

AN EXAMINATION OF THE IMPACT OF POPULATION GROWTH AND DEVELOPMENT PLANNING ON THE ECONOMY OF NIGERIA.

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ABSTRACT

The study looked at how Nigeria's economic growth is impacted by population expansion and development planning. The World Development Indicators (WDI), the National Bureau of Statistics (NBS), and the Central Bank of Nigeria Statistical Bulletin (CBN) provided secondary annual datasets spanning the years 1980 to 2022. Autoregressive Distributed Lag (ARDL) is the OLS estimate technique used to accomplish the particular objectives. Population (POP) is positive and statistically significant, according to the study. Throughout the study period, immigration likewise showed a strong and positive correlation with economic growth. However, there is a small but favorable correlation between life expectancy and economic growth. This study recommends thus; Nigeria's government should make sure that the country's growing population is directed toward sectors of the economy where it can be used more fully, effectively, and efficiently to generate rapid economic growth. The Nigerian government should also improve access to more social amenities, expand infrastructure, and ensure that people's homes and lives are secure. Finally, as the population grows and contributes significantly to Nigeria's high GDP and rising life expectancy rate, the government of Nigeria should provide enough infrastructure, particularly health and education, for a growing population.

KEYWORDS: Population Growth, Economic Development Planning, Autoregressive Distributed Lag (ARDL) and Nigeria.

1. INTRODUCTION

The number of people living in a given area is growing, and different countries have different correlations between population growth and economic growth. It continues to be a major problem for emerging economies worldwide (Adeosun & Popogbe, 2021). Malthus's theory, which holds that population expansion lowers the human development index and has a negative impact on per capita income, is one of the most well-known theories of population growth. The population dynamics of an economy have a significant impact on both the general well-being of the populace and economic growth.

Research on population expansion will be important in the next decades. The world population was only approximately 7 billion in 2012 (Martin, Hamilton, & Osterman, 2021). However, current data indicates that this number has significantly increased and has the potential to rise even further in the future. As of January 2022, the world's population is estimated to have reached 7.9 billion, according to a United Nations report (World Population Clock, 2022).

The world's population is expected to grow rapidly over the next few decades, taxing natural resources and potentially having negative effects on economic development if countries are unable to better manage the growth, according to economists and experts in population studies (United Nations Report, 2021). "About 80% of the projected 4 billion increase in global population in 2100 will be accounted for by Africa," according to Drummond, Thakoor A., and Shu (2014). A large number of emerging nations are currently seeing rapid population expansion as a result of high fertility rates and falling death rates.

A few years ago, it appeared that agriculture was the main source of income, and as a result, productivity and population growth were favorably correlated. Since more workers or laborers working efficiently would be expected to greatly improve productivity and the nation's overall output, it was thought that having more people would suggest more security and productivity (Tartiyus, Dauda, Peter, 2015). The world's industrialization and technological advancements have made it possible for societies to control diseases that were formerly killing off significant portions of the populace. Modern societies are equipped to combat hunger, malnutrition, and other serious illnesses. Modern medicine and sanitation have rapidly advanced technologically, significantly lowering the global death rates.

Technology advancements also increased worker productivity and efficiency. The world population has been growing at an unprecedented rate due to a mix of medical advancements and technology advancements. For instance, Tartiyus, Dauda, and Peter (2015) noted that the world's natural resources are under tremendous strain given the existing population of about 7 billion people and the continued worldwide fertility rates that exceed death rates. Consequently, this leads to adverse outcomes by impeding several facets of human existence, particularly in developing countries such as Nigeria, etc.

Nigeria is the most populous country in Africa, home to one in five people living in Sub-Saharan Africa, and has one of the fastest rates of population growth in the world, with a growth rate of roughly 2.44 percent as of 2016, according to the Central Bank of Nigeria.

Nigeria had 182.2 million people living there as of 2016, according to the National Population Commission, while the World Population Data Sheet WPDS (2015) anticipated that the country's population will expand to 206 million by 2020. Furthermore, Nigeria's population is expected to rise even faster in the future due to its high rate of population growth, which is not unique to Nigeria but rather a crucial characteristic of developing nations like most Sub-Saharan West African nations. Given that it impacts a wide range of socioeconomic factors; this is probably going to have an impact on Nigeria's economic growth. The difficulty of population expansion is significant as it exerts pressure on growth and development, consequently impeding the upkeep of a sustainable society.

The Population Division of the United Nations Department of Economic and Social Affairs (UNDESA) (2015) reports that, with roughly 4.7 children per woman, Africa has the highest fertility rate worldwide. Future projections of the world population may be significantly impacted by the indications that fertility rates are rising in Nigeria, the most populous country in Africa (Efuntade & Efuntade, 2020). Rapid population growth negatively impacts the loss of natural ecosystems, deforestation, desertification, climate change, and species extinction on the one hand, and housing shortages, traffic jams, pollution, infrastructure security, and stress on amenities on the other.

In Nigeria, development planning is crucial for reducing the effects of the country's explosive population increase. Like many other developing nations, Nigeria has implemented a plethora of economic policies in an effort to raise the standard of life for its people and promote sustainable economic growth and development. Therefore, the purpose of this article is to ascertain whether a long-term link exists between population growth and GDP in Nigeria, as well as the impact of development plans and population rise on GDP in Nigeria.

2. LITERATURE REVIEW

Population growth

The rise in the number of people within a population is known as population growth. The number of people on the planet is increasing by about 83 million each year, or 1.1% annually. From one billion people in 1800 to 7.616 billion in 2018, the world's population has increased. The population is predicted to continue expanding, reaching 8.6 billion by mid-2030, 9.8 billion by mid-2050, and 11.2 billion by 2100. While many countries with modest rates of population growth have high standards of living, many countries with fast population expansion have low standards of life. The overall measure of population abundance trends is population growth (Oke, Gbadebo, and Olatunji, 2022).

It informs us of their growth and rate of change. Population growth is defined as the population's annual percentage increase in size, expressed as a per capita rate of growth (Furuoka, 2005).

In Nigeria, rapid population growth is correlated with both stagnant economic performance and high rates of unemployment, which range from 17% annually for the entire population to 60% for young people due to a lack of job opportunities relative to the number of job seekers. This is because a significant portion of available resources is being consumed rather than being invested to spur growth (Federal Republic of Nigeria, 2004b).

Furthermore, it continually puts strain on resources, especially agricultural land. For example, in the Eastern states, where population density is high, 53 percent of farmers cultivate less than 0.4 hectares annually, and in the more crowded sections of those states, the majority of farmers cultivate only 0.2 hectares annually. In order to accommodate the expanding farming population, the outcome is the fragmentation of farmlands and their subdivision into smaller pieces. tiny plots will eventually become too tiny for even subsistence farming, causing the affected people to relocate to marginal soils where there is more degradation and a corresponding decrease in agricultural productivity (Akinbode and Madu, 2005).

The use of contemporary fertilizers and farming techniques may solve this issue, but regrettably, Nigeria's agricultural practices are dominated by traditional farming methods due to its lack of cash.

International migration (IM)

People who engage in international marketing must cross state lines and remain in the host state for a set amount of time. There are numerous reasons why people migrate. The vast majority of people travel abroad for employment, family, or educational purposes. These travels involve migration procedures that typically take place without posing significant challenges to the migrants or the nations they enter. On the other hand, a variety of compelling—and occasionally tragic—causes, such as conflict, persecution, and disaster, force other people to flee their homes and countries. Even though internally displaced people (IDPs) and refugees make up a very tiny portion of all migrants, they frequently require the greatest care and assistance.

The phrases "international migration" and "international migrant" are distinct yet frequently confused and used interchangeably, according to Klasen et al. (2007). Migration is the process of relocating to a different nation. It calls for action. On the other hand, a "migrant" is a person who, depending on the situation, may be referred to as such for one or more reasons. While migration is a common occurrence for migrants, it is not always the case. People who have never moved may be referred to be migrants in some circumstances; for instance, children of foreign-born parents are frequently referred to as second- or third-generation migrants.

While there are many possible systems for classifying foreign migrants, one system divides them into nine groups: long-term, low-skilled migrants; refugees; asylum seekers; forced migration; family members; return migrants; and temporary labor migrants. Other categories include highly skilled and business migrants. There are two sizable categories of migrants: those who are permanent and those who are transient. The goal of permanent migrants is to live permanently in a new nation and potentially become citizens of that nation.

Temporary migrants plan to stay for a set amount of time, such as the duration of their job contract, the completion of a specific study program, or a specific work season. The economies and societies of both the chosen destination country and the place of origin are significantly impacted by both categories of migrants (Aidi, Emecheta & Ikenna, 2016).

Nigeria's Demography and Economic Growth

Nigeria is the most populated nation in Africa, home to almost 211 million people spread on 923, 768 km². According to the World Fact Book (2018), Nigeria is the seventh most populous nation on Earth. Nigeria's population is youthful for the most part. According to records, 42.54% of Nigerians are between the ages of 0 and 14 (Tartiyus, Dauda, and Peter, 2015). According to the World Fact Book (2018), Nigeria has an extremely high dependence ratio of 88.2 dependents for every 100 non-dependents.

Nigeria's population has increased over the past 50 years as a result of extremely high birth rates, which have caused the country's population to double during this period. Nigeria's population has grown at the quickest rate since the 1980s, when child mortality began to plummet quickly. Since then, the birth rate has somewhat decreased. According to Ogunleye and Owolabi (2018), the current birth rate is 35.2 births per 1000 people, with a total fertility rate of roughly 4.85 children per woman.

Nigeria's overall population increased from 37,860,000 in 1950 to 185,989,640 in 2016, according to the 2017 assessment of the World Population Prospects. According to World Population Prospects (2019), in 2010 there were 44.0% of children under the age of 15, 53.2% of those between the ages of 15 and 65, and 2.7% of those

who were 65 or older. But according to Okeke, Ibenwa, and Okek (2017), the current age distribution in Nigeria is as follows: 42.54% of the population is between the ages of 0 and 14, 19.81% of people are between the ages of 15 and 24, 30.44% of people are between the ages of 25 and 54, and 7% of the population is older than 65.

THEORETICAL REVIEW

Numerous ideas have been identified by scholars to explain the correlation between population expansion and economic growth, based on models of economic growth that they have proposed. These include the Romer model, the stages of growth model by Rostow, the liberal theory, the Marxist theory, the Malthusian theory, the Harrod and Domar (2003) model, and the Endogenous Growth theory. But for the sake of this investigation, several of these theories were applied.

Endogenous growth theory

According to the endogenous growth theory, internal system dynamics rather than outside influences are what drive economic growth. It makes the particular case that internal procedures, policies, and investments in human capital all contribute to economic progress. Therefore, government policies encouraging innovation, investments in human capital, and knowledge acquisition—all of which represent internal technology driving economic growth—are the cornerstone for a nation's economic growth based on endogenous growth. Therefore, in the context of the current study, Nigeria's government policies on population growth—which restrict population increase through birth and death rates will have an impact on the country's ability to attain appreciable rates of economic growth. Thus, the present study's framework, the endogenous growth theory, is applicable (Romer, 1994).

Empirical review

Between 1994 and 2019, Efuntade and Efuntade (2020) investigated the impact of population growth on Nigeria's economic expansion. The World Development Indicators and the Central Bank of Nigeria (CBN) provided time series data on the GDP, immigration, mortality, and fertility rates. The data in this study were analyzed using the vector error correction model and co-integration. According to the study's findings, Nigeria's GDP is significantly impacted negatively by the death rate, whereas GDP is significantly positively impacted by the fertility rate. Nigeria's economy is growing more favorably as a result of international migration (IM). According to the report, the Nigerian government should make sure that the country's growing population is directed toward sectors of the economy where it may be completely, effectively, and efficiently used to generate rapid economic growth. Additionally, in order for Nigeria to have higher economic growth, the government needs expand access to reasonably priced health care services and lower the country's death rate.

Adewole (2012) used the ordinary least square (OLS) technique of analysis to look at the impact of population growth on economic development in Nigeria between 1981 and 2007. The findings showed that between 1981 and 2007, population growth in Nigeria had a favorable and significant impact on economic growth as indicated by real gross domestic product (RGDP) and per capita income (PCI). Ogunleye et al. (2018) investigated how Nigeria's population growth affected the country's economic expansion from 1981 to 2015. The study's findings, as demonstrated by the OLS regression, indicated that while fertility had a negative and substantial impact on Nigeria's economic growth, population expansion had a positive and significant impact on the country's economic growth. Exchange rate and crude death rate are however insignificant for economic growth of Nigeria.

Onwuka (2006), on the other hand, holds a different opinion based on his research, which used an OLS regression model to assess how Nigeria's population expansion affected economic growth between 1980 and 2003. The empirical conclusion demonstrated that, during the period under consideration, there was a negative link between population expansion and economic growth.

Considered one of the most thorough studies on the connection between population expansion and economic development is the work by Nwosu, Dike, and Okwara (2014). This model made use of Nigerian time-series data. The simulation's findings indicated that, in the near term, a slower rate of population increase would result in a greater rate of per capita income. It should be highlighted, nonetheless, that these findings did not take into account the effects of migration, particularly from rural and urban areas.

The effects of population growth rate on economic growth among the four most populated countries in the world—China, India, the United States of America, and Nigeria—were evaluated by Oyedepo, Bayelu, and Owuru (2023). The World Development Indicators time series data covering the years 1991–2020 were used. The analysis, which employed the Autoregressive Distributed Lag (ARDL) model, showed that, over the long term, economic growth in each of the four countries was inversely correlated with the total population growth. But in Nigeria, shifts in

the working-age population, sectoral employment (a stand-in for the use of human resources), and trade openness had a major positive impact on economic growth over the long and short terms.

Changes in the working age population have no long-term impact on economic growth in China, India, or the US, although there is evidence of notable short-term benefits in these countries. Additionally, the initial proportion of the population that is working age in China and the United States has beneficial long-term implications on economic growth. The analysis comes to the conclusion that while an increase in the population overall will have a negative impact on economic growth, an improvement in the working age share in each of the chosen countries will stimulate economic growth. Therefore, in order to enhance economic growth in these countries, policies that are required to raise the proportion of the population that is working age are advised.

3. METHODOLOGY

The descriptive and inferential data were employed to draw firm findings regarding the effect of population growth on Nigeria's GDP, a proxy for economic growth. The data presentation in the study was done using functions, tables, and figures. The research was conducted using annual quantitative time series secondary data spanning from 1980 to 2022. The Gross Domestic Product, Population Growth, Life Expectancy Rate, and International Migration data were the three economic variables that were used. The World Bank Indicators, National Bureau of Statistics (NBS), and pertinent government organizations provided the data.

Model specification

The following mathematical model was developed to analyze the relationship between population growth and GDP in Nigeria using POP, IM and LER as the independent variables and regressed against the dependent variables RGDP used as proxy for GDP of Nigeria.

This study employed the model specified below:

$$RGDP = f(POP, IM, LER) \quad (1)$$

The econometric form of the model is stated as:

$$RGDP = \beta_0 + \beta_1 POP + \beta_2 IM + \beta_3 LER + \mu_i \quad (2)$$

Where:

- RGDP = Real gross domestic product (economic growth)
- POP = Population growth rate
- IM = International migration
- LER = Life expectancy rate
- μ_i = error term

$\beta_0, \beta_1, \beta_2$ and β_3 are the coefficient of the function

In consonance with economic theory, POP, LER and $LER > 0$

4. RESULTS AND DISCUSSIONS

In this study, co-integration and regression-based error correction modeling were combined. These econometric methods were selected because of their capacity to identify stationary states and evaluate causal relationships between the variables. Version 9.0 of the E-Views statistical program was used to analyze the data.

Unit Root Test Result

When non-stationary time series data is analyzed, it might produce erroneous results from which significant conclusions cannot be drawn since the estimations derived from this type of data will have non-constant variance and mean. Furthermore, a non-stationary data set will have a high R-squared value, which makes it challenging to identify the relationship between the variables. It was crucial to determine the data's stationary state because this investigation used time series data. As a result, the variables are examined for unit roots, and if found, differencing is applied to address the issue.

However, this leads to loss of some fundamental long run information hence biased solutions and this is corrected through Augmented Dickey Fuller Test (Dickey and Fuller, 1979).

Table 1. Unit root test at first difference.

Variable	ADF	1%	5%	Decision	Order of integration
POP	-5.721124	-3.626784	-2.945842	Reject	1(1)
RGDP	-4.494713	-3.626784	-2.945842	Reject	1(1)
LER	-5.729173	-3.626784	-2.945842	Reject	1(1)
IM	-5.721037	-3.626784	-2.945842	Reject	1(0)

The unit root test for stationary using Augmented Dickey-Fuller is displayed in Table 1. The outcome demonstrates that although IM was stationary at levels, the variables (GDP, POP, and LER) are stationary at first difference. Given that the t-statistics exceed the crucial values at the 1 and 5% significance levels in absolute terms. Thus, we accept the hypothesis that POP, IM, and RGDP do not have unit root problems and conclude that no variable is characterized by one (Phillips and Perron, 1988).

Bounds Test for Co-Integration

The bound test for cointegration approach, which was suggested by Pearson, Shin, and Smith (2001), was used to examine the long-term link between external debt and economic growth in Nigeria. Because the unit root result contains a combination of I (0) and I(1) variables acting as regressors, the Johanson cointegration does not apply due to the order of integration. This study used the limits test, an appropriate cointegration method.

Given the hypothesis:

$$H_0 \beta_1 = \beta_2 = \beta_3 = \beta_4 = 0 \text{ (no long run relationship)}$$

Against the alternative hypothesis

$$H_1 \beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0 \text{ (a long run cointegration exists)}$$

Table 2: Bounds test Result

Test Statistic	Value	Significance	I(0)	I(1)
F-Statistic	9.947180	10%	2.2	3.09
K	4	5%	2.56	3.49
		2%	2.88	3.87
		1%	3.29	4.37

Source: Eviews output, 2024

The decision rule determines that the null hypothesis is not rejected and that there is no long-term relationship between the components of external debt (EDS), external debt service payment (EXDSP), gross savings (GS), and population growth rate (PGR) if the computed F-statistic is smaller than the lower bound value. On the other hand, the results are not conclusive if the estimated F-statistic is larger than the upper bound values. The bound test results are displayed in Table 4. It shown that, at the 5% significance level, the null hypothesis can be readily rejected in comparison to its alternative.

The computed F-statistic of 9.999 is greater than the lower and upper critical bound value at 10%, 5% and 1%, respectively, thus indicating the existence of a long run relationship among the variables under study, the long run model of error correction model is estimated. Having carried out the bound co-integration test, the study in which long run relationship exist between the variables, there is need to carry out ARDL and the results are presented in table 4.

ARDL LONG RUN ESTIMATED RESULT

The ARDL and Long Run Coefficients are shown in table 2 below:

Table 3: ARDL and Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
POP	43.03851	18.81685	2.287233	0.0309
LER	0.706550	2.551951	0.276867	0.7842
IM	9.554120	48.84894	1.955850	0.0017
C	-2.486585	12.84029	-1.936549	0.0642

$$EC = GDP - (-43.0385 * POP + 0.7065 * LER + 9.554120 * IM)$$

Source: Eviews 10 output, 2024

Table 3 presents the long-term link between population growth and economic growth in Nigeria throughout the studied period. Population (POP) is statistically significant and positive, as seen by the long run coefficients. This demonstrates that an increase in population of 1% will result in an increase in economic growth of 43.03%. The life expectancy rate shows a weak but positive correlation with economic growth. This indicates that Nigeria's economic growth will improve by 70.6% for every 1% increase in life expectancy. Moreover, throughout the study period, immigration showed a strong and positive correlation with economic growth. Accordingly, Nigeria's economic growth will improve by 95.5% with every 1% increase in immigration.

5. CONCLUSION AND RECOMMENDATIONS

This study evaluated how Nigeria's economic progress was impacted by population expansion. The lack of theoretical literature on population increase and GDP in Nigeria served as the main impetus for this study. The bound test co-integration results show that POP, IM, LER, and GDP have a stable long-term connection. The study fills in the information gap created by conflicting data regarding population increase and economic expansion, which has frequently led to instances where findings from studies conducted in wealthy economies are extrapolated to developing nations (Yao et al., 2013).

Population (POP) is positive and statistically significant, according to the study. Throughout the study period, immigration likewise showed a strong and positive correlation with economic growth. However, there is a small but favorable correlation between life expectancy rate and economic growth.

This study recommends thus; Nigeria's government should make sure that the country's growing population is directed toward sectors of the economy where it can be used more fully, effectively, and efficiently to generate rapid economic growth. Furthermore, as it has a negative impact on population growth and international immigration, the Nigerian government should expand access to social amenities, infrastructure development, and property security. Doing so will also help Nigeria's efforts to achieve higher economic growth.

Finally, as the population grows and contributes significantly to Nigeria's high GDP and rising life expectancy rate, the government of Nigeria should provide enough infrastructure, particularly health and education, for a growing population.

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