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Population growth, non-oil export and sustainable economic development in Nigeria (1980-2020)

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Abstract

This study examined the impact of population growth and non-oil export on sustainable economic development in Nigeria for the period of 1980-2020 using autoregressive and distributed lag (ARDL) model techniques. Result indicates that population growth retards sustainable economic development in Nigeria in the long run. While significant positive relationship exist between non-oil export, exchange rate and sustainable economic development in both the long run and short run. The study therefore recommends government concerted effort towards control of the rising population and ensuring that the existing one becomes more productive. There is need also for government to formulate meaningful economic policies aimed at re-inventing in the non-oil sector to enhance the revenue base of the country as an alternative source of foreign receipt and also tap into the potential of the non-oil sector with the view of growth and stability.

Key words: Population Growth, Non-oil Export, Sustainable Economic Development.

1. Introduction

Nigeria is the most populous country in Africa and the 7th most populous nation in the world with a total population of 190,886,311 and population growth rate of 2.59% as at 2017 and it is high in comparison with most developing countries (WDI, 2017). Given Nigeria's high population growth rate, the country's population is set to increase even more in the future. This may likely impact on Nigeria's economic growth and development as it affects a whole range of socio-economic variables (Eli et al., 2018).

Todaro & Smith, (2015) established that from 1750 to 2012 global population increased from 728 million people to about 7.5 billion. Studies such as Jonathan et al., (2018) have found that more than 85 million people are added to the world population annually, and over 83% of this net increase comes from the developing countries. The population growth of developing countries is moving at a geometric rate, compared to that of the developed countries and among the developing countries, Nigeria is one of the most populated. In fact, it is often referred to as the "Giant of Africa" due to its large population (Jonathan et al., 2018).

According to the 2018 United Nations estimation, Nigeria's population was 194,623,929 which is equivalent to 2.57% of the total world population (UN, 2018). But the large population implies a high supply of human resources in the country.

Human resource development is a key driver and component of economic development. However, the impact of population growth depends not only on the size or number of the people, but on the quality and development indicators like per capita income, standard of living and literacy (Tartiyus *et al.,*2014).

It is undisputable that Nigeria is a country naturally endowed with various kinds of resources to place her amongst the top emerging economies of the world. Unfortunately, the nation has not adequately utilized and benefited from the economic prosperity expected of a nation so richly blessed. Nigeria is a country believed to be too rich to be poor. Ironically, global economic indices from reputable international organizations have consistently categorized Nigeria as an economically backward state. For instance, in 2005, the UNDP human development index ranked Nigeria as 164th and 141st among 197 nations with low per capita income and low quality of life respectively (World Bank Development Report, 2010).

For nations ready to achieve their macroeconomic goals and objectives, exports will serve as a relevant tool for expanding their productive capacity, because its trade activities are required by countries to improve revenue allocations and usher in sustainable economic growth and development (Onuorah, 2018). Since all nations are interdependent internationally, excess exports over imports indicate higher productivity of the exporting countries than importing countries. The payments received as a result of exports reduces overdependence on foreign countries. It makes countries stronger, self-reliant and thus, making the economy formidable and progressing towards sustainable economic development.

Since 1970, Nigeria has been a mono-cultural economy relying heavily on oil as its major source of revenue. The implication is that the dynamics of the economy is left to be determined by the price of oil, which for the most part, has been volatile (Enoma & Mustafa, 2011).The major fallout of this fragile structure of the Nigerian economy is a situation where the economy has been growing without creating jobs and reducing poverty (Onodugo, 2013).

In 2017, the rate of unemployment in Nigeria rose to 20.4 percent (NBS, 2018) and the country's population rapidly increased at the average rate of 2.6 percent (WDI, 2017). Illiteracy rate is very high and more than 50 percent of the population lives in extreme poverty (NBS, 2017). The neglect of the Non-oil sector since 1970s has led to a drastic fall in non oil earnings due to non performance of the sector.

However, various efforts were made by government to restore the economic base of the country through policies such as; Operation Feed the Nation, OFN (1976), Green Revolution (1980), Structural Adjustment Program, SAP (1986), Export Promotion Policy (1999) and of recent, the Economic Recovery and Growth Plan, ERGP (2017).

Despite the efforts made by various administrations, there is still a rise in the level of import, over reliance on oil inadequate food and clothing, high level of illiteracy, unemployment, poverty and a decrease in standard of living (Kromit et al. 2017).

From the above, it can be clearly seen that, there is ongoing debate on the relationship between the population growth, non-oil export and sustainable economic development. It is in view of the foregoing that the study seeks to investigate whether population growth and non-oil export

could serve as a solution to the persisting problem and significantly contribute to promote the nation's drive towards the attainment of sustainable economic growth and development.

Research Objectives

The main aim of this study therefore, is to examine the role of population growth and non-oil export on sustainable economic development in Nigeria from 1980-2020. Specifically, the study seeks to:

i. Examine the contribution of population growth to sustainable economic development in Nigeria in both short-run and long-run.
ii. Examine the short-run and long run impact of non-oil export on sustainable economic development in Nigeria.

2. LITERATURE REVIEW

2.1 Conceptual Literature Review

2.1.1 Population and Population Growth

The term population means the number of persons living in a country or in a given geographical area at any given time. In statistics, population refers to a homogenous grouping, animate or inanimate, that is being studied. Such groupings could be men, women, school children, soldier and so on (Ande, 2015). Population growth is an increase in the number of people that reside in a country, state, county, or city. To determine whether there has been population growth, the following formula is used: (birth rate +immigration) - (death rate + emigration) (Martin & Murphy, 2016).

2.1.2 Non-oil Export

Non oil exports are those commodities excluding crude oil (petroleum products), which are sold in the international market for the purpose of revenue generation. The Nigeria's Non-oil exports sector is structured into four broad constituents which are the agricultural exports, manufactured exports, and solid mineral exports and services exports (Akeem, 2011).

2.1.3 Sustainable Economic Development

The concept of sustainable development was introduced by the Brundland Commission of the United Nations in 1983 and was defined as "development that meets the needs of the present without compromising the ability of future generation to meet their own needs". Therefore, sustainable economic development is an economic development that has sound foundation for the future in addition to the maximized welfare at the present (Usman, 2012).

2.2 Theoretical Literature

This research work is based on the following theories:

2.2.1 Malthusian Theory of Population

This study is tied on the Malthusian theory of population, by Thomas Robert Malthus (1798), which explains that an inverse relationship exists between population growth and economic development. The theorist explained that food supply which is an important element of economic development grows in an arithmetic progression while population growth increases at a geometric rate. This will make population to outweigh food supply, which will in turn lead to a conflict that can only be resolved by some positive and preventive checks. This theory provides a theoretical framework for this study on one hand.

2.2.2 Theory of Absolute Advantage

This theory was propounded by Adam Smith (1776). The theory uses a two-by-two model, i.e. there are two countries involved in the trading of two

commodities and using only two factors of production; labour and capital. The theory says that a country should export products in which it is more productive than other countries: that is, goods for which it can produce more output per unit of input than others can (i.e. in which it has an absolute advantage) while importing those goods where it is less productive than other countries (i.e. in which it has an absolute disadvantage) (Dunn& Mutti, 2004).

2.2.3 Solow-Swan Growth Theory

The neoclassical growth theory also known as the Solow-Swan growth theory or exogenous growth theory is among the long-run economic growth models. The growth theory explains long-run economic growth by looking at productivity, capital accumulation, population growth and technological progress (Solow & Swan, 1956). This theory was developed independently by Robert Solow and Trevor Swan in 1956 and supersedes the post Keynesian Harrod-Domar theory. Due to its attractive mathematical characteristics, Solow-Swan proved to be a convenient starting point for various economic growth theories.

The above theories were selected to form the theoretical framework of this study because; the first theory explains the relationship between population increase and economic development which is practically similar with Nigeria and most developing countries. The second theory explained that nations should export commodities in which they have absolute advantage and non oil production especially agriculture is one of the aspect where Nigeria has an absolute advantage. The third theory explains long-run economic growth as a function of productivity, capital accumulation, population growth and technological progress. Long run contribution of population growth to economic growth is part of the objectives of this study, as such the three theories provide a theoretical framework for this study.

2.3 Empirical Literature

This section reviewed previous empirical works by other researchers on the topic under study. Starting with empirical investigations that explored the relationship between population growth and economic growth and development, Nwosu, C. et al. (2014) investigated the role of population growth on economic growth in Nigeria. Empirical results based on ARDL model revealed that population growth has a significant positive impact on economic growth in both short and long run. The study recommends that government should make concerted effort to maintain the level of population growth and further improve the quality of the population as it impacts positively on economic growth.

Similarly, Eli, Dauda and Peter (2015), Olusogo et al., (2018) explored a positive relationship between population and economic growth. The findings are line with theoretical provision, as population to a large extent determine the amount of labour which is an important factor of production. But Jonathan, Godwin & Fedelia, (2018) found a negative relationship between population growth and economic growth.

Literatures were also reviewed on the relationship between non-oil export and economic growth. Usman, (2010), carried out a research on non-oil export determinant and economic growth in Nigeria. Finding revealed the existence of a positive relationship between non-oil export and economic growth over the study period. The study recommended that measures to further improve and increase the earning of the non-oil export should be taken for the country to experience sustainable development.

Similar findings by scholarly works such as, Aladejare and Abdulwahab (2014), Kromtit et al. (2017), Vincent, (2017), and Onuorah, (2018) also revealed a positive and significant relationship between non oil export and economic growth in Nigeria. While Awoke, Iwuoha and Awoke (2019) found a positive but insignificant result.

On the other hand, researchers such as Onodugo and Anowor (2013) explored a negative relationship between non oil export and economic growth in Nigeria, while Awoke, Iwuoha and Awoke (2019) obtained a neutral result.

From the above review of literature, majority of the findings revealed a positive and significant relationship between population growth and economic growth as well as non-oil export and economic growth in Nigeria. And very few explored a negative or positive but insignificant relationship. However, none of the papers jointly studied the relationship between the two variables on sustainable economic development. And will be useful in exploring the joint impact of the Nigeria's fast growing population and non-oil export on sustainable economic development. So also, there is ongoing debate on the relationship between the three variables. It is this gap that this study seeks to fill by investigating the joint effect of population growth and non-oil export on sustainable economic development in Nigeria in both the short and the long run in Nigeria.

3. Methodology

3.1 Data and Data Source

The data used for this study is a secondary data. All the data for the study are obtained from various publications of Central Bank statistical bulletin (2020 version) and World development Indicators (WDI, 2020) and it spans the period 1980 to 2020. The variables used include; gross domestic product per capita (GDP per capita) measured in local currency unit (LCU) as the dependent variable, and population growth rate, non oil export, agricultural output (at constant price) and exchange rate (Naira to Dollar) as the independent variables.

Population growth is measured by population growth rate. Non-oil export index is used to measure non-oil export and agricultural output is also used as an index to measure the contribution of the agricultural sector as means for diversification towards sustainable economic development. Exchange rate is also used as a control variable to measure the impact it has on the dependent variable. Sustainable economic development is measured using GDP per capita. GDP per capita measures the level of welfare in an economy. Economists viewed developmental progress as a result of human productivity that yields real output and income (Jhingan 2012).

3.2 Model Specification

The variables used are gross domestic product per capita (GDP per capita) as the dependent variable while population growth rate, non oil export, agricultural output and exchange rate as the independent variables. The functional relationship is expressed as:

$$GDPC = F(POPG, NOE, AGR, EXR) \quad (1)$$

Equation (1) above is transformed into an econometric model by incorporating the intercept (β_0), the coefficient of the explanatory variables (β_1-β_4), the time factor 't' and the disturbance term (μ) as follows:

$$GDPC_t=\beta_0 + \beta_1 POPG_t + \beta_2 NOE_t+\beta_3 AGDP_t +\beta_4 EXR_t + \mu \quad (2)$$

Logarithmic transformations are also a convenient means of transforming a highly

skewed variable into one that is more approximately normal (Kenneth 2011).
The modified version of the model adopted for this study now takes the form:
$\ln GDPC_t = \beta_0 + \beta_1 \ln POPG_t + \beta_2 \ln NOE_t + \beta_3 \ln AGR_t + B_4 \ln EXR_t + \mu_t$ (3)
Where ln = Natural Logarithm

3.3 Method of Data Analysis

The study employed the Augmented Dickey Fuller (ADF) unit root test and the auto regressive and distribution lag model (ARDL) proposed by Pesaran, Shin and Smith (2001) to estimate the relationship between the variables. Cointegration was tested using the ARDL bounds test. The computed F-statistic is compared with the non-standard critical bounds values as reported in Pesaran et al. (2001). The lower and upper bounds critical values assumes that the regressors are purely I(0), purely I(1), respectively. The F-statistic is above the upper bound critical value at 5%, as such there is co-integration among the variables of study.
After discovering the evidence of cointegration, the long-run ARDL model was specified as:

$$\ln GDPC_t = \beta_0 + \sum_{i=1}^{k} \phi_i \ln GDPC_{t-1} + \sum_{i=0}^{k} \varphi_i \ln POPG_{t-1} + \sum_{i=0}^{k} \lambda_i \ln NOE_{t-1} + \sum_{i=0}^{k} \delta_i \ln AGR_{t-1} + \sum_{i=0}^{k} \gamma_i \ln EXR_{t-1} + \varepsilon_t \quad \text{--- (4)}$$

Sequel to the existence of long run relationship, the error correction model for the estimation of the short run relationships was specified as;

$$\Delta \ln GDPC_t = \beta_0 + \sum_{i=1}^{k} \phi_i \Delta \ln GDPC_{t-1} + \sum_{i=0}^{k} \varphi_i \Delta \ln POPG_{t-1} + \sum_{i=0}^{k} \lambda_i \Delta \ln NOE_{t-1} + \sum_{i=0}^{k} \delta_i \Delta \ln AGR_{t-1} + \sum_{i=0}^{k} \gamma_i \Delta \ln EXR_{t-1} + \lambda ECT_{t-1} + \varepsilon_t \quad \text{-----(5)}$$

Where the ECT in equation 5 is defined as:

$$ECT_t = \ln GDPC_t - \alpha_o - \sum_{i=1}^{k} \psi_i \ln GDPC_{t-1} - \sum_{i=0}^{k} \varphi_i \ln POPG_{t-1} - \sum_{i=0}^{k} \lambda_i \ln NOE_{t-1} - \sum_{i=o}^{k} \phi_i \ln AGR_{t-1} - \sum_{i=o}^{k} \partial_i \ln EXR_{t-1} \quad (6)$$

Lastly, this study diagnosed the model by conducting tests for serial correlation, heteroscedasticity, normality, and functional form. In addition, the study adopted the suggestion by Pesaran and Pesaran (1997) by conducting cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMSQ) to assess how stable the model is along the sampled periods.

4.0 Results and Discussion

Result of the ADF unit root test conducted is presented in table 4.1 below:

Table 4.1: ADF Unit Root Test Result

Variables	Order of Integration	Augmented Dickey-Fuller Test Critical Values			ADF Statistics	Prob.
		1%	5%	10%		
ΔGDPC	I(1)	-4.234972	-3.540328	-3.202445	-4.498693	0.0052
POPG	I(0)	-4.309824	-3.574244	-3.221728	-6.066936	0.0001
ΔNOE	I(1)	-2.630762	-1.950394	-1.611202	-4.367006	0.0001
ΔAGR	I(1)	-4.234972	-3.540328	-3.202445	-5.836844	0.0001
ΔEXR	I(1)	-2.630762	-1.950394	-1.611202	-2.764492	0.0071

From table 4.1 above, it can be seen that the result based on the raw data (GDPC, NOE, AGR and EXR) are stationary at 1st difference I(1) and at1% level of significance, while POPG is stationary at level I(0) also at at 1% level of significance. result of the optimal lag order selection criteria is presented in table 4.2 below:

Table 4.2: Optimal Lag Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2.917064	NA	1.07e-06	0.439837	0.659770	0.516599
1	198.1106	335.0461	6.14e-11	-9.339477	-8.019878	-8.878902
2	267.1016	95.82092*	5.81e-12*	-11.78342*	-9.364160*	-10.93904*

From table 4.2 the optimal lag was selected using the Akaike Information Criterion and the optimum lag selected is two.

Having selected the optimal lag, the ARDL bounds test was conducted to find out if there was evidence of cointegration among the variables. The result of the bound test is presented on table 4.3 below:

Table 4.3: **Bounds Test Result**

Model	F-statistics	Lag	Level of significance	Bounds critical values Constant(Level) I(0)	I(1)
F(lnGDPC$_t$|lnPOPG$_t$lnNOE$_t$lnAGR$_t$lnEXR$_t$)	**8.518745**	2			
			10%	2.45	3.52
			5%	**2.86**	**4.01**
			2.5%	3.25	4.49
			1%	3.74	5.06

From the table 4.3 above, result shows that the computed F-statistic 8.518745 is greater than the upper bound critical value 4.01 at 5% significance level and even at all level of significance. This indicates the presence of cointegration among the variables.

Sequel to the discovery of cointegration relationship among the variables, the long-run model is estimated and the result is presented on table 4.4 below.

Table 4.4: **Estimated Long-Run ARDL Cointegration Results**

Dependent Variable, InGDPC				
Regressors	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
InPOPG	-5.365124	4.582963	-1.170667	0.2532
InNOE	0.329944	0.101459	3.251981	0.0034
InAGR	0.809195	0.509091	1.589491	0.1250
InEXR	0.420805	0.128129	3.284226	0.0031
C	6.352019	2.480835	2.560436	0.0172

R-squared = 0.753769 F-statistics = 6.679045

DW statistics = 2.271866 Prob(F-statistics) = (0.000053)

The result from Table 4.4 reveals that population growth (InPOPG) had a negative and statistically insignificant impact on the sustainable economic development of Nigeria in the long-run; given the coefficient and the probability values of -5.365124 and 0.2532 respectively. Even though the result is counter intuitive looking at countries like China and India where there is high population but still the countries are experiencing economic development, however the finding is consistent with the findings of other researchers in Nigeria such as (Ogbuabor, 2018).

On the other hand, non oil export was found to have a positive and significant impact on sustainable economic development in Nigeria over the study period. To be specific, 1% change in non oil export will lead to 0.329944 increase in sustainable economic development of Nigeria; the probability value is 0.0034 which indicates that the relationship is statistically significant at 1% level of significance.

The above finding is consistent with findings of other researchers in Nigeria (Aladejare & Saidi, 2014; Kromit et al. 2017 and Vincent, 2017). However, this is expected because when there is an increase in non oil export, it is indicative that other sectors of the economy are developing to accommodate more labour and many people will be employed which will in the long-run increase the productive capacity of the economy, and also lead to sustainable economic development.

Results further indicate a positive but statistically insignificant relationship between agricultural output (InAGR) and sustainable economic development in Nigeria over the study period. The coefficient of agricultural output is 0.809145 and the probability value is 0.1250. This may likely be attributed to the fact that the Nigerian agricultural sector is faced with so many challenges such as; lack of modern tools and techniques for farming, improper access to credit facilities, weather and climate changes, thereby making its contribution to sustainable economic development insignificant.

The long-run estimate also reveals that there is a positive and significant relationship between exchange rate (InEXR) and sustainable economic development in Nigeria at 1% level of significance. The coefficient of exchange rate is 0.420805 and the probability value is0.0031. This means that a unit change in exchange rate will lead to 0.420805 unit increase in sustainable economic development. The finding is in line with findings of other researchers in Nigeria (Usman, 2010; and Vincent, 2017).

The probability value of the F-satistics 0.000053 is less than 5% i.e (0.000053<0.05), this means that the explanatory variables are jointly significant in influencing the dependent variable (InGDPC). The R-squared of the model 0.753769 revealed that 75% of the proportion of the dependent variable has been explained by the explanatory variables, while only 25% of the variation is caused by the error term in the model. The Durbin Watson statistics is 2.271866which indicates that the model is good fit; because it falls within the range of 1.5 and 2.5. The DW statistics 2.271866 is greater than the R-squared 0.753769 and this further indicates that the model is free from first order serial correlation.
Result of the short-run and error correction model is presented on table 4.5 below.

Table 4.5: **The Estimated Error Correction (Short-Run) Model Results**

Dependent Variable, InGDPC				
Regressors	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
$\Delta lnGDPC_{t-1}$	0.337609	0.081971	4.118630	0.0004
$\Delta lnPOPG_t$	8.434340	4.758156	1.772607	0.0890
$\Delta lnPOPG_{t-1}$	-7.794868	3.968763	-1.964055	0.0612
$\Delta lnNOE_t$	0.153586	0.034870	4.404578	0.0002
$\Delta lnAGR_t$	-0.015303	0.182887	-0.083674	0.9340
$\Delta lnAGR_{t-1}$	-0.441608	0.170591	-2.588694	0.0161
$\Delta lnEXR_t$	0.120264	0.032178	3.737410	0.0010
ECT_{t-1}	-0.285794	0.055844	-5.117732	0.0000

From table 4.5 above, finding reveals that population growth ($\Delta lnPOPG_t$) has a positive and significant impact on sustainable economic development in Nigeria at 10% level of significance. The coefficient of $\Delta lnPOPG_t$ is 8.434340 and the probability value is 0.0890. This signifies that, population growth has an increasing relationship with sustainable economic development in the short run. To be specific, an increase in $\Delta lnPOPG_t$ with 1% leads to increase of 8.434340 in sustainable economic development; while the lag value of population growth ($\Delta lnPOPG_{t-1}$) indicates a negative and significant impact on sustainable economic development at 10% level of significance with coefficient -7.794868 and 0.0612 probability value. This indicates that 1% increase in $\Delta lnPOPG_{t-1}$ will lead to 7.794868 decrease in sustainable economic development of Nigeria.

Non oil export was revealed to have a significant positive relationship with sustainable economic development in Nigeria at 1% level of significance. The coefficient of $\Delta lnNOE_t$ is 0.153586 and the probability value is 0.0002. Specifically, a unit increase in non oil export by 1% will lead to 0.153586 increase in sustainable economic development in the short run.

Findings further revealed that agricultural output is negatively related to sustainable economic development even though the relationship is statistically insignificant; the coefficient of $\Delta lnAGR_t$is -0.015303 and the probability value is 0.9340. But the lag value of agricultural output ($\Delta lnAGR_{t-1}$) shows a significant negative relationship with sustainable economic development. Specifically, 1% increase in $\Delta lnAGR_{t-1}$ leads to 0.441608 decrease in sustainable economic development in Nigeria.

Exchange rate has a positive and significant relationship with sustainable economic development at 1% level of significance. This is to say that exchange rate has an increasing relationship with sustainable economic development in the short run. To be specific, 1% increase in $\Delta lnEXR_t$leads to 0.120264 increase in sustainable economic development.

The error correction term (ECT) is negative, less than one (in absolute value) and significant. The coefficient of the ECT is -0.285794 and the probability value is 0.0000. This confirms the earlier long run relationship among the series and also shows the speed of adjustment of towards long run equilibrium to be 29% in the first year. The speed of adjustment is slow because only 29% of the short term disequilibrium between the explained and the explanatory variables will converge to equilibrium in the long-run.

Table 4.7: Diagnostic Test Results

Test Statistics	F(Prob)	Probability
Autocorrelation	F(2,22) = 2.900947	0.2779
Hetroskedasticity	F(11,24) = 1.234904	0.2779
Normality	0.468928	0.790995
Stability	F(1, 23) = 1.561933	0.2240

The result of the diagnostic tests in Table 4.7 above reveals that the Breusch-Godfrey LM test has probability value of 0.2779 which indicates that there is no serial correlation in the model. Breusch-Pagan Godfrey test for heteroskedasticity

has a probability value0.2779 which shows that the model is homoskedastic. The probability value of the Jarque-Bera (normality) test is 0.790995 is also insignificant because it exceeds 5% (0.79>0.05) which indicates that the data in series are normally distributed. The Ramsey RESET test for stability shows that the model is correctly specified because the probability value 0.2240 is insignificant. This means that the model is free from serial correlation, heteroskedasticity, normality and functional form problems. As such, this model could produce reliable results.

As suggested by Chindo et. al (2018), cumulative sum (CUSUM) and cumulative sum of squares (CUSUMSQ) tests for stability of the model along the studied periods were conducted. It is suggested that for a model to be stable along the sampled period, the residuals line must be within the straight lines of the critical bounds at a 5% significance level. Figure 4.1 and 4.2 depict the results. Figures 4.1 and 4.2 show that the residual lies within the critical bounds at 5% level of significance. These indicate that the model is reasonably stable.

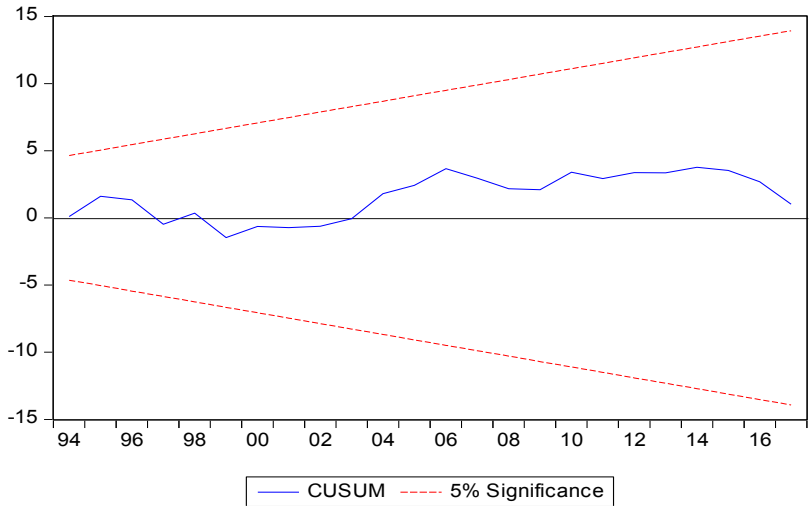

Figure 4.1: Plot of cumulative sum of recursive residual.
The straight lines represent critical bounds at 5% significance level.

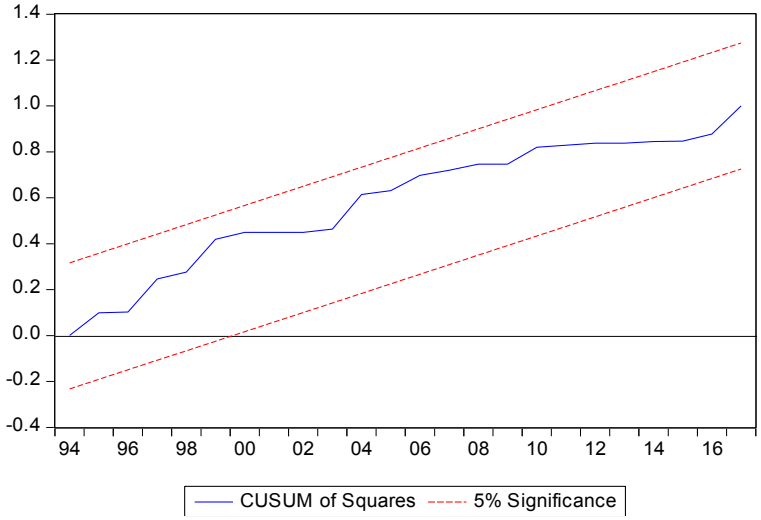

Figure 4.2: Plot of cumulative sum of squares of recursive residual.

The straight lines represent critical bounds at 5% significance level.

5. Summary, Conclusion and Recommendation

5.1 Summary

The study examined the impact of population growth and non oil export on sustainable economic development in Nigeria between 1980 and 2020. The main aim of the study is to examine the role of population growth and non oil export on sustainable economic development in Nigeria in both the short and the long-run.

Augmented Dickey Fuller (ADF) test was used to detect the presence of unit root among the variables. From the ADF test, GDPC, NOE, AGR, and EXR were found to be stationary at first difference I(1) while POPG is stationary at level I(0) given the 5% level of significance. Optimal lag selection test was conducted using Akaike Information Criterion (AIC) and ARDL bounds test approach to cointegration was used to test for cointegration among the variables of study and were found to have a long-run equilibrating relationship. The long-run ARDL result revealed a significant positive relationship between non oil exports (NOE), exchange rate (EXR) and sustainable economic development in Nigeria over the study period. While population growth (POPG) was found to have a negative but insignificant impact on sustainable economic development and agricultural output (AGR) has a positive but statistically insignificant impact on sustainable economic development in Nigeria.

The Error Correction Mechanism result indicates that 29% of short term disequilibrium between the explained and the explanatory variables will converge to equilibrium in the long-run. The coefficient of determination shows that 75% of the proportion of the dependent variable has been explained by the explanatory variables, while only 25% of the variation is caused by the error term in the model. The Durbin Watson statistics is 2.271866 which indicates that the model is good fit; because it falls within the range of 1.5 and 2.5.

5.2 Conclusion

The study concludes that population growth has a negative and insignificant relationship with sustainable economic development in Nigeria. Non oil export and exchange rate both have a positive and significant impact on sustainable development. While agricultural output has a positive but insignificant relationship with sustainable economic development in Nigeria over the study period.

5.3 Recommendations

1. Government should make concerted effort to control the escalating population and ensure that the existing population becomes more productive. Any population growth that occurs too fast will have a diminishing return or create a circumstance where economic growth will stagnate which in turn stops the country from realizing sustainable economic development.
2. Government should formulate meaningful economic policies aimed at re-inventing in the non oil sector to enhance the revenue base of the country as an alternative source of foreign receipt. The over reliance on oil proceeds by the economy which in recent times have proved not to be stable should serve as a signal for policymakers on the need to diversify the

Nigeria's revenue sources. The non-oil sector should therefore be given equal priority with the oil sector because of its capacity to make the country self-reliant by serving as alternative and reliable source of income

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