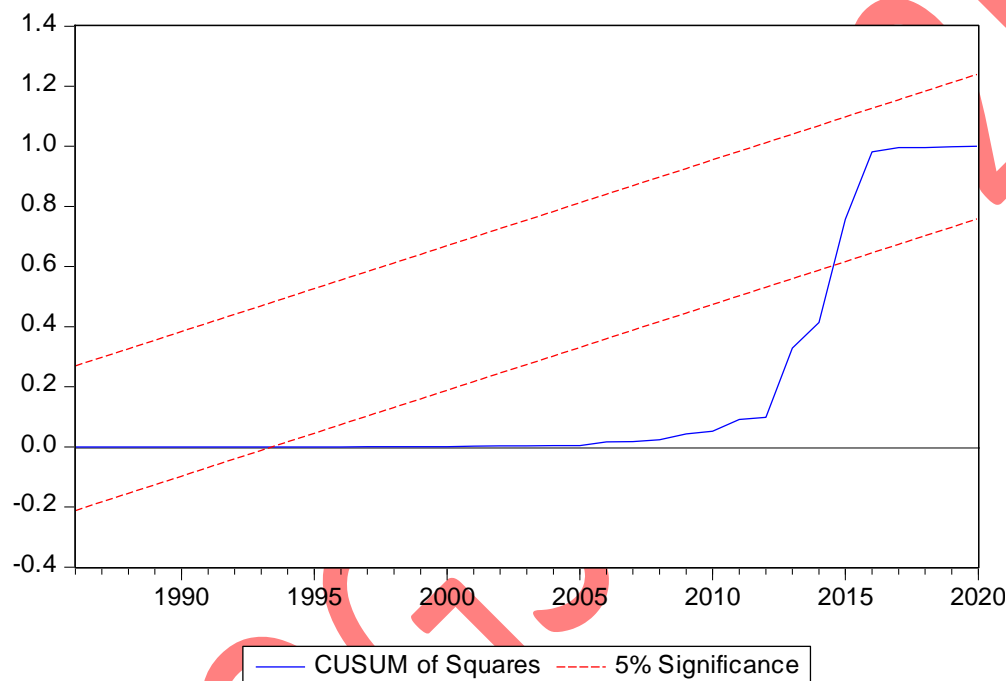

Figure 2:   CUSUM of Squares Stability Test

Having established instability in the series through the CUSUM Squares test (Figure 2) along with the indications of the possibility of multiple structural breaks from the Chow test (Table 1), this study subjects the regression result to the Bai-Perron Multiple Breakpoints Test. This is done by allowing maximum of 5 breaks and the result in Table 2 indicates the existence of 2 break dates (2006 and 2012).

Table 2:   Bai-Perron Multiple Breakpoints Test

Break test options: Trimming 0.15, Max. breaks 5, Sig. level 0.05

Sequential F-statistic determined breaks: 2

Break Test	F-statistic	Scaled F-statistic	Critical Value**
0 vs. 1 *	45.0187	225.0935	18.23
1 vs. 2 *	10.07815	50.39075	19.91
2 vs. 3	0.38268	1.913399	20.99

* Significant at the 0.05 level.

** Bai-Perron (Econometric Journal, 2003) critical values.

Break dates:	Sequential	Repartition
1	2012	2006
2	2006	2012

Since the result of the Bai-Perron Multiple Breakpoints Test in Table 2 indicates two breakpoints, 2006 and 2012, the study creates dummy variables to capture these breakpoints (that is, DUM06 and DUM12). This study subsequently utilizes the two dummies to capture the effect of trade reforms on export supply. However, the result in Appendix 3 shows that the two dummies (DUM06 and DUM12) do not have significant effect on the export supply ($t = 0.114, \rho > 0.05; t = 0.489, \rho > 0.05$). Meanwhile the result of the CUSUM of Squares Stability Test in Figure 3 shows that the plot deviates out of the 5% significant level boundary asthe fitted line is outside the 5% critical bound.Similarly, the estimated result with the interactions of the two dummies reveals insignificant effect of the two dummies on the export supply. Hence, the study discards the regression results in Appendixes 3 and 4.
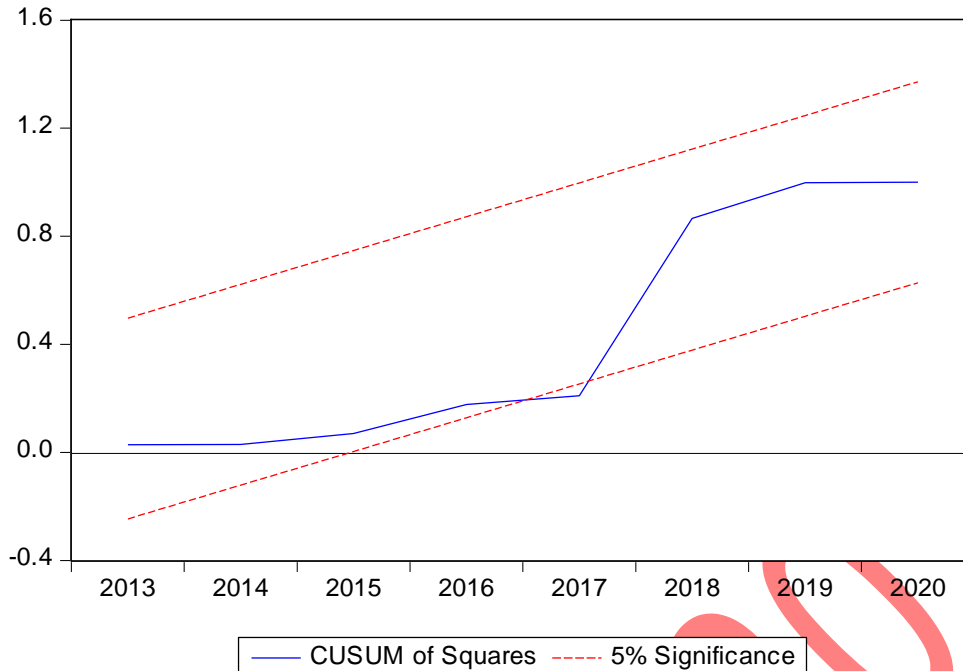
Figure 3:   **CUSUM of Squares Stability Test**

Since the result of the CUSUM of Squares in Figure 2 shows the existence of structural break from 2012, this study sticks to the 2012 dummy as a measure of the effect of trade reform on export supply. The regression result is reported in Appendix 5. The result in Appendix 5 shows that the 2012 dummy (DUM12) does not have significant effect on the export supply ($t = 0.505, \rho > 0.05$). The result of the CUSUM of Squares Stability Test in Figure 4 (for 2012 dummy) shows that the plot deviates out of the 5% significant level boundary.
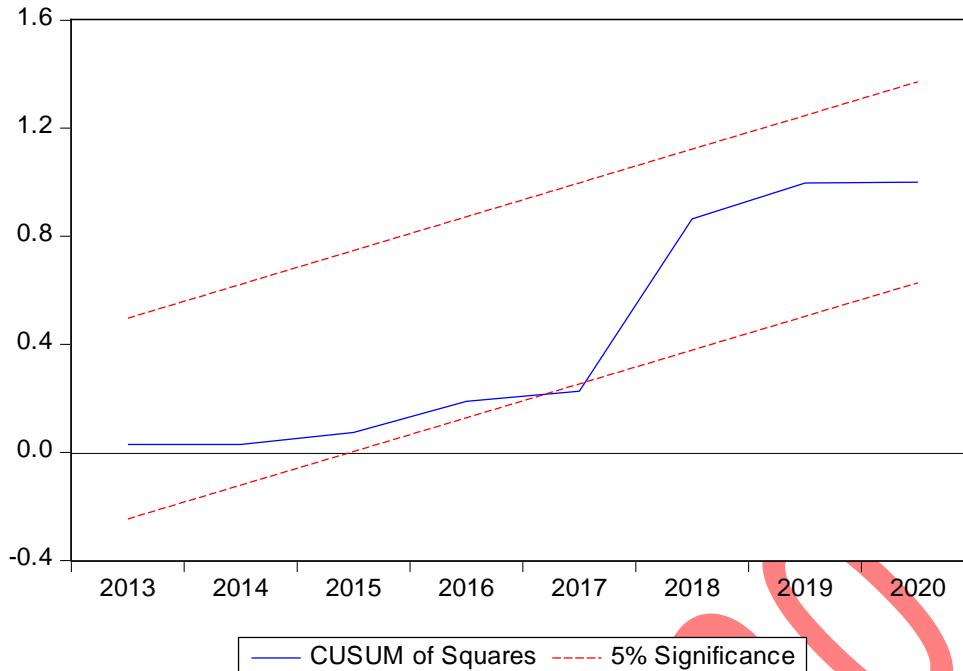
Figure 4:   CUSUM of Squares Stability Test

However, when the 2012 dummy is interacted with the other exogenous variables in the model, the result of the CUSUM of Squares Stability Test in Figure 5 (for the interaction of 2012 dummy) shows that the plot lies within the 5% significant level boundary. This suggests that the structural break in the model has been taken care of as the CUSUM of Squares is now stable.
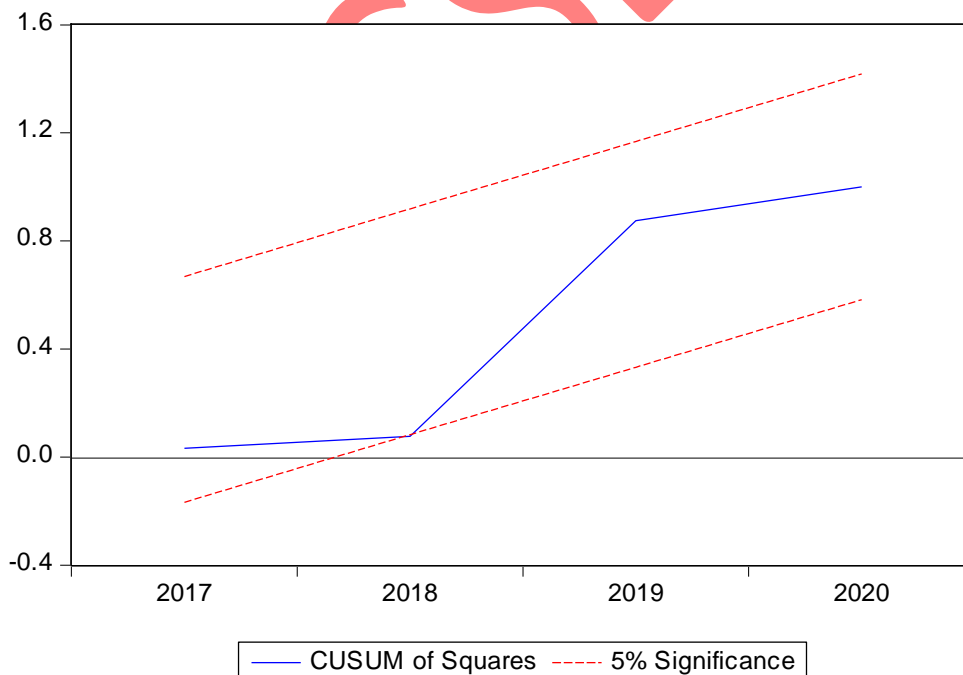

Figure 5:   CUSUM of Squares Stability Test

Hence, the main regression of interest in this study is the result reported in Table3. The result in Table 3 shows that, except LINV, all the exogenous variables (LGDP, LEXR, LOPN, and DUM12) have significant positive effect on export supply ($t = 8.297, \rho < 0.05$; $t = 2.953, \rho < 0.05$; $t = 9.825, \rho < 0.05$; $t = 2.209, \rho < 0.05$) while LINV has significant negative effect on export supply ($t = -0.467, \rho > 0.05$). However, the reverse holds when the exogenous variables interact with the dummy variable for 2012 (DUM12). Specifically, when LGDP interacts with the dummy variable ($LGDP * DUM12$), there is a reduction in the export supply ($t = -3.29, \rho < 0.05$). Meanwhile, when LEXR and LOPN interact with the dummy variable ($LEXR * DUM12 \ and \ LOPN * DUM12$), there may be increase in the export supply ($t = 0.936, \rho > 0.05$; $t = 0.254, \rho > 0.05$). Meanwhile, when LINV relates to the dummy variable ($LINV * DUM12$), there is an increase in the export supply ($t = 3.908, \rho < 0.05$). As noted earlier, the dummy variable captures the effect of the trade reform on the export supply. Thus, trade reform has significant positive effect on export supply ($t = 2.209, \rho < 0.05$).

Table 3:   **OLS Result of Export Supply Model with the Interaction of DUM12**

Dependent Variable: LEXPT

Method: Least Squares

Date: 02/18/22   Time: 12:02

Sample: 1981 2020

Included observations: 40

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	1.249478	0.150590	8.297226	0.0000
LEXR	0.143527	0.048599	2.953275	0.0061
LINV	-0.466974	0.180900	-2.581399	0.0150
LOPN	1.103682	0.112329	9.825457	0.0000
DUM12	20.12170	9.106936	2.209491	0.0349
LGDP*DUM12	-4.645888	1.411999	-3.290290	0.0026
LEXR*DUM12	0.284519	0.303997	0.935928	0.3568
LINV*DUM12	3.279116	0.838973	3.908490	0.0005
LOPN*DUM12	0.076157	0.299632	0.254169	0.8011

C	-4.673835	0.357443	-13.07574	0.0000

R-squared	0.998074	Mean dependent var	6.919040
Adjusted R-squared	0.997496	S.D. dependent var	2.658342
S.E. of regression	0.133018	Akaike info criterion	-0.984340
Sum squared resid	0.530817	Schwarz criterion	-0.562120
Log likelihood	29.68679	Hannan-Quinn criter.	-0.831678
F-statistic	1727.359	Durbin-Watson stat	1.839777
Prob(F-statistic)	0.000000		

Furthermore, the Breusch-Godfrey Serial Correlation LM Test result in Table 4 reveals that the estimated model does not suffer from serial correlation as the corresponding F-statistic is not significant ($F = 0.791, \rho > 0.05$). Also, the Breusch-Pagan-GodfreyHeteroskedasticity Test in Table 5 shows that the estimated model does not suffer from heteroskedasticityas the corresponding F-statistic is not significant ($F = 0.999, \rho > 0.05$). Similarly, the Normality Test result in Figure 6 shows that the estimated data are normally distributed as the Jarque-Bera statistic is not significant ($J = 1.5496, \rho > 0.05$).

Table 4:Breusch-Godfrey Serial Correlation LM Test

F-statistic	0.790595	Prob. F(2,28)	0.4634
Obs*R-squared	2.138103	Prob. Chi-Square(2)	0.3433

Table 5:Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.999963	Prob. F(9,30)	0.4613
Obs*R-squared	9.230507	Prob. Chi-Square(9)	0.4163
Scaled explained SS	2.796537	Prob. Chi-Square(9)	0.9718

| Series: Residuals |
| Sample 1981 2020 |
| Observations 40 |

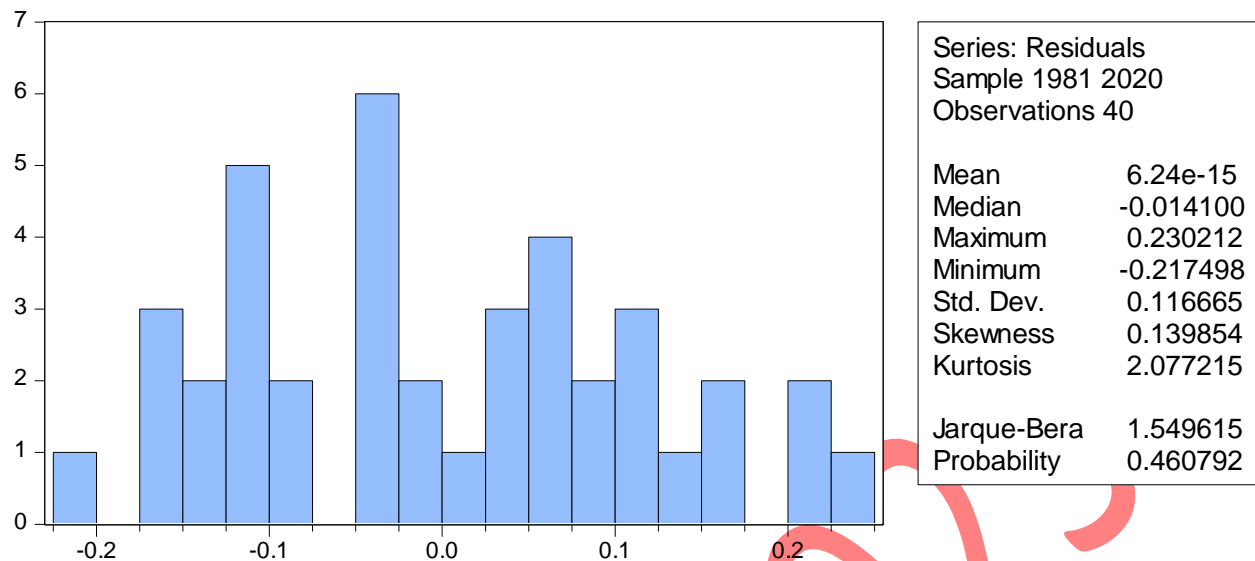|	
Mean	6.24e-15
Median	-0.014100
Maximum	0.230212
Minimum	-0.217498
Std. Dev.	0.116665
Skewness	0.139854
Kurtosis	2.077215
Jarque-Bera	1.549615
Probability	0.460792

Figure 6:   Normality Test

Discussion of Findings

The findings of this stusy shows that, except LINV, all the exogenous variables (LGDP, LEXR, LOPN, and DUM12) have significant positive effect on export supply ($t = 8.297, \rho < 0.05$; $t = 2.953, \rho < 0.05$; $t = 9.825, \rho < 0.05$; $t = 2.209, \rho < 0.05$) while LINV has significant negative effect on export supply ($t = -0.467, \rho > 0.05$). However, the reverse holds when the exogenous variables interact with the dummy variable for 2012 (DUM12). Specifically, when LGDP interacts with the dummy variable ($LGDP * DUM12$), there is a reduction in the export supply ($t = -3.29, \rho < 0.05$). Meanwhile, when LEXR and LOPN interact with the dummy variable ($LEXR * DUM12 \ and \ LOPN * DUM12$), there may be increase in the export supply ($t = 0.936, \rho > 0.05$; $t = 0.254, \rho > 0.05$). Meanwhile, when LINV relates to the dummy variable ($LINV * DUM12$), there is an increase in the export supply ($t = 3.908, \rho < 0.05$). As noted earlier, the dummy variable captures the effect of the trade reform on the export supply. Thus, trade reform has significant positive effect on export supply ($t = 2.209, \rho < 0.05$). The findings of this study is in support of finding of Adewuyi and Akpokodge (2011) which revealed that all categories of export except oil perform better during the trade liberalization than before the trade liberalization period. This study also supports findings of Agbo, Agu and Eze (2018). While the study against the finding of Elijah and Ahmed (2019) which revealed that trade liberalization did not cause growth during the period under study.

Conclusion and Recommendation

The prime objective of this research is to posit the effect of trade reforms and export supply in Nigeria. Thus, trade reform has significant positive effect on export supply .The positive impact of trade reforms on export supply is an indicator that the persistent rise in exchange rate over the years may have actually had a positive impact export supply in Nigeria.

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