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RESEARCH ARTICLE

Effect of Population Growth on Unemployment in Nigeria

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Abstract

This study investigates the impact of population growth on the unemployment rate in Nigeria using the Auto Regression Distributed Lag (ARDL) method. The Augmented Dickey-Fuller (ADF) test is used as a tool to determine series stationarity. Variables considered in the study include unemployment, literacy rate, life expectancy, real GDP, and population. The ARDL cointegration test is used to determine whether there is a cointegration relationship between variables. Furthermore, the results of the cointegration test indicate the presence of cointegration between the explanatory variables and the unemployment rate in Nigeria. The results of the study show that population growth and life expectancy have a positive impact on unemployment in Nigeria. In contrast, the literacy rate and the unemployment rate have an inverse relationship. Additionally, non-oil real gross domestic product shows a negative association with the unemployment rate. The Granger causality test was used to examine further the correlation between population growth and unemployment in Nigeria. The results show that there is no bidirectional causal relationship between population and unemployment, suggesting that each variable is not significantly responsible for the other. However, the probability value of the Granger causality between population and unemployment is 0.1413, which is higher than the significance level (0.005) leading to the rejection of the null hypothesis. This implies that population growth Granger causes unemployment in Nigeria. This result corresponds to the expectations of a developing country like Nigeria, where the number of jobs created does not keep up with population growth.

Keywords: Economic growth, Literacy rate, Life expectancy Population growth rate, Unemployment

JEL Classifications: O4, E24, Q56

1.0 Introduction

Africa's largest population lives in Nigeria and the population have been growing rapidly since the 1960s. The 1964 census was the first major attempt to determine the size and composition of Nigeria's population after independence in 1960. This census estimated the population at 55.6 million, a significant increase from the 1952 population estimates of 45.1 million (Akinyemi, 2005).

The 1964 census was considered a success, although there were some minor controversies and challenges. This provided valuable insights into the country's demographics and guided national development planning. However, subsequent censuses have not been without controversy, and the accuracy of some population estimates is debated (Okafor, 2014).

As of the 1991 census, Nigeria's population was 88.5 million, a significant increase from the 1964 figure. Since then, the country has experienced consistently high population growth, with the United Nations Development Program (UNDP) estimating the growth rate at 3% per annum (Akinyoade, Appiah & Asa, 2017). This rapid growth is driven by a birth rate of 40 per 1,000 and a mortality rate of 15 per 1,000. However, it is worth noting that fertility rates are gradually decreasing due to increased education and awareness about family planning methods (Bongaarts & Casterline, 2013)

Furthermore, women's educational attainment is an important factor in fertility rates. I know. Educated Nigerian women are estimated to have three fewer children than uneducated women who have an average of six children in their lifetime. Therefore, investing in education, especially for women, can help reduce population growth (Evans, 2011).

However, rapid population growth makes it difficult to balance development efforts with population growth. Nigeria's population has increased by 250% from 1964 to the present, making it difficult to adequately address issues such as poverty, healthcare, education, and infrastructure (Evans, 2011).

Nigeria is currently Africa's most populous country and her ninth most populous country overall. Birth rates, migration, and mortality are the three main factors that influence a country's population. According to this study, Nigeria's population is growing by 3% every year and it will take 22 years to double (Evans, 2011). This suggests symmetrical expansion and the immediate concern is whether the country's resources and infrastructure can adequately support such rapid growth. However, her relatively low neonatal mortality rate of 14 per 1,000 and high life expectancy pose a challenge, as they imply an increased chance of survival and therefore a larger population size. I am. According to the latest census data, Nigeria's total population in 2021 is estimated at 213,413,323 million, in contrast to 45,100,000 in 1960 (National Bureau of Statistics, 2018).

According to the report, population growth can affect unemployment rates in developing countries like Nigeria. As the population increases, so does the unemployment rate. Therefore, it is important to monitor and control unemployment rates to prevent negative effects on the economy. Rising unemployment is a problem in Nigeria.

Nigeria is currently experiencing an alarming increase in the rate of unemployment, coupled with economic recession and population growth. If not addressed, these issues could have devastating consequences for the country's future economy. The growing insecurity in the form of insurgency, public violence, and societal crimes can also be attributed to unemployment in a growing population. Nigeria has been struggling with underdevelopment for a long time, and the post-1999 period has been characterized by economic stagnation instead of strengthening the country's capacity (Akinola & Adediran, 2021). The loss of jobs due to unemployment can lead to stress and depression, which can negatively impact individuals and society. Job loss can result in increased penalties for parents and arbitrary punitive actions, leading to anxiety and depressive symptoms in children and teenagers. The escalating rates of unemployment in Nigeria can have wide-ranging detrimental effects, including academic challenges, substance abuse, risky sexual behavior, physical health issues, social problems, and an increased risk of suicide (Omonijo & Oladosu, 2019). It is imperative to proactively tackle this issue to mitigate the adverse consequences associated with unemployment and safeguard the well-being of individuals and communities in Nigeria.

2. Literature Review/Theoretical Framework

2.1 Conceptual Review

Economic Growth

Economic growth refers to a sustained increase in the production of goods and services in an economy over a period of time. It can be measured as a percentage increase in real gross domestic product (Ademola & Badiru, 2016). Gross domestic product is the total market value of all final goods and services produced within a country or economy (Well, 2021). Economic growth is not a linear process but occurs gradually and often fluctuates. This can have a positive impact on the economic and social sectors, including increasing GDP per capita. However, economic growth alone is not enough to ensure social progress. Development is an indispensable part of growth because it reflects the impact of economic growth on the whole society, including improving living standards. So, while economic growth is necessary, development is necessary to ensure that the benefits of growth are distributed equitably in the society.

Life Expectancy

Life expectancy is the expected number of years an individual will live, based on the average age at which members of a particular population are expected to die (Ospina, 2017). Typically, this is determined by calculating an age-specific mortality rate for a particular population and assuming that this rate will remain constant throughout the lifetime of individuals born in that year (Bassey, 2012). Life expectancy is the average number of years a newborn is expected to live,

taking into account age-specific mortality rates in a given country, region, or geographical area (Health Organization World, 2016).

Life expectancy is a statistical calculation that takes into account various demographic variables such as gender, age, and year of birth to estimate the typical length of an individual's life. The index commonly used to measure life expectancy is calculated from birth, providing an approximation of the typical lifespan of an infant (Noah, 2018).

Population growth rate

Population growth rate refers to the rate of increase in population size over a given period of time, expressed as a fraction of the original population (Thomas, 2019). Essentially, this ratio measures the change in the size of a population over a given period of time, usually expressed as a percentage of the original number of individuals in that population. Population growth rate refers to the average rate of change in population size within a defined time frame for a specific country, region or geographical area (WHO, 2016). Annual population growth is calculated by finding the difference between births minus deaths and immigrants minus emigrants within a particular country or geographical area.

Unemployment

Unemployment is a situation in which individuals are unemployed but are actively looking for work for a specified period of time (Onifade, Owoye & Bolarinwa, 2020). In simpler terms, unemployment can be considered as an underutilization of human capital (Aurangzeb & Asif, 2013). The unemployment rate is calculated by dividing the number of unemployed people by the total labor force and expressing the result as a percentage, as stated by Kenny (2019). The labor force participation rate (LFPR) is calculated by dividing the total labor force by the total population, as defined by Mehra (2018). Anono (2012) defines unemployment as a situation in which individuals are willing and able to work but cannot find work at prevailing wages. Gbosi (2005) defines unemployment as the percentage of people in the labor force, excluding students and medically unfit people, who are available for work but cannot find work.

2.2 Theoretical Review

The Malthusian theory of population growth serves as the theoretical foundation for this work. According to this theory, population growth becomes a problem when economic activities cannot keep up with population growth. Malthus argued that continued population growth would eventually hinder a country's ability to support itself and lead to increasing poverty rates (Mankiw, 2010). The result is a high dependency burden associated with a rapidly growing population, leading to low savings, lower economic growth, and lower GDP per capita. As a result, a Malthusian trap emerges, in which falling GDP per capita leads to higher unemployment rates as the influence of savings and investment in supporting economic growth declines,

ultimately leading to a decline in wages (Mankiw, 2010). Therefore, it is important to control population growth to avoid falling into the Malthusian trap. Malthus predicted that real wages would still fall to subsistence levels if population growth was not controlled, leading to lower nominal wages and a larger labor supply, possibly leading to unemployment (Mankiw, 2010).

The objective of this study is to empirically examine the correlation between population growth and unemployment in Nigeria. This work specifically examines the applicability of the Malthusian model, which is relevant to developing countries such as Nigeria, and confirms that population growth has a significant influence on national unemployment rates. (Oyakhilome & Akarue, 2021).

2.3 Empirical Review

Many studies, such as those by Babalola (2019), Adenomon et al. (2018), Okoro-Ugochukwu and Adenomon (2017), Jelilov and Obasa (2016), Ogbeide et al. (2015), Akeju et al. (2015) and Babalola (2019) were conducted in areas related to population growth and unemployment. However, a significant portion of existing research mainly focuses on the interactions between unemployment, economic growth, population growth, security concerns, and the relationship between unemployment and inflation. A thorough review of the literature reveals that there are very few studies that specifically examine the impact of population growth on unemployment in Nigeria. This section aims to provide a comprehensive overview of the available literature on the subject worldwide, before focusing on the specific context of Nigeria. The first part of the literature review will include an overview of relevant studies and their interrelationships worldwide, while the second part will focus exclusively on reviewing related studies. Focus on Nigeria. (Babalola, 2019; Adenomon, Ahmed & Abubakar, 2018); Okoro-Ugochukwu & Adenomon, 2017; Jelilov & Obasa, 2016; Ogbeide et al., 2015; Akeju et al., 2015; Babalola, 2019).

The ordinary least squares (OLS) method was used by Afzal and Awais (2012) to analyze the relationship between inflation and unemployment. The results show that Pakistan fits the Phillips curve, which assumes an inverse relationship between inflation and unemployment with a significantly negative unemployment coefficient. Using cross-sectional estimates of probit regression models and binary regression estimates, Baah-Boateng (2013) explored the factors contributing to unemployment in Ghana. According to the study, demand variables reduce the unemployment rate while the effect of economic expansion on job creation is insignificant. Similarly, Chand, Bhatia, and Sharma (2018) used correlation and regression analysis to evaluate the impact of economic growth on the unemployment rate in India. The results show a clear negative relationship between economic expansion and unemployment rate. Gur (2015) looked at analyzing the determinants of unemployment in BRIC countries to study the factors affecting unemployment in BRIC countries. Panel data analysis was used as the research method. Analysis results show that population growth and inflation are the two main causes. Unemployment is increasing in BRIC countries.

The relationship between unemployment and other contributing factors was examined in the study by Mahmood et al. (2014) used stepwise regression with a direct selection strategy. Unlike inflation and foreign direct investment, the results show a positive correlation between labor force participation and unemployment.

Autoregressive distributed lag was used by Maqbool, Zaman, and Khan (2013) to study the causes of unemployment in Pakistan. According to the study, Pakistan's population, gross domestic product, foreign direct investment, and inflation are all major factors causing long-term and short-term unemployment.

Muhdin (2016) used descriptive statistics to analyze the main factors affecting unemployment in Ethiopia. The results show that geographical location, education level, marital status, and gender have significant correlation with youth unemployment rate. Osora et al. (2021) examined the link between unemployment, population growth, investment and economic growth in Ethiopia. Principal component analysis (PCA) was the analytical technique used in their investigation. The results show that there is a clear relationship between unemployment and population size, showing that the unemployment rate increases as the population increases. On the contrary, there is an inverse relationship between employment and economic expansion, investment and the number of people employed, suggesting that as these variables increase, the unemployment rate tends to decrease.,

Sebikabo (2019) examined the variables influencing population growth in Rwanda and found that high birth rates contributed to population expansion. Musa, Maijama, National, and Yakubu (2019) used dynamic ordinary least squares to analyze time series data from 1991 to 2017 to investigate the impact of population growth on unemployment in Nigeria. The study results showed that the consumer price index, GDP per capita, and foreign direct investment have a negative impact on the unemployment rate, while the population growth rate and exchange rate were identified as variables that have a positive impact on the unemployment rate. It was done.

Bala et al. (2020) investigated the impact of population growth, poverty, and unemployment on economic growth in Nigeria through a study in a similar manner. In this study, an autoregressive distributed lag approach was used to examine the relationship. The results showed that poverty and unemployment have a negative impact on GDP, population growth and foreign direct investments have a significant impact on GDP.

3. **Methodology**

Traditional approaches to time series econometrics assume that time series data are stationary, implying that there is no systematic change over time. Nevertheless, recent studies suggest that many macroeconomic time series data actually have unit roots and are not stationary. This is called spurious regression and it is a common problem in small-sample studies. The standard t-test of regression coefficients used in ordinary least squares can be very misleading when dealing with integral variables of I(1) or higher (Granger & Newbold, 1977).

Davidson, Hendry, Srba, and Yeo (1978) introduced the idea of incorporating an error correction term in an autoregressive distributed lag model (ARDL) with a lagged dependent variable. Additionally, the authors proposed a stepwise approach to adding lagged dependent and independent variables to the model. This process aims to achieve white noise characteristics in the residuals within the dynamic specification.

To estimate the model when dealing with non-stationary variables, an error correction model (ECM) approach was used in this study. This method helps avoid spurious correlation estimates in the presence of non-stationary variables and provides more accurate results.

The error correction model (ECM) approach starts with an autoregressive distributed delay specification (ARDL), sometimes over parameterized, and determines the appropriate delay length based on data availability and degrees of freedom. For example, one or two lags are sufficient for annual data, but up to four lags can be used for quarterly data.

Model specifications

UEMP = f (LNPOP) …….. …….3.1

$$\Delta UEMP_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta UEMP_{t-i} + \sum_{i=1}^{q} \beta_2 \Delta LNPOP_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots\ldots 3.2$$

Where β_0 is the intercept; β_1 and β_2 are the short- run dynamic of the model's adjustment long-run equilibrium; UEMP is total unemployment rate; which was measured using the ratio of the unemployed to labor force; LNPOP is the log of total population in the country λ is the speed of the model's adjustment long run equilibrium; ECT is the error correction term and ε_t is the stochastic error term

Model 2

UEMP = f (POP, LIT, LIFEEX, NORGDP) …….. (3.3)

$$\Delta UEMP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta UEMP_{t-i} + \sum_{i=1}^{q} \alpha_2 \Delta LNPOP_{t-i} + \sum_{i=1}^{q} \alpha_3 \Delta LIT_{t-i}$$
$$+ \sum_{i=1}^{q} \alpha_4 \Delta LIFEEX_{t-i} + \sum_{i=1}^{q} \alpha_5 \Delta LNNORGDP_{t-i} + \lambda ECT_{t-1} + \varepsilon_t \quad \ldots\ldots\ldots\ldots\ldots 3.4)$$

In the equation above, α_0 represents the intercept, while α_1 - α_5 denote the short-run dynamic of the model's adjustmebhy655nt long-run equilibrium coefficients of the independent variables. The independent variables in the equation are LNPOP, which represents the total population of labor in the country; LIFEEX represent life expectancy, LNNORGDP represents log of real non-oil Gross Domestic Product; and LIT represents the literacy rate; λ is the speed of the model's adjustment long run equilibrium; ECT is the error correction term and ε_t is the stochastic error term. The dependent variable is unemployment and it is denoted with UEMP.

4. Data Analysis, Results and Discussion of Findings

Table 4.1: UNIT ROOT TEST

Variable	ADF test statistics value	Mackinnon critical Value at 5%	Remark	Order
UEMP	- 3.74621	- 2.9762	Stationary	I (0)
LIT	- 5.3013	- 2.95402	Stationary	I (1)
LIFEEX	- 4.47006	- 2.9762	Stationary	I (0)
LNORGDP	- 4.01027	- 3.59502	Stationary	I (0)
LNPOP	- 4.16159	- 2.9718	Stationary	I (I)

Source: Author's Computation (2022) using Views 10

Co-Integration Test

Co-integration tests were performed to determine whether the variables in the model exhibited long-run equilibrium relationships. The null hypothesis of the test states that there is no long-run relationship or co-integration between the variables. The null hypothesis was rejected because the study used an integration test, a decision criterion that requires a p-value of less than 5% to indicate the existence of a long-term relationship. However, a p-value greater than 5% indicates that the null hypothesis is accepted (i.e., there is no integration). The obtained results showed that all variables (UEMP, NORGDP, LIFEEX, POP, and LIT) had a long-term relationship, as confirmed by the tracking statistics and eigenvalues in Table 4.2a. Because all variables were integrated, both models were estimated using autoregressive distributed lags (ARDLs).

This study tested the null hypotheses of none and at most one. The tracking statistic for none was 10.32360, and the critical value was 18.39771. This result suggests that the null hypothesis should be accepted, that is, there is no integration. For up to 1, the trace statistic is 2.3368, but the critical value is 3.8414, indicating that H1 is accepted. This means that there is at most one co-integrating variable in the model. This result is similar to that obtained when using the Max Eigen statistic. Since one of the compared values has integration properties, the study concluded that there is a long-term relationship between unemployment the rate and population size.

Model 2:

$$\Delta UEMP_t = \alpha_0 + \sum_{i=1}^{p} \alpha_1 \Delta UEMP_{t-i} + \sum_{i=1}^{q} \alpha_2 \Delta LNPOP_{t-i} + \sum_{i=1}^{q} \alpha_3 \Delta LIT_{t-i}$$

$$+ \sum_{i=1}^{q} \alpha_4 \Delta LIFEEX_{t-i} + \sum_{i=1}^{q} \alpha_5 \Delta LNNORGDP_{t-i} + \lambda ECT_{t-1} + \varepsilon_t$$

UEMP = - 97.2521 + 15.0791LNPOP - 3.36509LIT + 1.8089LIFEEX – 11.904LNNORGDP

According to the study's findings, population growth and unemployment have a positive association that is consistent with the original hypothesis. According to the study, the rate of unemployment will rise by 0.15% for every 1% increase in population. The study also discovered an inverse relationship between literacy level and unemployment, meaning that for every 1 percent gain in literacy, unemployment will fall by 0.0336%. According to the study, life expectancy and unemployment are positively correlated, with a 1-unit rise in life expectancy corresponding to a 1.81% increase in unemployment. The relationship between unemployment and non-oil real GDP, on the other hand, was found to be inverse, showing that a 1% rise in non-oil real GDP is connected to a 0.11% increase in unemployment. All factors, except literacy level, were found to be statistically significant by the study, as indicated by the probability values.

The explanatory factors in the model are jointly important in explaining the explained variable, according to the F-statistics, which show the combined influence of all explanatory variables on the explained variable. According to the modified R2 value of 0.79, the population's literacy rate, non-oil real GDP, and life expectancy together account for around 79% of the variance in unemployment, leaving the remaining 21% unaccounted for by the model.

In terms of Granger causality, the study shows that unemployment causes population increase, whereas population growth causes unemployment. The investigation rejected the null hypothesis because the probability value of the Granger Causality from LPOP to UNMP is 0.1413, which is larger than 0.05. The Granger Causality from UNMP to LNPOP has a p-value of 0.0635, which is likewise higher than 0.05. The investigation thus disproved the null hypothesis. The study also discovered that there is no causal relationship between LLIT and UEMP, while there is unidirectional causation between UEMP and LNORGDP. The study also found a bidirectional causal relationship between LIFEEX and UEMP. The second model examined the association between unemployment and several factors, including life expectancy, literacy levels, population growth, and real non-oil GDP. According to the findings, there is a positive relationship between population increase and unemployment, which is consistent with earlier hypotheses. More specifically, a 0.15 percent rise in unemployment is correlated with every 1% increase in population. Conversely, unemployment and literacy level were found to be inversely related, meaning that a one percent increase in literacy level results in a 0.0336 percent decrease in unemployment, holding other variables constant.

In the same vein, there was a positive correlation between life expectancy and unemployment, suggesting that an increase of one unit in life expectancy corresponds to a 1.81 percent increase in unemployment while keeping other variables unchanged.

Finally, non-oil real gross domestic product and unemployment were found to be inversely related, such that a percent increase in non-oil real gross domestic product leads to a 0.11 percent decrease in unemployment, holding other variables constant.

The significance of the variables was assessed by analyzing their probability values. It was determined that all variables, except for literacy level, were statistically significant at a 5% level of significance. Additionally, the F-statistic, which serves as an indicator of the model's overall significance, was calculated to be 0.000000. This result implies that the independent variables collectively make a significant contribution to explaining the variability in unemployment.

Adjusted R-squared value of 0.79 implies that approximately 79% of the total variation in the dependent variable is explained by the independent variables in the model, while the remaining 21% is not explained by the model. Overall, the findings of the second model support prior expectations and provide insights into the factors that influence unemployment in the country. The Granger causality test is a statistical technique used to assess whether one time series can predict another time series. In this test, the significance of the p-value is used to determine the presence of a causal relationship between two variables. If the p-value exceeds 0.05, it suggests that there is no statistically significant causality between the variables. Conversely, if the p-value is less than 0.05, it suggests a significant causal relationship between the variables.

In this study, the Granger causality test was utilized to investigate the association between population growth (LPOP) and unemployment (UEMP) in Nigeria. The findings revealed that there is no bidirectional causality between LNPOP and UEMP, indicating that neither variable significantly causes the other. However, the p-value for the Granger causality from LNPOP to UEMP was calculated as 0.1413, which exceeds the threshold of 0.05, leading to the rejection of the null hypothesis.

This suggests that population growth Granger causes unemployment in Nigeria. This finding is consistent with the expectations for a developing country like Nigeria, which has not yet created enough jobs to absorb its growing population.

Furthermore, the Granger causality analysis showed that the probability value of the relationship between unemployment (UEMP) to population growth (LNPOP) was 0.0635, exceeding the significance level of 0.005, leading to the rejection of the null hypothesis. This finding indicates that there is Granger causality from unemployment to population growth, aligning with the principles of the Malthusian model. In other words, the study suggests that as unemployment rises, it tends to cause an increase in population growth, as individuals facing unemployment may be more likely to have larger families, contributing to a further rise in the population. Moreover, the study also employed a causality test to investigate the connection between unemployment (UEMP) and the logarithm of real GDP (LNNORGDP). The findings revealed that LNNORGDP does not have a Granger causal relationship with UEMP, as the probability value exceeded 0.05. However, the test showed that UEMP does Granger cause LNNORGDP, with a probability value less than 0.05. This indicates the presence of unidirectional causality between unemployment and the logarithm of real GDP in Nigeria. In other words, changes in unemployment serve as a predictor of changes in the logarithm of real GDP, suggesting that fluctuations in unemployment may influence the variations observed in the logarithm of real

GDP.

Additionally, researchers used the Granger causality test to explore the connection between literacy rate (LIT) and unemployment (UEMP) in Nigeria. The results indicated that there is no Granger causality from LIT to UEMP, and similarly, there is no Granger causality from UEMP to LIT. Hence, these findings suggest that there is no causal relationship between the literacy rate and unemployment in Nigeria.

Finally, the Granger causality test is applied to test the correlation between life expectancy (LIFEEX) and unemployment rate (UEMP) in Nigeria. The results show that there is a bidirectional causal relationship between LIFEEX and UEMP, meaning that changes in one variable can significantly lead to changes in the other variable. Specifically, LIFEEX Granger causes UEMP, implying that improved life expectancy will lead to reduced unemployment in Nigeria. Additionally, UEMP Granger causes LIFEEX, suggesting that changes in unemployment levels can also affect life expectancy. Overall, these findings highlight the complex relationship between life expectancy and unemployment and the need for further research to better understand the underlying factors driving this relationship in Nigeria.

Discussion of Findings

According to research, government's provision of basic health facilities and social protection can lead to increased life expectancy (Dudley, Galea, & Koenen, 2011). In particular, adequate access to health care and social protection can have a positive impact on the health of individuals, which in turn can increase life expectancy. Conversely, the lack of such provisions can hurt life expectancy, which can also affect unemployment levels in a country. Furthermore, according to research by Olotu (2018), there is a negative relationship between literacy rate and unemployment level. This implies that people with higher literacy levels are more likely to get a job, while people with lower literacy levels may have difficulty finding work. Indeed, employers tend to consider literacy as a basic requirement for most jobs.

It is therefore important that individuals have access to formal education and training, as this can improve their literacy skills and overall employability. However, the job market is very competitive and the number of new graduates often exceeds available job opportunities (Goyal & Joshi, 2021). To address this problem, the government could restructure the education sector and develop a curriculum that emphasizes skills and self-reliance, rather than traditional office jobs. This can help individuals become more self-reliant and create job opportunities, which can ultimately reduce unemployment rates.

Several studies have shown that there is a direct relationship between population growth and the unemployment rate (Umar, 2020; Musa, 2019; Bhally et al., 2013; Gideon, 2016; Adenomon, 2018). This country is experiencing a population growth rate higher than the rate of production of goods and services. This phenomenon is called the mismatch between exponential and arithmetic progressions.

Additionally, a reduction in real non-oil gross domestic product (GDP) can lead to high unemployment rates (Shahbaz et al., 2017). As production of goods and services declines, businesses may have to downsize, leading to increased unemployment. This, in turn, can hurt the overall quality of life of the population, as increased poverty and desperation can give rise to social evils such as prostitution, kidnapping, murder, ritual killings and armed robberies.

5. Conclusion and Recommendations

The study findings highlight that population growth in Nigeria has a negative and significant impact on the long-term unemployment rate in the country. Other macroeconomic variables, such as real non-oil gross domestic product, literacy, and life expectancy, were found to have no long-term relationship with unemployment. Additionally, research shows that higher literacy rates are associated with reduced unemployment rates, and increased life expectancy has a positive impact on unemployment rates. Additionally, non-oil real gross domestic product is negatively correlated with unemployment, suggesting that higher levels of this variable are associated with reduced unemployment. In conclusion, the study highlights that population growth is an important factor contributing to the unemployment problem in Nigeria. Based on the findings, it was determined that population growth in Nigeria has a notable and adverse impact on the persistent problem of unemployment. In contrast, many other macroeconomic factors such as literacy levels, life expectancy, and real non-oil gross domestic product do not show a long-term correlation with unemployment rates. Research shows that increased literacy rates lead to reduced unemployment rates, while increased life expectancy has a positive impact on unemployment rates. Furthermore, there is a negative relationship between real non-oil gross domestic product and the unemployment rate, suggesting that an increase in this variable will lead to a decrease in the unemployment rate. The study concluded that Nigeria's unemployment problem is largely due to population growth. The study found a positive correlation between life expectancy and unemployment, suggesting that the government should provide social and health insurance programs for retirees, pay benefits on time, and organize social insurance programs. Draft retirement preparation to reduce the rate of civil servants' age reduction. To combat unemployment, the government should restructure the education sector and develop curricula that produce self-reliant graduates, providing empowerment programs and low interest loans for the private sector, while diversifying the economy by developing other sectors and imposing restrictions on imported goods and services.

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