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Reevaluating the linkage between trade openness and economic growth in Nigeria

AMINU BLESSING *, PC EGBON and CK. OBI

Department of Economics, Faculty of Social Sciences, Delta State University, Abraka, Nigeria.

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Abstract

This study reevaluated the linkage between trade openness and economic growth in Nigeria with data for the period of 1981 to 2022. The study employed Descriptive Statistics, Unit Root Test, Cointegration analysis, Regression Analysis (ARDL), Error Correction Model as the methods of analysis. The findings from the study showed that trade openness and external reserve impact positively and significantly on economic growth while exchange rate was found to be negative and significant. Also, findings from the error correction model showed that trade openness has a positive and insignificant impact on economic growth, external balance also has a positive significant impact on economic growth. Exchange rate on the other hand displays a negative insignificant impact on economic growth. The error correction term indicated that about 79 percent deviation in the previous year is corrected in the current year. The study therefore concluded that trade openness is a fundamental for economic growth in Nigeria and that external reserve crucial to funding of critical import necessary for domestic production. Furthermore, exchange rate of the naira showed that the economy will benefit more if the appropriate rate is prevalent in the market as this will make export to be attractive. A long run relationship was found among the variables used in the study. Based on the findings from the study we recommended that the government should engage more in international trade especially for key production inputs to boost domestic production. The government should also ensure that they maintain a healthy external reserve and ensure it is channel into the import of critical inputs. The true value of the exchange rate of the naira in relation to major currencies of the world should be targeted in order to make our exports attractive.

Keywords: Trade Openness; Economic Growth; External Reserve; International Trade; Exchange Rate: Domestic Production

1. Introduction

The impact of trade openness on economic growth have been a subject of debate in recent times. In the view of some previous empirical studies, including Makun (2017), Singh (2011) and Karras (2003), trade openness has a significant and positive impact on long-run economic growth. This view is synonymous with the propositions of endogenous growth literature, according to which permanent changes in variables that are supposedly affected by government policy result in permanent changes in economic growth rates (Jones, 1995). In some cases, however, trade openness has a negative impact or no significant impact on economic growth (Adhikary, 2011, Clement et al. (2017) and Guei and Le Roux (2019)). Trade openness is seen as an avenue that can boost economic development in a developing country. As a result, developing countries have become more active in regional trade agreements (Dicaprio, Santo-Paulino & Sokolova 2017). With a population in Africa that is expected to double by 2050, the economic boost from intra African trade is important not only for growth but also for global stability (United Nations 2017). Hence, regional integration is seen as a solution to rising unemployment and poverty.

In his neoclassical model, Romer (1990) showed that free international trade can speed up growth. He also showed that economies with large stock of human capital experience faster growth. The model helps explain why growth is not

*Corresponding author: AMINU BLESSING

observed in countries with low levels of human capital and shows that less developed economies can still benefit from globalization. However, the endogenous growth model asserts that the contribution of trade for economic growth rests on whether the force of comparative advantage orientates the economy's resources towards activities that generate long-run growth or away from such activities. The theory therefore suggests that technological and financial limitations do not allow developing countries to effectively adopt the new technologies of advanced economies (Zahongo 2016). This means that the growth efforts of trade may differ according to an economy's level of development.

Trade has been an area of interest to policy makers as well as economists. It enables nations to sell their domestically produced goods to other countries of the world. And it has been regarded as an engine of growth which leads to steady improvement in human status by expanding the range of people's standard of living and preferences. But since the advent of oil as a major source of foreign exchange earning in Nigeria in 1974, the picture has been almost that of general stagnation of other sectors which contributed to total export. This led to loss of Nigeria's position as an important producer and exporter of palm oil produce, groundnut, cocoa and rubber among others. The relationship between openness to international trade and economic growth, is the subject of a vast number of both theoretical and empirical literatures, (Roubini and Sala-i-Martin, 1991). The conventional wisdom is that openness to international trade has a positive impact on economic growth. The reason for the argument is partly based on the conclusions of many empirical studies, which claim that outward-oriented economies consistently have higher economic growth rates than inward-oriented economies. It is also partly due to the failures of import-substitution strategies, particularly in the 1980s and overstated expectations from trade liberalization (Yanikkaya, 2003: 57). Lloyd and MacLaren (2000) argue that the fast-growing East Asian economies were partly a result of their early openness to international trade; less openness of economies to international trade will slow down their economic growth rates.

1.1. Statement of the problem

Trade has been an area of interest to policy makers as well as economists. It enables nations to sell their domestically produced goods to other countries of the world. And it has been regarded as an engine of growth which leads to steady improvement in human status by expanding the range of people's standard of living and preferences. But since the advent of oil as a major source of foreign exchange earning in Nigeria in 1974, the picture has been almost that of general stagnation in agricultural exports. This led to loss of Nigeria's position as an important producer and exporter of palm oil produce, groundnut, cocoa and rubber. The relationship between openness to international trade and economic growth, and financial development and economic growth are the subject of a vast number of both theoretical and empirical literatures, (Roubini and Sala-i-Martin, 1991). The conventional wisdom is that openness to international trade and financial development as a positive impact on economic growth. The reason for the argument is partly based on the conclusions of many empirical studies, which claim that outward-oriented economies consistently have higher economic growth rates than inward-oriented economies. It is also partly due to the failures of import-substitution strategies, particularly in the 1980s and overstated expectations from trade liberalization (Yanikkaya, 2003: 57). Lloyd and MacLaren (2000) argue that the fast growing East Asian economies were partly a result of their early openness to international trade; less openness of economies to international trade will slow down their economic growth rates.

According to Zahonogo (2017), in Sub-Saharan African countries, trade openness has beneficial growth effects up to a certain threshold, beyond which the trade effect on growth declines. This argument seems to be more applicable to developing, like Nigeria. The extant literature is a washed with mixed or conflicting findings on the impact of trade openness on economic growth. There is no consensus based on empirical evidence from previous studies on the impact of trade openness and economic growth. Consequently, whether a country is a developed, developing or least developed, is essential in determining whether trade openness has a significant impact on economic growth. Therefore, this current study seeks to reevaluate the link between trade openness and economic growth in the Nigerian context based on its status as a developing country. The rest part of the research is arranged as follows; section two deals on the literature review, section three covers the method applied in the study, in section four the data employed in the research is analyzed and discussed and in section five the conclusions reached based on the findings from the study are highlighted and recommendations made in tandem.

1.2. Objectives of the study

The objective of this research is to;

- Examine the impact of trade openness on economic growth in Nigeria.
- Ascertain the impact of external reserve on economic growth in Nigeria.
- Ascertain the impact of exchange rate on economic growth in Nigeria.

2. Literature review - Conceptual Framework

2.1. International trade in Nigeria

Historically, there seems to be a consensus among economic historians that in the nineteenth century trade acted as an engine of growth. Trade contributed to the optimal allocation of resources within countries and the transmission of growth from one part of the world to another. The gains were those gains that resulted from international specialization in line with the philosophy of comparative advantage. On the other hand, dynamic gains were those that accrued from the impact of trade on production possibilities at large. Different World Development Reports (World Bank, 1987, 1991, 1999-2000) tried to show that outward oriented trade policies have been more successful in promoting growth than inward trade policies. World Development Report (1987) argued that "outward-oriented countries" performed better than their "inward oriented countries" even under unfavorable market conditions. The success stories of East-Asia countries ('East Asian Miracle') were often shown as the success of free trade and export-oriented policies.

Nigeria has always been into trade considering its colonial antecedents. Before the discovery of Petroleum Oil in commercial quantity, the non-oil sector produce was the major export commodities in Nigeria: Agriculture provided the largest export communities. However, with the discovery of petroleum oil moved away attention from Agriculture to Oil product especially in the 1970s during the periods of the oil boom in Nigeria.

2.2. Economic growth

A major goal of poor countries is economic development or economic growth. The two terms are not identical. Growth may be necessary but not sufficient for development. (Salvatore, 2013). Economic growth refers to increases in a country's production or income per capita. Production is usually measured by gross national product (GNP) or gross national income (GNI), used interchangeably, an economy's total output of goods and services (Salvatore, 2013). Economic development refers to economic growth accompanied by changes in output distribution and economic structure. These changes may include an improvement in the material well-being of the poorer half of the population; a decline in agriculture's share of GNP and a corresponding increase in the GNP share of industry and services; an increase in the education and skills of the labor force; and substantial technical advances originating within the country (Salvatore, 2013).

2.3. Empirical literature.

Afolabi (2022) examined the impact of financial liberalization and trade openness as well as their interactive effects on the growth of the Nigerian economy using data for the period 1981 to 2018. The results confirm the existence of a long-run relationship among the variables in the model. Two equations were specified and estimated using the dynamic ordinary least square (DOLS) estimation technique and the granger causality test was carried out. The results revealed that financial development, exchange rate, and interest rate spread have a significant influence on real GDP in Nigeria while trade openness, as well as its interaction with financial development, do not exert any significant impact on economic growth in Nigeria.

Malefane and Odhiambo (2019) examined the dynamic impact of trade openness on economic growth in Lesotho using the autoregressive distributed lag (ARDL) bound testing approach. They employed four indicators of trade openness, which include three trade-based proxies and an index of trade openness. Their results showed that trade openness has no significant impact on economic growth in both the short run and long run irrespective of which proxy of trade openness is used. These empirical results have important policy implications for Lesotho.

Guei and Le Roux (2019) examined trade openness and economic growth in the context of Economic Community of Western African States region. They employed data from 15 ECOWAS member countries over the period 1990 to 2016 which was estimated with the autoregressive distributed lag (ARDL) bound testing approach and the pool mean group (PMG) model and found the existence of a long-run relationship between the variables at 1% in all countries except for Ghana, Guinea-Bissau, Mali, Senegal and Togo. The estimation revealed that trade openness has a negative impact on GDP per capita in the long run.

Ijirshar (2019) assessed the impact of trade openness on economic growth among ECOWAS countries using secondary data from 1975 to 2017. The study used non-stationary heterogeneous dynamic panel models through the application of Pooled Mean Group (PMG) and Mean Group (MG) estimators since time dimension was more than cross-sections. Using the Hausman test, PMG estimator was preferred. Results showed that trade openness has positive effects on growth in ECOWAS countries in the long-run but mixed effects in the short-run.

Yakubu and Akanegbu (2018) empirically examined the impact of trade openness on economic growth in Nigeria for the period 1981 to 2017 which was analyzed with the ordinary least squares technique. The result of the Analysis showed that all the variables Real Gross Domestic Product (RGDP), Degree of Openness (DOP), FX and Per Capita Income (PCI) were positive and statistically significant and there is a unidirectional causality from RGDP to DOP.

Zahonogo (2017) employed a dynamic growth model to examine the impact of trade openness on economic growth in 42 Sub-Saharan African countries. The results showed that there is a trade threshold below which increased trade openness has beneficial effects on economic growth and above which the trade effect on growth declines.

Clement et al. (2017) determined the long run relationship between trade openness and economic growth in Ghana and Nigeria covering the period between 1980 and 2016 which was analyzed with the Autoregressive distributed lag (ARDL) model. The findings of the study suggested existence of a long run relationship among the variables for both countries. The results further showed that trade openness has a positive impact on economic growth significant in Ghana while in Nigeria trade openness has a negative but insignificant effect on economic growth.

Keho (2017) analyzed the impact of trade openness on economic growth in Cote d'Ivoire for the period 1965 to 2014 employing the autoregressive distributed lag (ARDL) bounds test and the Toda and Yamamoto Granger causality tests. The results revealed that trade openness has a positive effect on economic growth both in the short and long run. More so, the study found a positive and strong complementary relationship between trade openness and capital formation in enhancing economic growth. Tsaurai (2017) examined the relationship between financial development, economic growth and trade openness in Argentina over the period 1994 to 2014. The study found the existence of a positive but weak uni-directional causality from financial development to trade openness to economic growth and from economic growth to trade openness in the long run.

Lawal et al. (2016) applied the ARDL methodology to Nigeria and find a negative long-run impact of trade openness on economic growth but a positive growth effect in the short run. Further, a two-way causality was found between the two variables. Also, China et al. (2016) in their study found that trade openness is positively related to growth in the long and short run.

Altaee and Al-Jafari (2015) investigated the relationship among financial development, trade openness, and economic growth in Bahrain using annual time series data from 1980 to 2012. This study employed the Vector Error Correction Model (VECM), variance decomposition, and impulse response function techniques in examining this relationship. The results showed the existence of a long-run relationship among the variables. The empirical findings revealed that financial development and trade openness have a significant influence on economic growth in Bahrain.

Chimaobi (2010) examined the causal relationship among financial development, trade openness and Economic Growth in Nigeria for the period 1970-2005. The econometric methodology employed was the Cointegration and Granger Causality test. The Granger-causality empirical findings suggest that trade openness and financial development does have causal impact on economic growth; conversely growth have causal impact on trade and financial development, implying support for growth-led trade but no support for trade-led growth.

2.4. Theoretical literature

The theoretical underpinning on the effect of trade barriers on economic growth have revealed mixed and vague results. Comparative advantage is seen as the main reason for countries to engage in trade. Countries tend to benefit from the specialization of goods in which they have a comparative advantage. Early endogenous growth theories claim that less developed economies tend to converge towards advanced economies through trade and technological diffusion (Barro & Sala-i-Martin 1997; Grossman & Helpman 1991; Romer, 1990). Their model implies that countries more open to trade experience a faster growth rate.

3. Methodology

This study applies Autoregressive Distributed Lag (ARDL) model developed by Pesaran et al. (2001). The ARDL model can be presented as:

$$Yt = \propto + \sum^{p} \delta i Yt-1 + \sum^{q} \beta, Xt-1 + it$$

i=1 *i*=0

This research work is modeled after the study of Malefane and Odhiambo (2019) and Clement et al. (2017), the specified model is given in its functional form below as:

GDP = f(TOP, EXT, EXR) (1)

The model is re-written as in its econometric form as:

$GDP=\beta_0+\beta_1TOP+\beta_2EXT+\beta_3EXR+\mu$ (2)

Where;

GDP is gross domestic growth rate a measure of economic growth.

TOP is trade openness.

EXT is external reserve.

EXR is Exchange Rate and μ is the Stochastic Error Term. β_0 is the constant β_1, β_2, and β_3 are the parameters to be estimated.

The data used were obtained from the World Bank Development Indicators these include 42 observations, starting from 1981 to 2022.

4. Results and discussion

4.1. Descriptive statistics

Table 1 ADF unit root test

	GDP	**TOP**	**EXT**	**EXR**
Mean	3.046473	31.60594	9.181852	114.5262
Median	3.449434	33.38961	9.126488	114.8990
Maximum	15.32916	53.27796	10.87805	403.0291
Minimum	-13.12788	9.135846	5.413430	0.617708
Std. Dev.	5.319457	12.28486	1.412629	116.3712
Skewness	-0.831907	-0.246291	-0.596705	0.948598
Kurtosis	4.736123	2.169051	2.488507	2.983388
Observations	42	42	42	42

Source: Author's computation 2024

The descriptive statistics is presented in table 1 above. It shows the features of the data employed in the study. From the table it can be observed that the mean and standard deviation of economic growth (GDP) are 3percent and 5.3 percent while the mean values of trade openness (TOP), external reserve (EXT) and exchange rate (EXR) are approximately 31 percent, 9.1 percent and 115 naira/dollars respectively. The spread around their mean are about 12.2%, 1.4% and 116 naira/dollars, for trade openness, external reserve and exchange rate respectively. The spread around the mean appears to be low for all the variables as the standard deviation values are low. All the variables displayed negative skewness except exchange rate although its skewness value appears to be low. The values of the skewness for GDP, TOP and EXT mirrors a left tail distribution while EXR exhibit right-tailed positive skewness. The Kurtosis value for GDP tend to show evidence in favor of a leptokurtic distribution due to the value been greater than 3 while the explanatory variables have a platykurtic distribution since they are less than 3. Overall, all the variables in the study mirrors a normal distribution.

4.2. Unit root test

Testing for unit root is important in time series data base study because the use of nonstationary data can result in spurious regression.

Table 2 Augmented Dickey-Fuller Unit Root Test

	Unit Root Test at Levels			
Variable	**ADF Test Statistic**	**ADF Critical Value**	**P-Value**	**Remark**
GDP	-3.203694	-2.936942	0.0271	Stationary
TOP	-2.473432	-2.935001	0.1292	Not Stationary
EXT	-2.288207	-2.938987	0.1807	Not Stationary
EXR	2.418828	-2.935001	1.0000	Not Stationary
	Unit Root Test at 1st Difference			
Variable	**ADF Test Statistic**	**ADF Critical Value**	**P-Value**	**Remark**
TOP	-5.653171	-2.938987	0.0000	Stationary At I(1)
EXT	-7.596634	-2.938987	0.0000	Stationary At I(1)
EXR	-4.565373	-2.936942	0.0007	Stationary At I(1)

Source: Author's computation, 2024

The result of the unit root test presented in table 2 above showed that GDP is integrated at levels, while TOP, EXT and EXR are integrated at order one. The outcome from the unit root test makes the ARDL Bounds test approach to cointegration the best technique for testing for the existence of a long run relationship. This is so since there is mixed order of integration that is I(0) and I(1) from the unit root test conducted. The next step is to check for the existence of long run relationship among the variables.

4.3. Cointegration test

The ARDL-bound test approach to cointegration proposed by Pesaran et al

(2001) was applied, because the Johassen cointegration cannot be applied in this case, due to the mixed order of integration. The bound test approach makes it possible to test for the existence of long run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the variables. The outcome of the cointegration test is presented below.

Table 3 Long run form and Bounds Test for Cointegration

F-Bounds Test	**Null Hypothesis: No levels relationship**	
Test Statistic	Value	K
F-statistic	7.213533	3
Critical Value Bound		
Significance	I(0) Bound	I(1)Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Author's computation, 2024

The result for the bounds test for cointegration is presented in table 3 above. From the result it can be seen that the existence of a long run relationship between the variables used in the study is confirmed. This is based on the fact that

the F-statistics of 7.213533 lies beyond the I (1) bound at the 1% significance level of the critical value bound of 4.29 and 5.61. Since a long run relationship is confirmed based on the result, we therefore proceed to estimate both the long run relationships and the Error correction model.

4.4. Model estimation

Table 4 OLS Estimates of the Long-run Model **[**Dependent Variable: GDP Method: Least Squares]

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TOP	0.111670	0.055591	2.008788	0.0519
EXT	2.198017	0.741103	2.965871	0.0053
EXR(-1)	-0.017375	0.009069	-1.915919	0.0631
C	-18.51338	5.543984	-3.339363	0.0019
R-squared	0.392187	Mean dependent var		3.440969
Adjusted R-squared	0.342905	S.D. dependent var		4.722741
F-statistic	7.957989	Durbin-Watson stat		1.612469
Prob(F-statistic)	0.000322			

Source: Author's computation, 2024.

From the OLS estimate presented in table 4, it is observed that the trade openness is positively and significantly related to economic growth signifying that a one percent increase in trade openness will increase economic growth by 0.111670 percent. This is in line with the findings of Guei and Le Roux (2019), Ijirshar (2019), Yakubu and Akanegbu (2018), Keho (2017) and Altaee and Al-Jafari (2015). As least developed countries like Nigeria engages in international trade there are numerous opportunity that flows with it. A key positive from trade openness is technological transfer. This can help to accelerate domestic production, which invariably boost export and improve the trade balance. More so, no nation can live in isolation as a nation cannot sufficiently produce all it needs. However, several other studies have found contrary evidence like Afolabi (2022), Malefane and Odhiambo (2019), Clement et al. (2017), Lawal et al. (2016) who found no significant impact of trade openness on economic growth as well as negative relationship between the two variables.

External balance is a key determinant of trade openness and economic growth, it is observed to exact positive and significant impact on economic growth. This flows through with the apriori expectation. This signify that the more a nation's external reserve appreciates or increase the economy experience growth. This is essentially true as it is needed to fund foreign transactions that are vital for domestic economic activities.

Exchange rate is negatively and significantly related to economic growth. This is in line with apriori expectation. As the exchange rate depreciate it make export cheaper and attractive to foreign buyers, this invariably will spur domestic production that triggers economic growth. This follows through with the Marshall-Lerner condition as well as the findings of Kromtit, et al., (2017). The model is free from serial correlation based on the Durbin-Watson stat of approximately 1.6 and the variables captured in the model explained approximately 39% of the variation in economic growth in Nigeria.

Table 5 Error Correction Model Estimates Model [Dependent Variable: D(GDP); Method: Least Squares]

Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(TOP)	0.045067	0.076456	0.589457	0.5593
D(EXT)	2.257776	0.956835	2.359629	0.0240
D(EXR (-1))	-0.005290	0.035754	-0.147964	0.8832
C	0.043785	0.672397	0.065118	0.9485
ECM (-1)	-0.793004	0.173355	-4.574459	0.0001
R-squared	0.427037	Mean dependent var		0.251377

Adjusted R-squared	0.361556 S.D. dependent var		4.677528
F-statistic	6.521502 Durbin-Watson stat		2.026758
Prob(F-statistic)	0.000496		

Source: Author's computation, 2024.

The short run model estimation result is presented in table 5. From the result of the error correction model estimate, trade openness is positive which implies that a 1% change will lead to a 0.05% change in economic growth, external balance also have a positive impact on economic growth implying that a 1% change in it will cause economic growth to increase by 2.26%, exchange rate on the other hand displays a negative impact on economic growth which indicates that a 1% change will cause economic growth to decrease by 0.0053%. Only external balance has a statistically significant impact on economic growth, although there is a joint significant from all the variables. The R-square showed that the variables used in the study explains about 43% of the variations in economic growth. The error correction term (ECM) is negative and statistically significant which is in line with econometrics theory. This implies that last period deviation from equilibrium, is corrected up to 79 percent in the current period.

4.5. Diagnostic test

Table 6 Test for Normality, Heteroskedasticity and Autocorrelation

Test	F-Statistics	P-value
Serial correlation LM Test	1.062568	0.3095
Heteroskedasticity	0.829717	0.4860

Source: Author's computation

From the table 6 above, it is evident that the model formulated and estimated for the study is robust and devoid of any bias. There is no serial correlation as well as the heteroscedasticity in the model based on the probability values of 0.3095and 0.4860 respectively which is clearly greater than the 5% level. The null hypothesis of the presence of autocorrelation and heteroscedasticity is therefore rejected. The CUSUM and CUSUM of Squares test for stability presented in figure 1 and 2 below showed that the model formulated for the study is stable as the 5% plot was not exceeded.

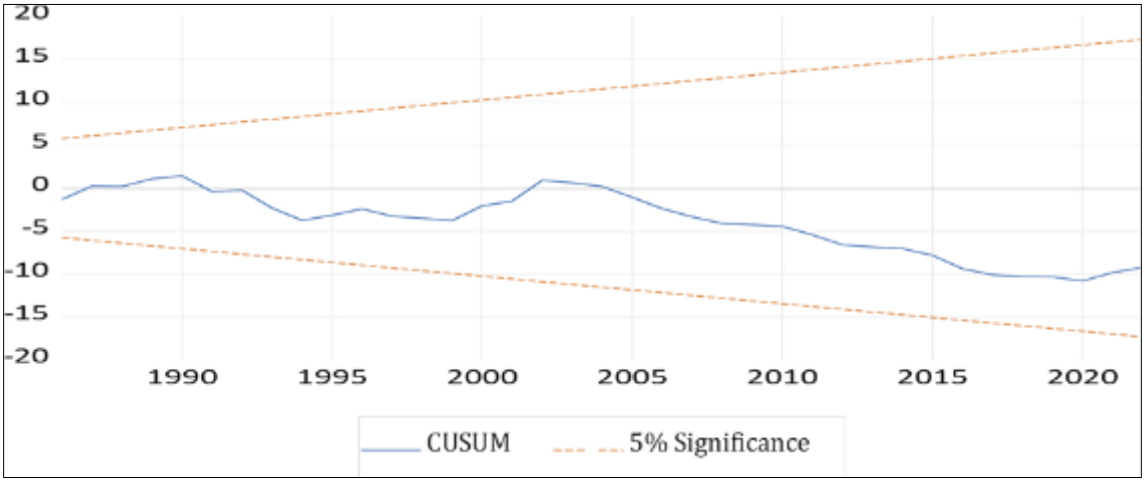

Figure 1 CUSUM

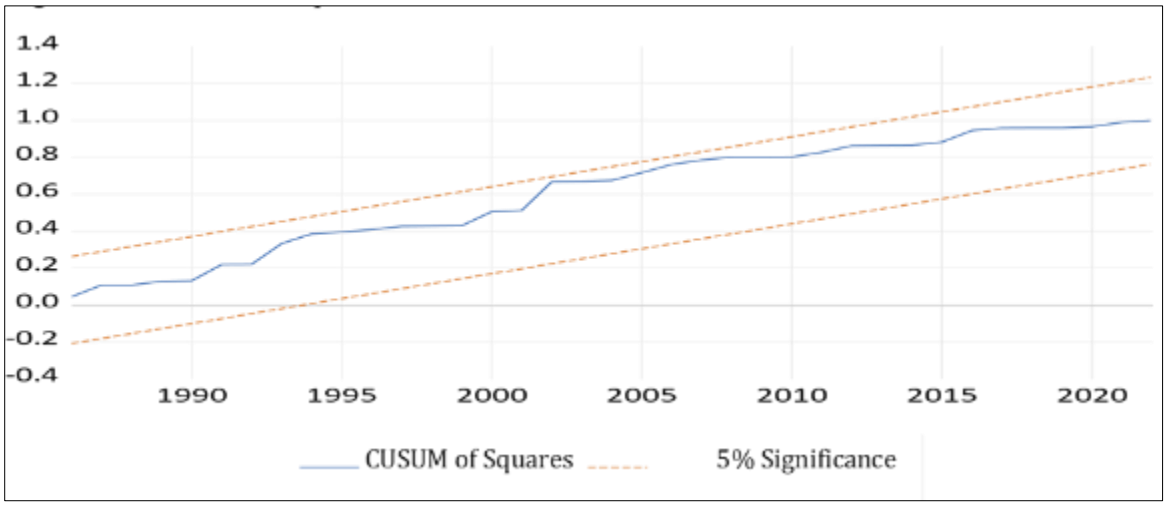

Figure 2 CUSUM of Squares

5. Conclusion

This study reevaluated the linkage between trade openness and economic growth in Nigeria with data for the period of 1981 to 2022. The study employed Descriptive Statistics, Unit Root Test, Co-integration analysis, Regression Analysis (ARDL), Error Correction Model as the methods of analysis. The findings from the study showed that trade openness impact positively and significantly on economic growth, external reserve positively and significantly impact economic growth while exchange rate was found to be negative and significant. The study therefore concluded that trade openness is a fundamental for economic growth in Nigeria and that external reserve crucial to funding of critical import necessary for domestic production. Furthermore, exchange rate of the naira showed that the economy will benefit more if the appropriate rate is prevalent in the market as this will make export to be attractive. A long run relationship was found among the variables used in the study. Based on the findings from the study we recommended that the government should engage more in international trade especially for key production inputs to boost domestic production. The government should also ensure that they maintain a healthy external reserve and ensure it is channel into the import of critical inputs. The true value of the exchange rate of the naira in relation to major currencies of the world should be targeted in order to make our exports attractive.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

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