ANALYSIS OF THE IMPACT OF POPULATION GROWTH ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

Population growth has remained a key issue facing developing economies in including Nigeria, with population growth above the economic growth rate. The country has struggled against demographic tide since independence with widening gap in poverty, unemployment, and inequality which are factors responsible for the country's under-development. This study examines the impact of population growth and economic development in Nigeria. The study employed the Auto Regressive and Distributed Lag (ARDL) econometric technique. The data was also analyzed using Descriptive statistics and granger causality tools. The findings revealed that population growth rate has negative and insignificant impact on economic growth in Nigeria, both in the short run and long run. The study recommends amongst others that Nigeria must control its rapidly growing population by formulating and implementing population and economic policies that are supportive of all-inclusive economic growth. The high rate of youth unemployment should be checked and large investment in human capital (education, health & skills) both on the part of the government and private bodies should be made. This will improve the quality of labour which will in turn increase productivity.

Keywords: *Economic Growth, Human Development Index, Population Growth, Unemployment Rate*

1. INTRODUCTION

Nigeria is one of the fastest growing countries in the world with a population growth rate of about 2.44 percent as at 2016. According to the Central Bank of Nigeria, is the most populous country in Africa endowed with wide range of natural resources, and accounts for one in five of Sub-Sahara Africa's people. Nigeria's population according to the National Population commission as at 2016 was 182.2 million. Nigeria like many other developing countries in the world has put in place countless economic policies in her numerous attempts to better the living standard of her populace in order to enhance sustainable economic growth and development. It is crystal clear that the country is not just blessed with abundant deposit or supply of diverse natural resources (such as bitumen, crude oil, timbers among many others) but also highly favoured in term of human population size.

As such, the country is currently the most populous in Africa according to World Bank (2014). For a country with such huge population size, it is imperative to incorporate or consider population variables in any feasible economic development plan. Economic growth is a fundamental macro-economic policy objective which countries all over the world (i.e developed and developing) continue to strive to achieve. Although there are other important macro-economic policy objectives such as full employment, price stability and balance of payment equilibrium, economic growth can solely be facilitated by proper management or attainability of equilibrium of all these other macroeconomic policy objectives. Even in the developed countries where significant level of economic growth has been attained, efforts are still being put in place not just to sustain the level of growth but also to improve on the periodic rate of growth. While Nigeria's population has been growing steadily, positively and significantly overtime; the trend of economic growth (measure by RGDP) in Nigeria has experienced high rate of fluctuation/volatility. To support this claim, data from World Bank (2014) revealed that RGDP has experienced both positive and negative growth. For instance, the growth rates of RGDP in 1975, 1986, 1999, 2019, 2020 were -7.8 percent, 11.1 percent, -2.6 percent 2.27 percent, -1.29 percent respectively.

The relationship between population and economic growth was first noted in 1798 when the famous paper titled "An essay on the principle of population" by Thomas Malthus was published (Aidi, et al. 2016). In Nigeria, population has been growing rapidly and consistently from time immemorial. For instance, the country's population rose from 16.06 million in 1911 to 30.42 million in 1953; it rose further to 89 million in 1991, over 170 million in 2014, 208,327,405 in 2020 and 218,541,212 in 2022 (World Bank, 2022). This huge population size does not just make development planning difficult for the country but could also pose significant threats to economic growth in general in the country.

2. LITERATURE REVIEW

2.1 Conceptual Clarification

2.1.1 Population

A population is the summation or total number of persons inhibiting in a country, city or any district or area at a particular period of time (Todaro and Smith, 2006). Human population growth is round 75 million annually, or 1.1% per year. An increase in the number of people that reside in a country, state, or city is defined as population growth (Harrison, 2014).

Population is a rise in the number of people that feature in a state, country, or city. To indicate if there is a progress in population growth, there is a standard formula that is used for that for instance (birth rate + immigration) - (death rate + emigration). Government bodies and various businesses make use of this information to resolve whether to invest in certain regions or communities.

2.1.2 Population Growth.

Population growth rate is quantitatively measured as the percentage yearly net relative increase (or decrease, in which case it is negative) in population size due to natural Increase and net international migration (Todaro and Smith, 2006). Human population growth is perhaps the most significant cause of the complex problems the world faces; climate change, poverty and resource scarcity (Horizon, 2009).

2.1.3 Economic Growth

According to Anyanwu and Oaikhenan (1995), economic growth is the increase over time of an economy's capacity to produce those goods and services needed to improve the wellbeing of the citizens in their increasing number and diversity. It is also conceived as a sustained increase in the per capital income over a period of time (Claus et al., 2001). Kuznets defined growth (as cited by Todaro, 1995) as a long-term rise in the capacity of an economy to supply increasingly diverse economic goods and service to its population.

Farah (2008) defines it as potential growth in the income of each individual that forms the working group in a country as a result of their level and type of education. Also, Kathleen (2012) defines it as an increase in the bargaining power of individuals to demand more goods and services produced within the economy over time. Coechy (2011) posits that economic growth is conventionally measured by the level of education and commensurate employment opportunity provided. Ghachukha (2009) views it as the percentage rate of increase in real income of individual over a period of time.

2.3 Empirical Literature Review

A review of literature on population and economic growth suggests that a number of studies have been performed in Nigeria and other countries of the world as regard this topic, some of these studies are examined here;

Befikadu and Tafa (2022) carried out an empirical Analysis of the Effects of Population Growth on Economic Growth in Ethiopia. The study employed the Autoregressive Distributive Lag (ARDL) Model

Approach." the appraisal coefficient of population growth (POP) and the implication is positive and signifcant, according to the findings of this study. The study recommended that government should also establish a benchmark to ensure that the economy increases faster than the population.

Ochinyabo (2021) examined rapid population growth and economic development issues in Nigeria. The study adopted an ex-post facto-research design and, obtained secondary data from the publications of the Central Bank of Nigeria, the National Bureau of Statistics, and the World Bank. Descriptive and Analytical statistics tools were used to analyze the data. The findings of the study revealed that increase population growth, remittances, gross domestic product, and unemployment negatively and significantly affect the Human Development Index in Nigeria, while foreign direct investment and effective governance exerted a positive and significant effect. So, the study makes the following recommendations; Nigeria must control its rapidly growing population by formulating and implementing population and economic policies that are supportive of all-inclusive economic growth.

Onyeoma (2020) studied the influence of the rising population on Poverty and unemployment in Nigeria using Autoregressive Distributed Lag Bounds (ARDL) approach on annual data from 1980-2018. It explores the dynamic relationship between population growth and selected macroeconomic variables of economic growth, poverty, and unemployment as well as the direction of causality between them. The study also found that population growth and its components exerted a negative impact on the overall economic conditions in Nigeria. Sebikabu et al. (2020), explores the effects of population growth on economic development in Rwanda from 1974–2013. The study uses data from the World Development Indicators (WDI) and uses economic growth as a proxy for economic development and the neoclassical growth model to capture the effects of population growth on economic development. It also uses the ARDL technique for a time series analysis. In the long run, ARDL results show that population growth has a positive and statistically significant impact on economic development. In the short run, population growth does not have any significant impact on economic development in Rwanda.

Iyoboyi (2020) investigates the long run impact of institutions on economic growth, using the Dynamic Ordinary Least Squares technique. There was empirical evidence of a statistically significant and positive relationship between property rights and growth. Law and order was also statistically significant and positively associated with growth, while political terror exerted a negative impact on growth in the period of investigation.

Keghter et al. (2020) examined the role of institutional quality in economic growth enhancement and the precise role it plays through the channel of health expenditure. The ARDL model was employed and there was evidence that the long-run effects of health expenditure and institutional quality on economic growth are both surprisingly negative, with only institutional quality having a statistically significant relationship. Chowdhury and Hossain (2019) did a study on Population Growth and Economic Development in Bangladesh: Revisited Malthus. A simple linear regression analysis was undertaken to determine the relationship between population growth and economic development. The result indicated that population growth is adversely related to per capita GDP growth, which means rapid population growth is a real problem for the development of Bangladesh.

Okonkwo et al. (2019) carried out a study and adopted the political economy methodology on restructuring for economic diversification in Nigeria. It stated that the Nigerian political economy has unfortunately centralized its economic resources making it impossible for active economic participation of the ever-increasing populace. Findings of the study revealed that the devolution of economic resource is a sine qua non for sustainable growth and development that can support the rising population growth. Olusogo et al. (2018) explored the effect of population growth on the economic growth of Nigeria from 1981 to 2015. Data used were GDP and exchange rate, Population growth rate, fertility rate, and crude death rate. Ordinary least squares regression was used to analyze these data. The findings of the study revealed that population growth has a positive and significant effect on the economic growth of Nigeria, while fertility was negative and significant for economic growth in Nigeria. The exchange rate and crude death rate are however insignificant for the economic growth of Nigeria.

3. METHODOLOGY

3.1 Model Specification

To examine the impact of population growth on economic growth in Nigeria, the study adapted a model from the study of Bashir and Abubakar (2019) on Population Growth and Economic Growth in Nigeria: An Autoregressive Distributed Lag (ARDL) Model Approach. The model showed that economic growth measured by gross domestic product is a function of population growth, Gross fixed capital formation and foreign direct investment.

This model can be written as;

$$GDP = \beta 0 + \beta 1\ POPGR + \beta 2GFC + \beta 3GFDI + \mu t \text{……………………….…………..(1)}$$

The study adopted the model to examine the effect of population growth in Nigeria and introduced other control variables such as Human development Index and unemployment rate as shown in equation 2 below;

GDP=f(POPGR, HDI, UNEMPR, FDI, GFC) …….....(2)

Where:

GDP= Gross Domestic Product (a proxy for economic growth), POPGR = Population Growth Rate

HDI = Human Development Index, UNEMPR = Unemployment Rate, FDI= Foreign Direct Investment, GFC=Gross Fixed Capital Formation

The above model was specified in econometric form as follows:

$GDP_t = \beta_0 + \beta_1 POPGR_t + \beta_2 HDI_t + \beta_3 UNEMPR_t + \beta_4 FDI_t + \beta_5 GFC_t + \varepsilon_t$……...(3)

Where: ε_t = is the Error term, and t= time trend, β_0 - β_5= parameters to be estimated, others as in equation 3

Equations (3) above is functional form showing that the Gross Domestic Product is a function of Population Growth, Human Development Index, Unemployment Rate, Foreign Direct Investment, Gross Fixed Capital Formation and the error term, which capture the structural factors that are likely to affect economic growth.

4. RESULTS AND DISCUSSION

This section shows the estimated results and also the discussion of the results obtained. The section starts by showing the descriptive statistics, unit root test and the ARDL bound test.

4.1 Descriptive Statistics

Table 1 Descriptive Statistics.

	LFDI	LGDP	LGFCF	LHDI	LPOPGR	LUNEMPR
Mean	0.228461	1.389630	3.300516	0.666386	1.108377	1.546163
Median	0.371564	1.613430	3.327551	0.653926	1.011601	1.391282
Maximum	1.756132	2.729812	3.973870	0.634878	1.713798	2.292535
Minimum	-1.609438	-1.021651	2.701361	0.733969	0.810930	1.308333
Std. Dev.	0.714249	0.831964	0.398835	0.039145	0.213515	0.336652
Skewness	-0.166322	-1.138007	-0.129660	0.721287	1.609160	1.439098
Kurtosis	3.059697	4.154830	1.744256	1.771340	4.394262	3.262170
Jarque-Bera	0.157047	8.956580	2.260694	4.937109	16.91463	11.48502
Probability	0.924480	0.011353	0.322921	0.084707	0.000212	0.003207
Sum	7.539205	45.85778	108.9170	21.99073	36.57643	51.02338
Sum Sq. Dev.	16.32486	22.14928	5.090226	0.049035	1.458831	3.626703
Observations	33	33 33	33 33 33	33 33 33 33	33 33 33 33	33 33 33 33

Source: Author's Computation (2025) Eviews 9.

Table 1 shows the descriptive statistics of the data for all the variables used in the analysis. The table showed that between 1990-2022, foreign direct investment (LFDI), Gross domestic product (GDP) and Gross Fixed Capital Formation (LGFCF) human development index (LHDI), Population Growth rate (POPGR) and unemployment rate (UNEMPR) is 0.228461, 1.389630, 3.300516, 0.666386, 1.108377, 1.546163 respectively. This indicates that the variables exhibit significant variation in terms of magnitude.

The descriptive analysis also reveals that all of the variables used in the study were normally distributed as observed from the Jarque-Bera statistics. The results generally imply that all the variables foreign direct investment (LFDI, GDP, LGFCF, LHDI, POPGR and UNEMPR) have been increasing over the years.

4.2 Unit Root Tests

The Augmented Dickey-Fuller (ADF) test is a statistical test used to determine if a time series is stationary or non-stationary. Augmented Dikey-Fuller (ADF) test was used to test the stationarity of the series, the results are shown in **Table 2**

Table 2: Augmented Dikey-Fuller (ADF) test results

Variables	Test Statistics at Level	5 % Critical value	P Value at level (5%)	Remark	Test Statistics at first difference	5% Critical Value at First Difference	P Value at First Difference (5%)	Remark
GDP	-3.620383	-2.957110	0.0109	Stationary	-4.539527	-2.967767	0.0012	stationary
HDI	-0.081910	-2.957110	0.9432	Non stationary	-5.731799	-2.986225	0.0000	stationary
UNEMPR	0.681294	-2.957110	0.9898	Non stationary	-5.457599	-2.986225	0.0002	stationary
FDI	-2.311333	-2.957110	0.1747	Non stationary	-6.080343	-2.957110	0.0000	stationary
POPGR	-4.875223	-2.957110	0.0004	Stationary	-5.940865	-2.963972	0.0000	stationary
GFCF	-0.864546	-2.967767	0.7849	Non stationary	-3.921351	-3.562882	0.0230	stationary

Source: Author's Computation (2025) Eviews 9.

The review of table two above showed stationarity of variables used for this study with focus on 5% level of significance. From empirical evidence above, the null hypothesis is rejected while alternative hypothesis is accepted, thus concluding that the variables Gross domestic Product (GDP), Human development index

(HDI), unemployment rate (UNEMPR), Foreign Direct Investment (FDI), Population growth (POPGR) and gross fixed capital formation (GFCF) are stationary series.

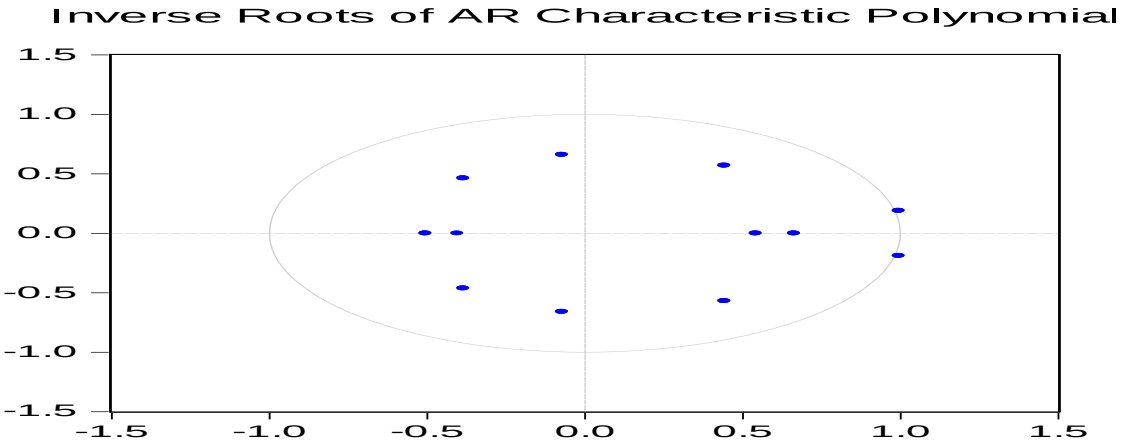

Figure 1

The result of inverse root of AR characteristic of polynomial test in figure 1 could be observed from the graph that none of inverse roots lies outside the unit circle this implies the VAR stable condition.

4.3 Estimation Results of ARDL Bound Test.

As it can be seen in table 2 the variables are integrated at different orders. This means that the Autoregressive distributive lag ARDL bound test for co integration can be applied to test the various relationships among the variables.

Null hypothesis states that there is no cointegration between the coefficients of GDP and independent variables coefficient, while the alternative hypothesis states that there is significant long run relationship between the GDP and independent variables.

Table 4.3 Results of bounds test using F-statistic

F STATISTIC	4.225807		
PERCENT	LOWER BOUND	UPPER BOUND	OUTCOME
10%	2.26	3.35	Cointegration
5%	2.62	3.79	Cointegration
2.5%	2.96	4.18	Cointegration

F Statistics = 4.225807 **K= 5, Actual Sample size = 30**

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Source: Author's computation Eviews Version 9.

From the table above, the F-statistics from the result above is greater than both the lower and upper bound for sample size of 30. Thus, the study concludes that the variables are co integrated. This implies there is a long run relationship between the variables against the null hypothesis which states that there is no long run relationship. Hence, the null hypothesis is rejected, while the alternative hypothesis is accepted.

ARDL Short-Run Estimate

The study estimates the short-run model using Akaike Information Criterion for an optimal lag selection and automatically selects ARDL (3, 2, 1, 0, 2, 1). The variables were logged so as to minimize the effect of outliers in the data. The result of the short-run ARDL estimate is presented in Table **4 below.**

Table 4 ARDL Short-Run Estimate

Dependent variable= D(log(GDP))				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
D(log(LGDP(-1))	-0.018017	0.269583	-0.066833	0.9476
D(LGDP(-2))	0.291489	0.170634	1.708272	0.1082
D(LFDI)	0.920802	0.375473	2.452376	0.0269
D(LFDI(-1))	0.591065	0.432037	1.368088	0.1914
D(LGFCF)	1.333872	1.561182	0.854399	0.4063
D(LHDI)	-7.741670	5.352129	-1.446465	0.1686
D(LPOPGR)	-0.375893	0.854284	-0.440010	0.6662
D(LPOPGR(-1))	-1.868015	1.115266	-1.674949	0.1147
D(LUNEMPR)	-7.270579	2.247090	-3.235553	0.0055
ECT(-1)	-1.078853	0.310273	-3.477104	0.0034
R-squared=0.932504, Prob (F-statistic)= 0.003948				

Source: Author's Computation, 2025 using EVIEWS 9. **Where:** D=Difference, Log=Logarithms, GDP= Gross Domestic Product (proxy for economic growth), FDI= Foreign Direct Investment, GFCF= Gross Fixed Capital Formation, HDI= Human Development Index, POPGR= Population Growth Rate, UNEMPR=Unemployment Rate

The variables Gross Domestic Product (GDP), Foreign Direct Investment (FDI), Gross Fixed Capital Formation, Human Development Index (HDI), Population Growth rate (POPGR), and Unemployment Rate (UNEMPR) were logged to minimize the effect of outliers in the data. Thus, the result of the short-run ARDL model is presented in Table 4.4. The p-values of constant and trend shows significant values less than 0.05 percent, therefore the study utilized constant and trend to estimate this analysis. The rule of thumb states that if p-value is less that 5 percent or 0.05 it shows are positive significance order wise, it is insignificant.

The results however suggest that, the coefficient of lagged dependent variable (LGDP(-1)) has a negative and insignificant at 5 percent level, implying that the current level of Gross domestic product does not significantly depends on previous information of gross domestic product in Nigeria.

For Population growth, the coefficient showed negative and insignificant value at lag 0 and lag 1 D(LPOPGR(-1)) using 5 percent level, implying that Population growth decreases gross domestic product in the short-run. This suggests that, a unit change in population growth rate will bring about a 0.375893 percent and 1.868015 insignificant decrease in gross domestic product in Nigeria respectively.

The coefficient of foreign direct investment has a significant value at 5 percent level using lag 0. Foreign direct investment is however positive but insignificant at lag 1. At lag 0, Foreign Direct Investment has a significant positive impact on economic growth in the short-run. The coefficient explained that a unit change in Exchange Rate will result in 0.920802 percent significant increase in economic growth in Nigeria for the period under study.

The coefficient of Gross Fixed Capital Formation has a positive but insignificant value at 5 percent level using lag 0 (GFCF), indicating that, Gross Fixed Capital Formation has an insignificant positive impact on economic growth in the short-run. The coefficient explained that a unit change in Gross Fixed Capital Formation will result in 1.333872 percent insignificant increase in economic growth in Nigeria for the period under study.

More so, the coefficient of Human Capital Development proxied by Human Development Index (HDI) has a negative and insignificant value at 5 percent level using lag 0 (HDI), indicating that, Human Capital Development proxied by Human Development Index has an insignificant negative impact on economic growth in the short-run. The coefficient explained that a unit change in Human Capital Development proxied by Human Development Index will result in 7.741670 percent insignificant decrease in economic growth in Nigeria.

Additionally, the coefficient Unemployment rate at lag 0 has negative and significant values at 5 percent level. This suggests that, Unemployment Rate at lag 0 have a significant negative impact on economic growth in Nigeria in the short-run. Thereby, indicating that, a unit change in unemployment rate will lead to 7.270579 percent decrease in economic respectively.

In term of the goodness of fit, the value of R-Square and adjusted R-squared reveals a very high goodness of fit because R-Square is close to 1. The value showed that about 93 percent of total variation in Gross Domestic product is explained by Foreign Direct Investment (FDI), Gross Fixed Capital Formation, Human Development Index (HDI), Population Growth rate (POPGR), and Unemployment Rate (UNEMPR) while only 7 percent is explained by the error term. The implication of this is that the model is of a best fit. Additionally, the probability value of F-statistic shows a very small probability value (0.003948) suggesting a jointly high significance impact of all the independent variables on economic growth proxied by gross domestic product in Nigeria which is below 0.05 percent.

For the Error Correction Term (ECT), the coefficient showed significant negative value (-1.078853) at 5 percent level which implied that there is a long run relationship among the variables; Gross Domestic product is explained by Foreign Direct Investment (FDI), Gross Fixed Capital Formation, Human Development Index (HDI), Population Growth rate (POPGR), and Unemployment Rate (UNEMPR) while only less than 1 percent is explained by the error term. The significant negative coefficient of the ECT term implied that there is an adjustment in the system if any disequilibrium occurs.

ARDL Long-Run Estimate

The ARDL long-run estimate is presented in Table 4.5 below.

Table 4.5: ARDL Long-Run Estimate for Objective One

Dependent Variable=LOG(GDP)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
LOG(FDI)	-0.727221	0.569857	-1.276146	0.2213
LOG(GCFC)	-1.790636	0.449357	-3.984885	0.0012
LOG(HDI)	-7.175833	4.578717	-1.567215	0.1379
LOG(POPGR)	-1.068101	1.732571	-0.616483	0.5468
LOG(LUNEMPR)	-1.867807	0.910272	-2.051922	0.0581
C	6.738483	4.369280	1.542241	0.1438

Source: Author's Computation, 2023 using EVIEWS 9. **Where:** D=Difference,

Log=Logarithms, GDP= Gross Domestic Product (proxy for economic growth), FDI= Foreign Direct Investment, GFCF= Gross Fixed Capital Formation, HDI= Human Development Index, POPGR= Population Growth Rate, UNEMPR=Unemployment Rate.

The results revealed that population growth (POPGR) have a negative and insignificant impact on Economic Growth in the long-run. Precisely, the coefficient revealed that a unit increase in POPGR will results in about 1.068101 percent insignificant decrease in Economic Growth in Nigeria. The results also showed that foreign direct investment (FDI) has a negative and insignificant positive impact on Economic Growth in the long-run. The coefficient explained that a unit increase in foreign direct investment (FDI) will results in about 0.727221 percent insignificant decrease in Economic Growth in Nigeria.

Gross fixed formation (GFCF) has a significant negative impact on Economic Growth in the long-run. The coefficient explained that a unit increase in GFCF will results in about 1.790636 percent significant reduction in Economic Growth in Nigeria. Human development index (HDI) also exhibit a negative and insignificant impact on Economic Growth in the long-run. The coefficient explained that a unit increase in HDI will results in about 7.175833 percent insignificant reduction in Economic Growth in Nigeria.

Additionally, unemployment rate (UNEMPR) also exhibits a negative but insignificant impact on Economic Growth in the long-run. The coefficient explained that a unit increase in UNEMPR will results in about 1.867807 percent insignificant decrease in Economic Growth in Nigeria.

Diagnostic Check

The study conducts diagnostic test to ascertain the reliability of the above ARDL estimates and presents the result in Table 6 below.

Table 6 Diagnostic Check

Test	Statistic	P-Values
Heteroskedasticity :Breusch-Pagan-Godfrey	11.72359	0.9253
Ramsey RESET Test	0.871870	0.3913
Breusch-Godfrey Serial Correlation LM	12.29895	0.5033
Heteroskedasticity Test Arch	0.213014	0.6444

Source: Author's Computation, 2023 using EVIEWS 9.

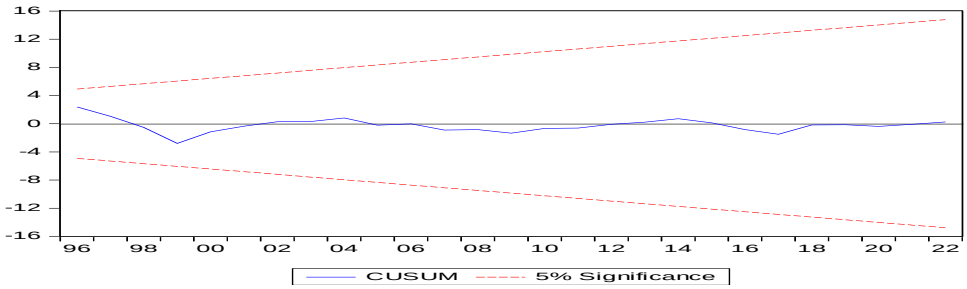

Figure 2: CUSUM Test

Source: Author's Computation, 2023 using EVIEWS 9.

From the above diagnostic test results, the probability value of the JarqueBera statistic is more than 5 percent which implied that the model has residual that is normally distributed. Similarly, the probability values of the observed R squares for both Breusch-Godfrey Serial Correlation LM test and Breusch-Pagan-Godfrey heteroscedasticity test are more than 5 percent which implied that the model is free from serial autocorrelation and heteroscedasticity problem. In addition, the parameters of the model are stable because the CUSUM plot in Figure 4.2 above falls within the 5 percent critical bound.

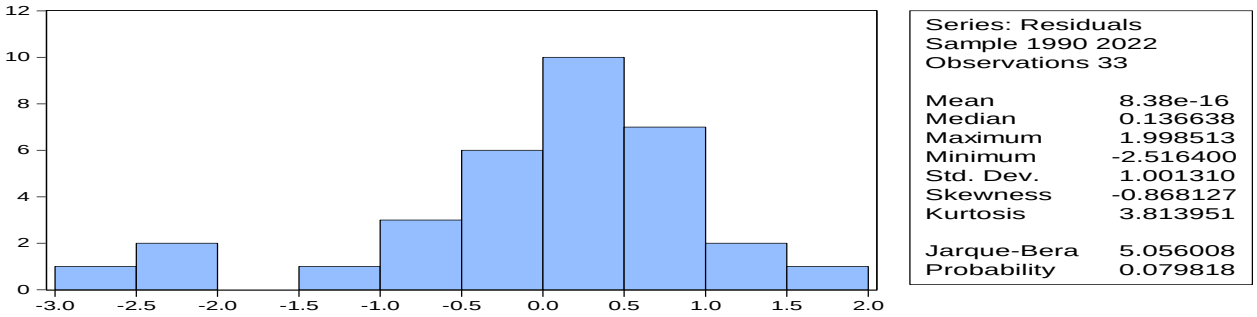

Figure 3 Normality Test

Discussion of Results

Population growth is theoretically expected to have a positive impact on Economic Growth. The result of ARDL short run and long estimate in Table 4.4 and 4.5 does not affirmed this theoretical assertion because population growth rate showed insignificant negative impact on economic growth in Nigeria both in the short run and long run. This result is consistent with the findings of the following studies; Onyeoma (2020) and Aidi, Emecheta & Ngwudiobu (2016), Okwori, et.al (2015), on the impact of population growth on economic growth in Nigeria and it is at variance with the study Olusogo, et al. (2018), Ali et al (2013), Mahmud (2015) and Mohsen and Chua (2015). It is an indication that Nigeria's rapid population growth will not result in the sustainable economic development of the country. What this portends for the country

is that with a population growth greater than the economic growth rate there is pressure on available resources. These results in undue pressure for survival that has seen the country witness increasing unemployment, vices, restiveness and insurgency.

5. CONCLUSION AND RECOMMENDATIONS

This study examined the effects of population growth on Nigeria's economic growth between the period of 1990-2022. Using the time-series data and Autoregressive analysis technique. The results show that population growth has an insignificant negative impact on economic growth. Nigerian population is growing rapidly without corresponding growth in socio-economic development. As explained by Rev. Thomas Malthus, an increasing population without corresponding increase in the means of subsistence will breed poverty, diseases, unemployment and other social ills. Based on the research findings, the researcher recommends the following:

i. To achieve long-term economic growth, Government should make concerted effort to check population growth rate. Any population growth that occurs too fast will have diminishing returns or create a circumstance where economic growth is stagnating. Effort should be made by government and other concern institutions to solve the problems of unemployment, underemployment, inadequate social amenities etc.
ii. Public expenditure on education and health components of human capital development should maintain an upward budgetary allocation that is consistent.
iii. The government should carefully invest in various healthcare aspects in the country. This will boost income, GDP, and productivity and alleviate poverty.
iv. Nigeria government should ensure that Nigeria’s rising population are channelled into areas of the economy where they may more fully utilized in bringing about high rates of economic growth for the country.
v. The high rate of youth employment in Nigeria should be checked by developing skills set through quality education, improved health care, and vocational training for the youths. Large investment in human capital (education, health & skills) both on the part of the government and private bodies should be made. This will improve the quality of labour which will in turn positively exert productivity;
vi. Nigeria must control its rapidly growing population by formulating and implementing population and economic policies that are supportive of societal welfare.

Reference

Adeosun, O. T., & Popogbe, O. O. (2021). Population growth and human resource utilization nexus in Nigeria. *Journal of Humanities and Applied Social Sciences*, *3*(4), 281-298.

Aidi, H., O., Emecheta, C. & Ngwudiobu, I., M. (2016). Population and economic growth in Nigeria: Is there an empirical evidence of causality? *International Journal of Advances in Social Science and Humanities,* 4(2), 59-66.

Akinbode, S. L., Okeowo, K. S., & Azeez, A. (2017). The dynamics of population and economic growth in Nigeria. *Journal of Economics and Development Studies*, *5*(3), 79-86.

Akinbode, A. (2002), Introductory Environmental Resource Management, Ibadan, Daybis Limited

Anyanwu, J. C. (1993). Monetary Economics: Theory, Policy and Institutions, Hybrid Publishers Limited, Onitsha.

Befikadu, A. T., & Tafa, B. A. (2022). An Empirical Analysis of the Effects of Population Growth on Economic Growth in Ethiopia Using an Autoregressive Distributive Lag (ARDL) Model Approach. *Discrete Dynamics in Nature and Society*, *2022*(1), 3733243.

Chowdhury, M. N. M., & Hossain, M. M. (2018). Population growth and economic development in Bangladesh: Revisited Malthus. *arXiv preprint arXiv:1812.09393*.

Chowdhury, A. H. M. Y., Hamid, M. K., & Akhi, R. A. (2019). Impact of macroeconomic variables on economic growth: Bangladesh perspective. *Information Management and Computer Science*, *2*(2), 19-22.

Claus, E. B., Stowe, M., & Carter, D. (2001). Breast carcinoma in situ: risk factors and screening patterns. *Journal of the National Cancer Institute*, *93*(23), 1811-1817.

Dickey, D.A. and Fuller, W.A. (1979), "Distribution of the Estimates for Autoregressive Time Series with Unit Root," *Journal of the American Statistical Association*, Vol. 74, No. 366, pp. 427-431.

Farah, A. I. (2014). Factors influencing women participation in entrepreneurial activities in Mandera township, Mandera central division, Kenya (Doctoral dissertation, University of Nairobi).

Harrison J, Hoyler M (2014), "Governing the new metropolis", *Urban Studies* Vol 5, No 11, pages 2249–2266.Malthus, T.R. (1872), Essays on the Principles of Population, London, Bensley Publishers.

Iyoboyi, M. (2021). Unraveling the Impact of Institutions on Stock Market Performance in Nigeria. In *A Paper presented at 5th International Conference on Business, Management and Economics*.

Jhingan, M. L. (2005) The Economics of Development Planning. 38th Edition. New Delhi: Vrinda Publications.

Johansen, S. & Juselius, K. (1990). Maximum likelihood Estimation and Inferences on Co-integration with Application to Demand for Money. Oxford Bulletin of Economics and Statistics, 52(2):169- 210.

Johansen, S (1988) "Statistical Analysis of Cointegration Vectors". *Journal of Economic Dynamics and Contro*l Vol. 12 (2/3), pp231-254.

Okonkwo, I. V., & Ukoh, J. E. (2020). Foreign direct investment and foreign exchange rate fluctuations in Nigeria: 1981-2018. *International Journal of Social Sciences and Management*, *3*(4).

Olusogo O. O., Owolabi, O. A., & Mubarak, M. (2018). Population Growth and Economic Growth in Nigeria: An Appraisal. *International Journal of Management, Accounting & Economics*, *5*(5).

Onyeoma S. (2020). The Influence of Rising Population on Unemployment and Poverty in Nigeria. Vol. 5(No. 1):106 – 122

Pesaran, M.H., Shin, Y., & Smith, R. J. (2001). Bounds testing approach to the analysis of level relationships. *Journal of Applied Econometrics*, 16(12): 289-326

Sebikabu, D. R., Ruvuna, E., & Ruzima, M. (2020). Population growth's effect on economic development in Rwanda. *Rwandan Economy at the Crossroads of Development: Key Macroeconomic and Microeconomic Perspectives*, 73-95.

Todaro, M and Smith, S. (2006). Economic development. ninth edition. U.S.A: pearson publishing company.

World Bank (2014). World bank development indicator. Washington Dc, World Bank, USA.