**CHAPTER TWO**

**LITERATURE REVIEW**

**2.1 Introduction**

This chapter intends a detailed and thorough overview of the literature on Nigeria's population, unemployment growth. The topics covered are divided into three categories, including conceptual review, theoretical review, empirical review, and gaps from the literature.

**2.2 Conceptual Review**

**2.2.1 The Concept of Population**

The total population is the sum of all the individuals who are alive at a given time**.** (Thomas Frejka, 1973). To put it another way, a population is a clearly defined group of people, whether it be a country or a group of people who are related in some way. Consequently, any group of people brought together by a common trait. This means that a population is any group of people who have something in common.

**2.2.2 Definition of Population Growth**

The increase in the number of people within a population is known as population growth. (Wikipedia, 2019). According to the Business Dictionary population growth is an increase in the number of both citizens and non-citizens that reside in a country, state, country, or city at a given period of time usually a year. The annual increase in a country's population represented as a percentage of the population at the beginning of the year is called the population growth rate.

It reflects the differences between -fertility rate and mortality rate plus net migration. The estimate across a number of years is more accurate than any one year. The rates of immigration, migration, births, and deaths, which are further conceptualized below, determine the rate of population growth;

1. Birth rate: The total number of children born into a population over a specific time period, usually a year, is what is being referred to here.
2. Death rate: This is the total number of deaths per 1,000 persons in a given time frame, usually a year.
3. Immigration: The total number of individuals that enter a nation where they were not born with the intention of relocating permanently can be referred to as this.
4. Emigration: This is the act of leaving a country with the goal of relocating irrevocably.
5. Net Migration: This is the difference between the quantity of individuals entering and departing a country. Mathematically, Net Migration = Emigration-Immigration.

Having clarified all of these phrases, the birth rate is the main cause of population expansion. Due to better and more comprehensive medical services and facilities, birth rate has had a significant impact on population expansion in various ways. Because of enhanced medical services that lower child, baby, and even mother mortality, child mortality has significantly decreased. This is in contrast to earlier times when there were no advanced health care, such as better medications and immunizations, that would have reduced death (Odusina, 2006). Population increase is also influenced by sex distribution, access to basic necessities of life (shelter, food, and clothes), and a decline in infant mortality.

Mathematically, Population growth is calculated by subtracting the total of emigration and death rates from the total of immigration and birth rates.

Population Growth = (Birth Rate +Immigration) - (Death rate +Emigration). This suggests that a rise in the birth rate and a rise in the immigrant population have a propensity to increase population and a decline has a tendency to reduce population. Additionally, a rise in the overall death toll and the number of emigrants causes a decline in population and population growth, whereas a rise does the opposite. It should be emphasized that an increase in the population does not necessarily mean there are too many people. When the population exceeds the carrying capacity of the resources available, overpopulation is a concern. It may result from a drop in mortality rates, improved medical facilities, reduced poverty, technological improvements in reproductive treatments, immigration, and a lack of family planning, among other things. Therefore, population growth is permitted as long as it doesn't outpace the capacity of the resources. The ideal population is one where the output growth rate equals the pace at which the population grows.

**2.2.3 Definition of Unemployment**

Basically, the majority of people associate being unemployed with being an unemployed person. Unemployment, however, is a much more intricate concept than the one that was just stated. Even individuals who are now employed fear losing their jobs owing to job insecurity, economic recession, and employee layoffs, which causes unemployment since there aren't enough jobs to keep up with the nation's rapid population increase (Akiri 2016). Unemployment is the lethargy of a person who depends on employment for a living but is unable to find the kind of job he is qualified for, despite wanting it and being able to do it. (W.H. Beveridge 1931).

Unemployment is the state of being both employable and actively looking for work but not having a job.

According to (Investopedia 2018), Unemployment is defined as the state of being unemployed while being employable and actively looking for work. A common indicator of the health of an economy is unemployment. When job-seeking workers are unable to secure employment, unemployment results, which lowers economic production. The ability of employees to find gainful employment and its effect on the economy's productive output make unemployment a major economic indicator.

According to ILO (International Labour Organization), The proportion of people in the labor force (i.e., the entire economically active population, not just the overall Nigerian population) who were actively looking for work but were unsuccessful for fewer than 20 hours during the time frame is referred to as unemployment.

The percentage of the labor force overall who are unemployed is known as the unemployment rate. Wikipedia (2021). The following formula is used to compute the unemployment rate, which may be expressed as a percentage:

Unemployment rate = unemployed/Labour force ×100%

Many factors on both the supply (employee) and demand (employer) sides contribute to unemployment. Demand-side reductions may be influenced by high interest rates, a global recession, and a financial crisis. On the supply side, frictional and structural unemployment have a big impact.

**2.2.4 Types of Unemployment**

In Nigeria, there are various types of unemployment: Structural unemployment, Frictional unemployment, cyclical unemployment, voluntary unemployment and seasonal unemployment.

1. **Structural Unemployment**

It happens when the skills set of a worker does not match the skills demanded by the jobs available, or alternatively when workers are available but are unable to reach the geographical location of the jobs. An example is a teaching job that requires relocation to Canada, but the worker cannot secure a work visa due to certain visa restrictions. It can also happen when there is a technological change in the organization, such as workflow automation that displaces the need for human labor.

1. **Frictional Unemployment**

It refers to those workers who are in between jobs. An example is a worker who recently quit or was fired and is looking for a job in an economy that is not experiencing a recession. It is not an unhealthy thing because it is usually caused by workers trying to find a job that is most suitable to their skills.

1. **Cyclical Unemployment**

This type of unemployment occurs when there is not enough aggregate demand in the economy to provide jobs for everyone who wants to work. In an 8 economy, demand for most goods falls, less production is needed, and less workers are needed. With cyclical unemployment the number of unemployed workers is greater that the number of job vacancies.

1. **Voluntary Unemployment**

This type of unemployment occurs some people who are unwilling to work at the prevailing wage rate, and there are some who are lucky enough to get a continuous flow of unearned income from their unemployed status. Jobs are available for them but they do not want to accept them.

1. **Seasonal Unemployment**

There are some industries and occupations such as agriculture, the catering trade in holiday resorts, some agro-based industrial activities, like sugar mills and rice mills, etc., in which production activities are seasonal in nature. So, they offer employment for only a certain period of time in a year. For instance, work in sugar mills lasts for about six months. Rice mills work for only a few weeks.

**2.3 Theoretical Review**

This study covers both the theories of population growth and unemployment as it investigates the fundamental hypotheses that underpin this research proposal.

**2.3.1 Theories of Population growth**

This population growth study's primary theoretical review comprises the following: Malthusian theory, and the Demographic Transition theory.

**2.3.1.1 Malthusian theory**

Thomas Robert Malthus (1766-1834) was the well-known person who examined the population data. In the history of population theories, his formulation on population marked a turning point. He made generalizations about the connection between social transformation and population issues. He discusses the population principle in his essay (1978). The population may double every 25 years, according to Malthus, because of the strong attraction between the sexes. He argued that the population will eventually increase to a point where there wouldn't be enough food being produced. Malthus said that the rate of population growth worldwide was outpacing the supply of food. He asserted that whereas population growth is geometric, the growth of the food supply follows an arithmetic progression (1, 2, 3, 4), notwithstanding the geometrical growth of the population (1, 2, 4, 8). He predicts that over time, the gap between the population and food supply would grow. A expanding population would still require more food, even if the supply increased. Malthus proposed preventive checks, which are voluntary activities people take to avoid adding to the population, to limit overpopulation caused by the imbalance between population and food supply. (Late marriage, chastity, and moral restraint) and Relevant points that could limit the average longevity (war, hunger, and flood) to slow the citizenry's growth rate.

If misery and immorality were allowed to run rampant, the desire between the sexes would cause people to marry at a young age and give birth to so many children that the population would double in a short period of time. The situation in Nigeria exemplifies the two issues of a large population and a food deficit. Due to a lack of overall demand for critical commodities, the concern about food has increased recently. Lack of land, water, labor, etc., are not the cause of the Nigerian problem because they are all in ample supply. The fundamental problem is the inability to utilize these plentiful resources in order to supply enough food for the nation's burgeoning population. Malthusian theory, which was condemned for its dismal outlook, had a significant impact on social policy, particularly in Great Britain. It had an impact on people's ideas all across the world, notably Charles Darwin's, who advanced the well-known biological (evolution) theory. Malthus also backed the claim that trade unions could not improve worker welfare because any salary increase would only encourage reproduction until there was merely enough food for everyone once more (Samuelson).

**2.3.1.2 Demographic Transition theory**

The phrase "demographic transition" was initially used by Warren S. Thompson (1929), and in a while via way of means of Frank W. Notestein (1945), about a historical process of change that takes into account the trends in population growth, deaths, and births that happened in today's industrialized societies, particularly European societies. The majority of this process of demographic transition began in the latter part of the 18th century. This idea is more of a comprehensive explanation of the evolutionary process than a "rule of population expansion." It is a theory that seeks to define the broad principles by which the composition and size of human populations vary as societies become more industrialized. It is frequently acknowledged as a helpful resource for outlining a nation's demographic past. The idea proposes a particular sample of demographic shift from high fertility and high mortality to low fertility and low mortality as a civilization develops, changing from a largely rural, agricultural, illiterate society to a dominating urban, industrial, literate, and modern society.

**Stages of the Demographic Transition Model**

The Demographic Transition Model has five stages, which are described below:

**Stage one:** It is characterized by an elevated fertility rate and high death rate, which results in a poor population growth rate. It is linked to poor output, underdeveloped, and primarily agricultural environments. Because there are not enough good medical facilities, there is a high death rate because individuals cannot afford a sufficient and balanced food, which leads to poor health and increased susceptibility to disease. The death rate increases significantly during times of conflict, starvation, and epidemics. Due to illiteracy, traditional, social, and spiritual ideals, as well as early marriage, the birth rate is rising. Additionally, there may be a lack of information about family planning options and facilities, and in an economy that is predominately agricultural, children are more of an asset than a liability.

**Stage Two:** It happens when there is economic growth and the mortality rate falls, primarily as a result of improvements in living conditions, particularly in the areas of sanitation and healthcare. Nonetheless, the birth rate is still rather high, and as a result of the growing gap between the dropping mortality rate and the high birth rate, the population growth rate has significantly increased.

**Stage three:** In correlation with economic growth, industrialization, urbanization, and a rise in the number of jobs held by women outside the home, the fertility rate falls. The fertility rate declines more slowly than the death rate does, resulting in a period of population increase that progressively declines. Both fertility and mortality rates are dropping continually.

**Stage four:** Low stagnant birth and death rates help to maintain demographic stability. These worldwide nations typically have more developed economies, higher levels of healthcare, better education, a higher percentage of working women, and fertility rates that are typically around two children per woman.

**Stage five:** The death rate is higher than the birth rate, therefore there is a Natural Decline. Low population increase is the consequence. In any industrialized nation, such a situation is seen as cause for alarm.

**2.3.2 Theories of Unemployment**

Since ancient times, economists have proposed various ideas regarding unemployment. Although different schools of thought have viewed unemployment from various perspectives, the fundamental fact that it lowers national output has not changed. We will be considering the Keynesian theory of unemployment and Okun’s theory.

**2.3.2.1 Keynesian theory of unemployment**

The General Theory of Unemployment, Interest, and Money, published by John Maynard Keynes in 1936, is an example of how he transformed thinking in various macroeconomics fields throughout the 1930s, including unemployment, the money supply, and inflation. The Keynesian theory of unemployment, commonly referred to as cyclical unemployment or the deficient demand theory, states that when there is insufficient aggregate demand in the economy, unemployment results. According to the hypothesis, when demand for products and services declines, so will output, necessitating a reduction in labor force. The Keynesian model is based on the supposition of rigid prices and imperfection in the market. Keynes believed that the government could address the lack of demand for jobs by increasing aggregate expenditure and deficit spending, which can increase employment levels and boost aggregate demand in the economy.

**2.3.2.2 Okun’s theory of Unemployment**

According to workforce participation, labor hours, and productivity changes, Arthur Okun (1962) empirically demonstrated that there is a negative correlation between unemployment and potential output, or economic growth. (Holmes and Silverstone,2006). Theoretically, an expanded workforce must result in the production of more goods and services, according to Okun's research. Okun discovered that the unemployment rate decreased in years with a high real growth rate, while it rose in years with a low real growth rate. According to conventional wisdom, a percentage drop in the unemployment rate corresponds to a 3% boost in economic growth (Okun's, 1962). Only a 0.3% decrease in unemployment can be expected when the unemployment rate is growing at a rate that is 1% higher than the trend rate of growth. Utilizing US real GDP data, the theory's veracity was tested, and the results did, in fact, support the relationship between unemployment and economic growth. Furthermore, according to Freeman (2007), if the real GDP performance rises by 3% and the unemployment rate falls by 0.3%, it follows that the increase in the real GDP performance for each percentage point of decline in the unemployment rate corresponds to an average growth rate of the real GDP of the nation of 2%.

**2.4 Empirical Review**

This section examines several studies done on unemployment and population growth in developed, developing countries and Nigeria.

**2.4.1 Studies in developing and developed countries**

According to well-known economist Ojegbile (1986), the level of unemployment is a good indicator of the health of a country's economy. In Nigeria in particular, Ojegbile argues that over-reliance on oil has made people forget about the agricultural sector, which could have offered job seekers gainful employment. Growing unemployment is also a result of inadequate educational resources, including the absence of comprehensive vocational training in school curricula and business owners' preference for capital-intensive rather than labor-intensive manufacturing methods.

According to Todaro (1989), the lack of essential amenities in rural areas makes rural life somewhat undesirable. He claims that the pull factors include a growing wealth difference between rural and urban people in favor of urban dwellers and a presumptive higher likelihood of finding paid job in cities.

Rama (1998) demonstrates that cultural influences also lengthen applicants' wait times for jobs. Many first-time job seekers use family support as a means of holding off on accepting available positions that, at the moment, they find unappealing. This practice is known as voluntary unemployment.

In the European Union, the relationship between growth, employment, and unemployment was examined by Walterskirchen (1999). He used two techniques to get results: time series analysis for individual EU member states and international cross-country analysis (panel data) for every EU member state from 1988 to 1999. According to Walterskirchen (1999), there are two parts to the relationship between GDP growth and change in unemployment: one is governed by economic factors, while the other is governed by labor market policies and demographic factors. The relationship between GDP and change in employment is governed by economic factors. The study's findings show a strong positive association between GDP growth and changes in employment levels. In order to create a growing trend in the level of employment and lower unemployment, output must grow at a faster pace than the rate of productivity.

In their study from 2000, Calmfors and Holmlund examine the relationship between unemployment and economic growth in Sweden. This study found a significant inverse relationship between economic growth and unemployment over the short term, but they were unable to draw any conclusions about the relationship over the long term because higher long-run growth rates brought on by rapid structural change or technological advancement (which results in higher productivity) tend to either increase structural unemployment or lessen unemployment or reduce the unemployment rate overall.

The long-term relationship between population increase and economic development was studied by Thornton (2001) in seven Latin American nations: Argentina, Brazil, Chile, Colombia, Mexico, Peru, and Venezuela. His findings confirmed what Dawson and Tiffin had realized (1998). There doesn't seem to be a long-term correlation between population and real per capita GDP.

Bello's 2003 study on the subject of unemployment in sub-Saharan Africa makes a special connection to the situation in Nigeria. The paper explains a variety of elements that account for this phenomena, including the extreme danger it poses to the economy and the nature of this episode in this sub-Saharan region. A review of Nigeria's previous and present anti-unemployment policy efforts revealed that a variety of economic issues hinder their effectiveness.

Abdul (2007) conducted research to look at the connection between output and unemployment in Malaysia between 1970 and 2004. Their study used the ADF and Phillip-Perron test to test stationery using fundamental econometric analysis. The outcome supported the idea that unemployment and economic growth are mutually exclusive. The regression's coefficient is -1.75%, which is significant at the 1% level. In other words, a 1% drop in unemployment will result in a 1.75% rise in GDP. They also confirmed that there is a two-way causal relationship between GDP and unemployment in the Malaysian economy.

In 2009, Aktar and Ozturk conducted research on the question of whether economic growth and foreign direct investment in Turkey could reduce unemployment. Turkish quarterly time series data from the first quarter of 2000 to the fourth quarter of 2007 were used to conduct the study. To obtain results, the study used the econometric method known as the VAR model. The study's findings show that the system has two cointegrating vectors, which suggests that the variables used have a long-term link. Also, it was implied that foreign direct investment did not help Turkey's economy by reducing unemployment or by generating new jobs. The study recommended that Turkey concentrate on raising labor skill levels in order to draw more and better foreign direct investment.

According to Obadan and Odusola (2010), growth and unemployment are mutually exclusive. It was also discovered that different sectors of the economy had different responses to unemployment. For example, employers in the industries sector use fewer workers to reach a high volume of production, which results in employee unemployment. The study examined the coincidental relationship between productivity and unemployment in all economic sectors of Nigeria's economy, excluding the service sector.

Kreishan (2011) examined the connection between Jordan's unemployment rate and economic growth using annual data spanning the years 1970 to 2008. According to the empirical findings, Okun's law has not been verified for Jordan. Consequently, it can be inferred that Jordan's unemployment issue is not caused by a lack of economic growth. As a result, demand management-related economic policies would not significantly affect the unemployment rate. As a result, policymakers in Jordan would be better served by implementing economic policies focused on structural transformation and labor market reform. This study's findings are consistent with those of other research conducted in Arab nations.

**2.4.2 Studies in Nigeria**

Durosinmi (2012) used multivariate regression analysis and the ordinary least squares method to evaluate the effects of unemployment and economic growth from 1970 to 2010. The research claims that Nigeria's high unemployment rate has a negative effect on the economy of the nation.

Adewole (2012) used the Phillips-Perron test and ordinary least squares techniques to analyze the relationship between population increase and economic progress in Nigeria from 1981 to 2007. The results showed that real GDP, population growth, and per capita income are non-stationary at levels, but the first difference for both test models with intercept and trend refuted the null hypothesis of non-stationarity. The study also showed that real GDP and per capita income, which are used as proxy measures of economic sustainability, are positively and significantly impacted by population expansion.

Existing production components are unable to be fully utilized, according to a phenomena identified by Olotu, Salami, and Akeremale in 2015. According to the research on Nigeria, the nation's failure to absorb the significant number of graduates produced each year is the cause of the rising rate of unemployment. In Nigeria, entrepreneurship should be promoted because it will lower unemployment and help the country's economy grow sustainably.

Orumie (2016) used multiple regression models to conduct research on the inverse link between the unemployment rate and GDP while taking into account population growth. It offers the chance to evaluate other factors influencing economic growth (in this case, population growth). The model created for this research study's results showed that, since 1970, the population and unemployment rates have increased while the gross domestic product has decreased. The outcome also shows that population increase and unemployment have equivalent effects on the GDP.

Researchers Adekola Paul, Allen, Olawale-Isaac, Akanbi, and Adewumi (2016) investigated whether demographic change in Nigeria is the main cause of unemployment or if other underlying factors are to blame for this societal issue. Three positively chosen and densely populated nations—Nigeria, China, and the United States—had their population and unemployment systems compared. The results show that population growth is not solely driven by population growth; instead, in Nigeria, both unemployment and population are rising.

Imiosi, Olatunji, and Ubi (2017) examine annual secondary data for the years 1980–2016 on the gross domestic product, unemployment rate, minimum wage, labor force, and population to examine the effects of unemployment on economic growth in Nigeria. The results indicate that while the minimum wage rate has no appreciable influence on the country's economic growth, unemployment, population, and labor force all have significant effects. The researchers suggested that the government should encourage job growth in the economy, particularly in the real sector, that private sector businesses should be encouraged to hire more people by offering incentives, and that the labor market should be regulated.

Abdurrasheed Nasir Ila (2018) used time series annual data on real to investigate the effect of unemployment on Nigeria's economic growth from 1986 to 2018. The relationship between the variables and their nature was ascertained using Granger Causality and Ordinary Least Square (OLS) approaches. According to the OLS findings, the economy's GDP growth was inversely correlated with unemployment. Moreover, Granger causality tests revealed that there is no causal connection between the variables.

In 2019, Maijama, Musa, Yakubu, and Mohammed looked at how unemployment and population increase affected Nigeria. Annual time series data from the years 1991 to 2017 were used in the study. The model was estimated using the Dynamic Ordinary Least Square (DOLS) method. The key findings showed that population and exchange rate had a favorable impact on unemployment. To reduce unemployment in the nation, the government should place more of an emphasis on luring foreign direct investment, raising GDP per capita, and achieving the targeted rate of consumer price index.

**2.5 Gaps in the Literature**

The majority of studies conducted in the past by different academics have always been concentrated on population growth and economic growth, unemployment and economic growth, the impact of population growth on economic development, and the relationship between growth, unemployment, and employment in Nigeria, with little emphasis on population growth, unemployment, and economic growth in Nigeria. Hence, this study examines the impact of population growth and unemployment on economic expansion. This study aims to update the literature because the majority of studies have not used updated data.

**CHAPTER THREE   
RESEARCH METHODOLOGY**

**3.1 Introduction**

This chapter focuses on the general methodology employed in undertaking this study. It covers the research design, theoretical framework, model specification, estimation techniques and sources of data collection.

**3.2 Theoretical Framework**

The Malthusian hypothesis of population growth serves as the study's guiding economic theory. Malthus predicted that the country's per capita GDP would decline over time as a result of this expanding population in a relatively short period of time. Decreasing per capita the effect of savings and investment, which are essential for boosting economic growth, is hampered by a growing population, which raises the unemployment rate.

According to Malthus' model, real wages set by the market will always adhere to replacement levels. If real wages rose above that point, the population would start to increase. This would include a decline in nominal wages as a result of the increased supply of labor that businesses now have access to. Due to the decline in nominal wages brought on by the population growth, this may result in some people losing their jobs.

**3.3 Model Specification**

The model's specification explains the dependent variable's mathematical link to the independent variable. Here is a presentation of the empirical model for objective two, which is based on the study's theoretical framework and some empirical research.

UNEM=*f*(POP) ………………………………………………………………………..… (1)

Where;

UNEMP=Unemployment

POP=Population Growth

The preceding equation clarifies how the relationship between unemployment and population growth works in functional form. In the theoretical and empirical literature on the analysis of macroeconomic determinant of unemployment, some variables like population growth proxy as total population, EXG (Exports of goods and services), GEXP (Government Expenditure), INR (Interest rate) and Inflation will be included.

UNEMP=+POPGR+EXG+INR+INF+Ut ……………… (2)

>0, -<0

The econometric function is in equation two where;

POP=Population Growth

UNEMP =Unemployment

GE=Government Expenditure

INR=Interest Rate

INF=Inflation

b0-b4 =parameters.

The equation 2 above shows that unemployment is a function of population growth proxy as total population, government expenditure, interest rate, and inflation. It demonstrates how these factors influence unemployment and how changes in these factors would have an impact on it either favorably or adversely.

Ut is the error term which will be used to capture other important variables not included in the model.

To fulfill study's second goal, which is to ascertain how economic expansion affects unemployment, which will be estimated in the following equation;

RGDP= *f*(POP +UNEM) ……………………………………………………………..(3)

RGDP=Real Gross Domestic Product

POP =Population growth

UNEM=Unemployment

Also, a number of significant variables are mentioned in the theoretical and empirical literature on the examination of the factors that contribute to the rise in unemployment. For simplicity. this study includes economic growth, foreign direct investment, are specified below;

RGDP=β0+β1POP+UNEM+FDI+Ut…………………. (4) -<0, >0

RGDP=Real Gross Domestic Product which is the proxy for Economic Growth.

POP=Population Growth proxy as total population

UNEM=Unemployment Growth

FDI= Foreign Direct Investment

CPI=Consumer Price Index

EXR=Exchange Rate

GDP, population growth, and unemployment all have a negative a priori association. GDP and foreign direct investment have a positive a priori expectation. According to the estimate model, population growth should be positively correlated with unemployment. This indicates that they ought to have a positive evaluation. Because of this, even if the population is growing, the production factors are not growing at a rate that is proportionate to how much is being produced and how it is being used.

**3.4 Estimation Techniques**

The regression analysis employed in this study's estimate method is the Auto-Regressive Distributed Lag (ARDL) Bounds Testing Method, which examines whether population and unemployment have both short- and long-term effects on economic growth in Nigeria. The conditional error correction version of the ARDL model must be estimated for the variables under estimation in the ARDL approach. The following methods must be used to analyze the model specification below:

1. **Unit Root Test**

In order to use the findings of this study to analyze any expressive policy. It's critical to distinguish between correlations derived from simple trends (spurious) and those connected to core causal relationships. All of the study's data are initially checked for their unit root to confirm its stationary nature in order to come to this realization. When something is described as stationary, it means that it does not change over time and that the mean and variance of the time series data are the same regardless of the method used to measure them (Gujarati, 2007). The test would assist in identifying erroneous regression on the time series and would also aid in accurate forecasting. A unit root test employing the Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests is used to determine whether or not the time series data is stationary at any level.

1. **Lag Length**

Establishing the lag length of the ARDL is a crucial step in the definition of the model. The Akaike Information Criteria (AIC), Hannan-Quinn Information Criteria (HQ), the Log Likelihood (LL), the Schwarz Information Criteria (SIC), and the Final Prediction Error (FPE) were taken into consideration in order to select the proper lag length.

1. **Co-integration Analysis**

When the time series data of the regressor and the regressed variable are not integrated of order zero, the ARDL Bounds Testing Method is no longer appropriate zero(0). A co-integration study can be done in this situation to look at the long-term relationship between the two variables that are not integrated at order zero (0). The term "co-integration analysis" refers to a set of variables that move together even when they individually are non-stationary, meaning they are likely to fluctuate up and down over time. It is necessary to ascertain whether or not there is a long-term relationship between population, unemployment, and economic growth after confirming that variables are stationary.

1. **Long-run and Short-run Estimates**

Even when some of the regressors are endogenous, this method typically produces unbiased estimates of the long-run model and a valid t-statistic (Harris and Sollis,2019), Inder (1993) and Pesaran (1997) have shown that the inclusion of the dynamics may correct the endogeneity bias.

With the aforementioned benefits, the ARDL variant of equation (2) is defined as follows for objective two:

(5)

Where represents the first difference operator, is the drift component and is the white noise residual. The represents the long run coefficient to be estimated when the represents the short run coefficients in the respective variables in the model. This study tests the null hypothesis of cointegration.

:

For objective three, the ARDL model of equation (3.4) is specified as;

(6)

Where represents the first difference operator, is the drift component and is the white noise residual. The represents the long run coefficient to be estimated when the represents the short run coefficients in the representative variables in the model. This study tests the null hypothesis of cointegration.

=

**3.5 Sources and Method of Data collection**

The majority of the information used in this study will come from secondary sources, notably World Development Indicator (WDI) and statistics bulletins published by the Central Bank of Nigeria (CBN). The data that will be used for this study will cover fifty (50) from 1970-2021. The table below displays the variables of interest, Kinds and sources of data obtained for the purpose of this study.

**TABLE 3.1 Summary of Variables**

|  |  |  |  |
| --- | --- | --- | --- |
| **S/N** | **VARIABLES** | **DESCRIPTION** | **SOURCES OF DATA** |
| 1 | Unemployment (UNEM) | When someone is actively looking for job but is unable to find it, they are considered to be unemployment. Economic development has a bad link with the a priori anticipation. | World Development Indicator (WDI) 2019 |
| 2 | Government Expenditure (GEX) | This is the buying of products and services with the intention of generating rewards in the future. Unemployment has a bad association with the a priori anticipation. | CBN Statistical Bulletin (2019) |
| 3 | Interest Rate (INR) | This rate, which is expressed as a percentage of the lent amount, is what a bank charges to borrow money. The a priori expectation has a negative relationship with unemployment. | World Development Indicator (WDI) 2019 |
| 4 | Inflation (INF) | It serves as a gauge for how quickly prices for goods and services are rising in a given economy. The a priori expectation has a negative relationship with unemployment. | World Development Indicator (WDI) 2019 |
| 5 | Gross Domestic Product (GDP) | It is the total market value of all finished goods and services generated by an economy during a given time period. | World Development Indicator (WDI)2019 |
| 6 | Foreign Direct Investment (FDI) | It is an acquisition made by a company or person in one nation into business interests situated in another one. | World Development Indicators (2019) |
| 7 | Population Growth (POP GR) | It refers to the growth in the population of a nation. The real GDP and the a priori expectation are positively correlated. | World Development Indicator (WDI) 2021 |
| 8 | Exports of goods and services (EXG) | It refers to the growth in the population of a nation. The real GDP and the a priori expectation are positively correlated. | World Development Index (2021) |
| 9 | Consumer Price Index (CPI) | This measures the average change in prices over time that consumers pay. The a priori expectation has a negative relationship with real GDP. | Penns World Table version 9.0(PWT) 2021 |
| 10 | EXCHANGE RATE(EXR) | This represents the value of a currency when converting it to another. Real GDP and the a priori expectation are inversely related. | World Development Indicator (WDI) 2020 |

**Source: Author’s Computation (2021)**