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Nexus between Unemployment and Sustainable Development in Nigeria

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ABSTRACT

This study examined the impact analysis of unemployment on economic growth in Nigeria using the ordinary least squares (OLS) technique as methodology. Findings from the study revealed that the p-values for unemployment, population growth, and government expenditure were 0.0003, 0.0000, 0.0004, and for DUNEMP, DPOP, and DGOVE respectively. According to the findings, every variable is stationary. The position of the dependent variable is GDP. Ceteris paribus, population growth, and unemployment have a negative long-term impact on GDP. Adjusted speed of 11.5%; a percentage change in POP is linked, on average, to a 0.0004% short-term decline in GDP; a percentage change in UNEMP is linked to a 7% short-term decline in GDP. Furthermore, the population growth rate coefficient shows a negative value that deviates from the presumptive expectation, suggesting an inverse link between the two variables. The outcome demonstrates that GDP is reduced by 0.00004% for every percentage rise in population growth, and GOVE is negative and deviates from a priori prediction. Therefore, the study recommended that Nigeria ought to make every effort to diversify its economy. This entails shifting away from relying solely on the production of crude oil and toward a wider range of minerals, trade, agriculture, revenue, and expenditure sources. In the end, this will raise the nation's employment rate and by making loans available to them, the government need to provide small and medium-sized enterprises with sufficient attention. This will improve the sufficient and accessible funding needed for these companies to hire more staff members and expand their output significantly. iii. Investments in the agriculture industry should be made to commercialize the sector and increase job possibilities. To achieve the commercial success of the new agricultural products, production, distribution, marketing, sales, customer support, and other essential tasks will be required for the new items and services that will be brought to market.

Keywords: Unemployment, Economic Growth, Ordinary Least Square

1.0 INTRODUCTION

The high unemployment rate that has been steadily rising over time is one of the biggest problems facing the economy of Sub-Saharan Africa (Magaji, Musa, Abdulmalik & Eke, 2022). Since the beginning of the 1980s, Nigerian economists and policymakers have been deeply concerned about the issue of

unemployment. The issue has garnered renewed attention due to the impact of the financial crisis on both the public and private sectors. In the field of economics, it is commonly acknowledged that an economy's GDP growth rate leads to higher employment and lower unemployment.

Nigeria's unemployment issue has several facets. There are instances of underemployment where people's pay is insufficient to cover their fundamental requirements, such as clothing, food, and housing. There are also instances of "disguised unemployment," where individuals accept positions that are beneath their level of education and expertise. The worst situation is when someone looks for work but is unable to locate any in the public or private sectors (Ibrahim & Sule, 2023). Certain individuals possess the willingness and readiness to establish their own businesses and participate in various forms of economic endeavors; yet, they are limited by the current unfavorable macroeconomic climate. All of these have made a substantial contribution to Africa's high rates of poverty and unemployment (Oni, 2016).

The problem of unemployment is one of Nigeria's macroeconomic challenges. Achieving sustainability and high output with a low unemployment rate is one of Nigeria's government's macroeconomic goals (Magaji & Musa, 2015). The National Bureau of Statistics (NBS, 2017) asserts that there is no single, accepted definition of unemployment because different nations define it differently based on what is important to them locally. Like most other countries, the (NBS, 2017) uses a version of the International Labor Organization's definition.

People between the ages of 15 and 64 who were available for work and actively seeking employment during the reference period—typically the week before the survey is conducted—but were unable to find employment are covered by the ILO definition. It is important to understand that the global definition of unemployment, underemployment, and employment does not depend on job satisfaction or the amount or quality of wages received. Instead, employment, underemployment, and unemployment are viewed as outcomes of an individual's participation in the economy, regardless of whether that participation is motivated by pleasure or fulfillment or just a need to make ends meet (ILO, 2018).

Economic welfare indices, such as the living standard, poverty rate, or happiness index, cover the appropriateness of remuneration or job contentment; they do not, however, address the determination of one's employment status, which is a result of economic involvement, or whether one is unemployed or underemployed (Musa, Salisu, & Magaji, 2024). According to Adebayo (2013), social marginalization, a rise in crime, social instability, and the exodus of human capital are a few social and economic effects of unemployment in Nigeria. The high rate of unemployment in Nigeria is the cause of income inequality and pervasive poverty (Enaberue, Musa & Magaji, 2024). Determining the routes of causality and the relationship between unemployment and economic growth are therefore crucial.

The period of economic transformation in Nigeria began with the political shift from military control to democratic dispensations in the country's third republic. Understanding the long-standing economic crisis brought on by the military's autocratic rule which was marked by ill-considered economic policies that sparked widespread poverty, income inequality, and structural unemployment is necessary. Even though the new democratic age began many years ago, the administration is still concerned about the high rate of unemployment.

One important indicator for assessing poverty and the unemployment rate is economic growth, which is thought to raise people's standards of life (Makaringe & Khobai, 2018). It is anticipated that a rise in GDP growth will lower the unemployment rate and raise employment levels (Magaji, Musa & Titus, 2023). This idea is well recognized in economics and is supported by Okun's law, a theoretical assertion about output and unemployment (Makaringe & Khobai, 2018). It has been determined that Okun's law, which characterizes a well-known empirical link between output (GDP) and unemployment in macroeconomics theory, is applicable to a number of industrialized countries (Banda, 2016).

But the strong correlation between unemployment and economic growth might not hold over time, so economic growth by itself is unable to overcome the other crucial but still unrecognized factors that contribute to poverty and unemployment (Magaji, Musa & Ali, 2022). Thus, it is necessary to implement dynamic economic policies in order to lower the unemployment rate and increase employment in order to achieve sustainable economic growth. Examples of these policies include investing in high-quality

education, entrepreneurship training, and human capital development (Magaji, Musa & Lawal, 2024). Nigeria needs strong economic strategies to reduce unemployment and promote sustainable growth because the country currently has a high unemployment rate.

In particular, the study aims to investigate how unemployment affects Nigeria's economic growth and assess how sensitive production is to changes in unemployment rates over the short- and long-terms.

2.0 LITERATURE REVIEW AND THEORETICAL FRAMEWORK

2.1 Conceptual Review

Two important Concepts are to be reviewed in this study; The concepts of unemployment and sustainable development.

2.1.1 Concept of Unemployment

Unemployment is a multifaceted economic issue studied across various fields, including economics, sociology, and political science, each bringing unique perspectives. Traditional definitions, such as those by the International Labour Organization (ILO), describe unemployment as the state of being without work despite active job-seeking. Theoretical developments, like Phelps' Non-Accelerating Inflation Rate of Unemployment (NAIRU), link unemployment to inflation, suggesting that lowering unemployment beyond a certain threshold can lead to rising prices. Other macroeconomic and microeconomic models, like those of Blanchard & Diamond (1989), explore labor market mismatches, while sociologists like Gallie (2002) view unemployment as a social phenomenon impacting identity and mental well-being. In developing countries, scholars like Todaro and Smith (2015) attribute unemployment to structural challenges like inadequate infrastructure, while Sen (1999) highlights unemployment as a form of capability deprivation, emphasizing the human cost beyond mere income loss. Recent discussions on unemployment have adapted to the changing economic landscape, with automation and the gig economy introducing new dimensions. Autor (2019) and Brynjolfsson & McAfee (2014) examine "technological unemployment," where automation displaces middle-skill jobs, leading to job polarization. Standing (2011) introduces the concept of the "precariat," a class characterized by precarious, insecure employment. During the COVID-19 pandemic, Coibion, Gorodnichenko, & Weber (2020) discuss "pandemic-induced unemployment," underscoring the impact of health crises on labor markets. Other emerging definitions, like "digital unemployment" (Spence & Hlatshwayo, 2021) and "gig economy unemployment" (De Stefano, 2016), focus on the challenges in adapting skills to an increasingly digital and flexible job market. Additionally, educational mismatches (Blundell et al., 2020) and cyclical and structural unemployment (IMF, 2022) highlight the evolving nature of unemployment, emphasizing the importance of targeted interventions to address both immediate and long-term job market challenges.

2.1.2 Concept of Sustainable Development

Sustainable development is an approach to growth and human development that aims to meet the needs of the present without compromising the ability of future generations to meet their own needs. The aim is to have a society where living conditions and resources meet human needs without undermining planetary integrity. Sustainable development aims to balance the needs of the economy, environment, and social well-being (Musa, Magaji & Salisu, 2022). The Brundtland Report in 1987 helped to make the concept of sustainable development better known.

Sustainable development overlaps with the idea of sustainability which is a normative concept. UNESCO formulated a distinction between the two concepts as follows: "*Sustainability* is often thought of as a long-term goal (i.e. a more sustainable world), while *sustainable development* refers to the many processes and pathways to achieve it. There are some problems with the concept of sustainable development. Some scholars say it is an oxymoron because according to them, development is inherently unsustainable. Other commentators are disappointed in the lack of progress that has been achieved so far. Part of the problem is that *development* itself is not consistently defined. The *Rio Process* that began at the 1992 Earth Summit in Rio de Janeiro has placed the concept of sustainable development on the international agenda. In 2015 the United Nations General Assembly (UNGA) adopted the Sustainable

Development Goals for the year 2030. These development goals address the global challenges, including for example poverty, climate change, biodiversity loss, and peace.

2.2 Theoretical Review

Okun's Law or Theory is taken to underpin this study as below;

2.2.1 Okun's Law

Okun's Law is a foundational theory that underpins the relationship between unemployment and economic growth. Proposed by economist Arthur Okun in 1962, the theory posits an inverse relationship between unemployment and economic output. Specifically, Okun's Law suggests that for every 1% increase in the unemployment rate, a country's GDP will be roughly an additional 2% lower than its potential GDP. This relationship can be explained by the fact that higher unemployment means that fewer people are working, leading to a reduction in the production of goods and services. As a result, the economy operates below its full capacity, leading to slower economic growth. Okun's Law has been widely used in macroeconomic analysis to estimate the potential impact of changes in unemployment on a country's economic growth.

However, the exact coefficient in Okun's Law may vary depending on the country, the time period, and the specific economic conditions. For instance, during periods of economic recession, the negative impact of unemployment on GDP might be more pronounced due to decreased consumer spending and lower business investment. Conversely, during periods of economic boom, the relationship might be less pronounced as businesses might respond to higher demand even with a higher unemployment rate. The importance of Okun's Law in understanding the impact of unemployment on economic growth lies in its empirical simplicity and its ability to highlight the significant costs of unemployment to an economy. Policymakers often use this relationship to estimate the level of GDP growth necessary to reduce unemployment or to gauge the economic damage caused by rising unemployment.

2.3 Empirical Review.

Al-Qudah & Nsairat, (2024) test the effect of some variables; per capita GDP (PCGDP), Population growth rate (POPG), inflation rate (INF) on unemployment in Jordan for the period 2000-2022 that may affect unemployment rates in Jordan. This study adopted the econometrics analysis approach to test the study hypotheses. The study used cointegration test, F-bounds test and ARDL model to examine the effect of unemployment determinants in Jordan. cointegration test and Fbounds test results indicated that there is a long term relationship between (PCGDP, POPG, INF) and unemployment in Jordan. ARDL long run results indicated that PCGDP has a negative and significant impact on unemployment in Jordan, while (INF) has a negative and not significant impact on unemployment. In addition, ARDL long run results indicated that POPG has a positive and significant impact on unemployment in Jordan. These results indicated that PCGDP and POPG are good determinants for unemployment rates in Jordan examines youth unemployment and its determinants in urban Ethiopia. It aims to examine the incidences and durations of youth unemployment and their determinant factors. In addition to logistic regression model, a nonparametric Kaplan–Meier survival analysis and Cox proportional hazards model are used. The results indicate that both the incidence and duration of youth unemployment is higher in urban Ethiopia. The hazards model shows that the hazard rate of leaving unemployment are significantly related to individual characteristics such as age and educational level of the youth, and labor market factors such as experience and job market information. Gender and regional disparities are observed. Young women exit unemployment much slower than men and the exit rate increases with age. Big and relatively more urbanized regions have a higher incidence and longer duration of unemployment spells than the small regions.

Alastair-Abisha, (2024) investigates the macroeconomic determinants of unemployment in developed countries. The aim of this study is to understand the influence of independent variables (IV), including GDP, Inflation, Population and FDI have towards the dependent variable, unemployment. Data of 5 developed countries were collected and analyzed using econometric methods. The relationship of the

independent variables and dependent variables were analyzed using the panel model which are POLS and Hausman test. The findings found that GDP and FDI have an insignificant relationship towards unemployment whereas inflation and population have a significant relationship towards unemployment. Olubusoye, Salisu & Olofin, (2023) investigates the nature and causes of youth unemployment in Nigeria, with the aim of proffering evidence-based workable solutions as policy recommendation. The study employs a Vector Autoregressive (VAR) model. This describes the spillovers of youth employment among different sectors (Agriculture, Industry and Services) in Nigeria; thus, explains whether the nature of youth unemployment in Nigeria is frictional or not. The study also adopts Panel Autoregressive Distributed (PARDL) model to analyze the short-run and long-run significance of the determinants of youth unemployment, such output level, macroeconomic uncertainties and labour market flexibility. This helps to determine the main causes of youth unemployment in Nigeria and whether the youth unemployment is cyclical or structural in nature. The results suggest that the nature of youth unemployment in Nigeria is non-cyclical, partly frictional, but largely structural. This may explain why youth unemployment is increasing in Nigeria despite government remedial efforts; as government focused on frictional youth unemployment remedial policies and dispelled the potential of youth unemployment being structural in nature.

Uddin & Rahman, (2023) examine the impact of corruption, unemployment and inflation on economic growth for seventy nine (79) developing countries of the world for the period from 2002 to 2018. This study uses Panel unit root tests (PUT), Pooled Mean Group (PMG), Fully modified ordinary least square (FMOLS), and Dynamic least square (DOLS), for the data estimation. The estimates of PUT reveal that all the variables are mixed order of integration. The PMG, FMOLS and DOLS estimates reveal that corruption, unemployment and political stability have negative effect on GDP per capita, while Inflation, governance effectiveness and rule of law have positive effect on GDP per capita.

Shah, Shabbir, and Parveen (2022) examine how unemployment affected Pakistan's growth rate from 1974 to 2020. The Autoregressive Distributed Lag (ARDL) technique was used in this work to conduct empirical research. The dependent variable GDP growth rate is used as a stand-in for economic growth. The explanatory factors in the current study are government spending, foreign direct investment, inflation rate, unemployment, and population growth rate. The study's empirical results demonstrate that there is a statistically significant negative correlation between unemployment and inflation rates and economic growth.

Economic growth is positively and statistically significantly impacted by the rate of population expansion. There is cointegration between the variables in the short run. Using quarterly data, Sekwati & Dagume (2023) examine the impact of inflation and unemployment on economic development in South Africa from 1994 to 2018. All the variables had a unit root in levels, according to the results of the unit root test using the Phillips Perron and Augmented Dickey Fuller tests, and they became stationary after the initial differencing. The results of the Johansen co-integration test demonstrated a long-term association between the variables, and the Vector error correlation model verified that unemployment and inflation have a detrimental effect on economic growth. Additionally, the outcomes of the White Heteroskedasticity, Jarque-Bera, and Serial Correlation LM tests show that there is no issue with data distribution, serial correlation, or heteroskedasticity, respectively.

Azolibe, Dimnwobi & Uzochukwu-Obi, (2022) assess the effectiveness of banking system credit in curbing the unemployment rate by making a comparative analysis of Nigeria and South Africa covering the period of 1991–2018. The study employed the unit root test, Johansen cointegration test, vector error correction model and VAR impulse response function in determining the relationship between the variables. The major findings revealed that banking system credit matters in curbing the unemployment rate in South Africa than in Nigeria. Also, other macroeconomic factors such as lending rate, inflation rate, Government expenditure, and population growth were significant enough to influence the unemployment rate in South Africa than in Nigeria. Foreign direct investment was a significant factor in reducing the unemployment rate in Nigeria than in South Africa. The cointegration test showed a long-

term relationship between the variables in both countries while the speed of adjustment coefficient of the vector error correction model is faster in South Africa than in Nigeria.

2.4 Gap in Literature

The reviewed studies provide extensive analysis on the impact of unemployment on economic growth across various countries using different methodologies like ARDL, ECM, and panel data analysis. However, a notable gap exists in the application of Structural Vector Autoregression (SVAR) modeling to study the dynamic relationship between unemployment and economic growth, particularly in Nigeria over an extended period (1990-2023).

Most studies have focused on linear models (ARDL, ECM) or general time series/panel methods without addressing the potential endogeneity and dynamic interactions between unemployment and other macroeconomic variables over time. SVAR modeling offers a more robust framework to analyze such relationships, considering the potential feedback effects among variables, which are not adequately captured in the studies reviewed. Additionally, while some studies have considered factors like inflation, FDI, and population growth, few have thoroughly examined the structural shocks and their transmission effects on unemployment and economic growth. This gap presents an opportunity to explore how these structural changes impact unemployment and economic growth in Nigeria.

3.0 METHODOLOGY

3.1 Research Design

The Ordinary Least Squares (OLS) statistical technique was used and the methodology was based on the ex-post facto research design. The study makes use of secondary data of annual observations on GDP, unemployment, and population growth rate. However, these data were sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin, National Directorate of employment, and National Bureau of Statistics (NBS) Publication (2019).

3.2 Model Specification

To establish the relationship between unemployment and GDP the study adopted Iloabuchi (2019). Though, the present study is different from that of Iloabuchi (2019) in the sense that both studies considered different time period. It was expected that the findings from the current study would provide somewhat different policy insights on the economic effect of unemployment on the growth of Nigeria economy.

Therefore, the model is presented in implicit form in equation 3.1

$$\text{as: } \text{GDP} = f(\text{UNEMP}, \text{POP}, \text{GEX}) \quad 3.1$$

The above implicit function in equation 1 could be presented in a linear functional form as in equation 3.2 as follows:

$$\text{GDP}_t = \beta_0 + \beta_1 \text{UNEMP} + \beta_2 \text{POP} + \beta_3 \text{GEX} + \mu_t \quad 3.2$$

Where:

GDP _t	=	Gross Domestic Product
UNEMP _t	=	Unemployment
POP _t	=	Population
GEX	=	Government Expenditure
μ _t	=	Error Term
t	=	Time (Series) Trend
β ₀	=	Constant or Intercept Term
β ₁ , β ₂ , β ₃ , and β ₄	=	Population Parameters

From the specified model equations above, the dependent variable is GDP while exogenous variables are UNEMP, POP and GEX. The parameters of the respective functions are β_i where i = 0,1,2,3... n. It is however, worth emphasizing here that where the assumption of an econometric technique (economic, statistic and econometric criteria) is not satisfied; it is customary to re-specify the model (e.g. introduce new variables or omit some others, transform the original variable and include error terms) so as to

produce new form, which meets the assumptions of the econometric theory. We then proceed with re-estimation of the new model and re-application of the entire tests. This process of re-specification of the model and re-estimation will continue until the results pass the entire economic, statistical and econometric test (Amos, 2019).

3.4 Nature and Source of Data

The data technique for the research was of time series in nature and in secondary form between 1980-2019. The data was sourced from the Central Bank of Nigeria Statistical Bulletin (2019), National Bureau of Statistics Annual Abstract. The data obtained includes annual observations on Unemployment rate, GDP and population growth rate.

3.5 Estimation and Evaluation Technique and Procedure

Statistical Criteria

Coefficient of Determination (R²)

It shows the goodness fit of explanatory variables in the model. This will explain the rate at which the independent variables explain changes or percentage change in the dependent variables.

F-Statistic

This statistics will show the explanatory power of the independent variables i.e. whether all the independent variables are jointly significant in explaining changes in the dependent variables.

Hypothesis Test

The null hypothesis for this test statistic will be such that the model is insignificant.

Ho: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ (the model is insignificant)

H1: $\beta_1 \neq \beta_2 \neq \beta_3 \neq \beta_4 \neq 0$ (the model is significant)

At $\alpha = 5\%$ with $k-1$ (v_1) and $n-k$ (v_2) degree of freedom.

Decision Rule

The decision rule was such that if the F calculated is greater than the tabulated value, the null hypothesis was rejected; otherwise, the null hypothesis will be accepted, that is reject Ho if F calculated (F_c) > F tabulated (F_b), otherwise accept Ho.

Durbin-Watson Statistic

This test checked for autocorrelation in the result obtained.

T-Statistic

This test explained the statistical significance of each independent variables. This test will form the basis for either accepting or rejecting the stated hypothesis. The technique was so adopted because it possesses the BLUE properties as proved by Gauss Makov.

Unit Root Test

The stationary test (unit root test), was carried out first using the Augmented Dickey Fuller (ADF) test on each variable to test for stationarity and avoid spurious regression as suggested by Yule G. U in 1926. In the variables are found to be non-stationary, the co-integration test which is a pretest to spurious regression will be carried out. The Johansen co-integration test will be used to test for the long run relationship between the variables. Furthermore the Augmented Engel granger test was carried out to ensure that the model is fit for use in analyzing the relationship that exist between the variables in use during the period. This test becomes imperative so as to prove the direction of influence between these variables, as econometrician Edward Leamer puts it, which of the variables takes precedence.

Stationarity Model

Before the data for the variables are tested, we need to test for the stationarity of the model. To test for stationarity, the unit root method was used to correct for autocorrelation in the error term, the ADF unit root test was applied. The null hypothesis to be tested is such that the variable possess unit root, and as such is non-stationary. The decision rule was such that if the absolute ADF statistic is greater than the absolute critical values, the null hypothesis was rejected.

Co-integration Equation

In the case of non-stationarity of any variable, the Johansen Co-integration test will be carried out. To further check for co-integration, the Augmented Engel- Granger (AEG) co-integration test will be carried out, such that a unit root test was carried out on the residuals of the regressed equation i.e. $\mu_t = \mu_{t-1} + \epsilon_t$. Such that generated error series is stationary at a level i.e. $I(0)$ for variables to be cointegrated. The null hypothesis for the Johansen's co-integration test is such that there is no co-integration equation; while that of the AEG test is such that the error series possess unit root, and is thus not co-integrated.

4.0 DATA PRESENTATION, ANALYSIS AND INTERPRETATION OF RESULTS

4.1 Data Presentation

The data presented here shows the variables used for this study on yearly basis from 1980 to 2023. GDP represents gross domestic product; UNEMP represents unemployment rate; and POP represents population growth rate. All results discussed in this chapter are computed using E-views 9.0 statistical package. Data used is presented in the appendix.

4.1.1 Descriptive Statistics of Data

Table 4.1.1: Descriptive Statistics

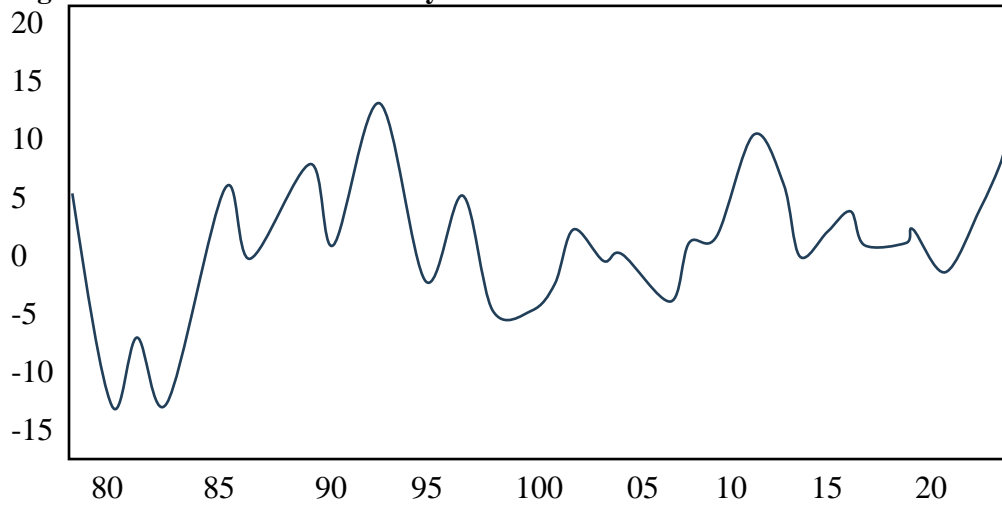
	GDP	UNEMP	POP	GOVE
Mean	3.248749	8.747500	1.27E+08	9.6565
Median	4.217446	6.250000	1.21E+08	10.7723
Maximum	15.32916	23.10000	2.01E+08	11.5467
Minimum	-13.12788	1.800000	73423633	12.6678
Std. Dev.	5.405315	6.010887	38768326	13.6763
Skewness	-0.927429	0.859774	0.402453	15.2456
Kurtosis	4.791445	2.795635	1.975685	17.9234
Jarque-Bera	11.08296	4.997684	2.828492	16.2290
Probability	0.003921	0.082180	0.243109	0.3783
Sum	129.9500	349.9000	5.09E+09	108.100
Sum Sq.				
Dev.	1139.480	1409.100	5.86E+16	1034.23
Observations	43	43	43	

Source: Computed Output (E-View 9) 2024.

The descriptive statistics which generally investigate the features of the data include; the mean, median, maximum, minimum, standard deviation, skewness, kurtosis, Jarque-Bera, probability as well as number of observations for each variable. The deviations from the averages of these magnitudes indicate that the gross domestic product growth of Nigeria is not stagnant, but varies year in year out—also, the same for the unemployment rate and population growth rate.

4.1.2 Trend Analysis

Figure 4.1.2.1: GDP Trends Analysis



Source: Computed Output (E-View 9)

Figure 4.1.2.2: UNEMP Trend Analysis

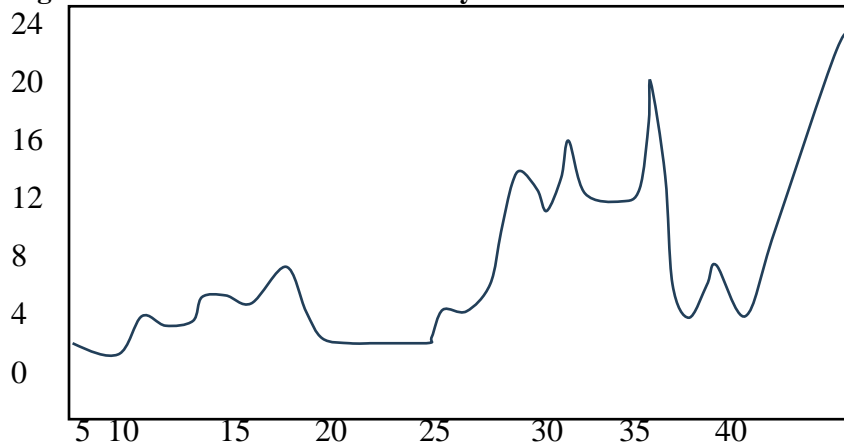
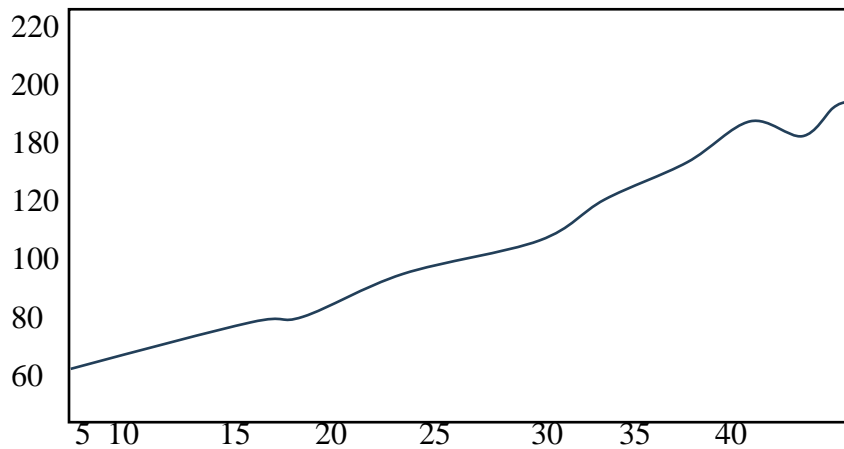
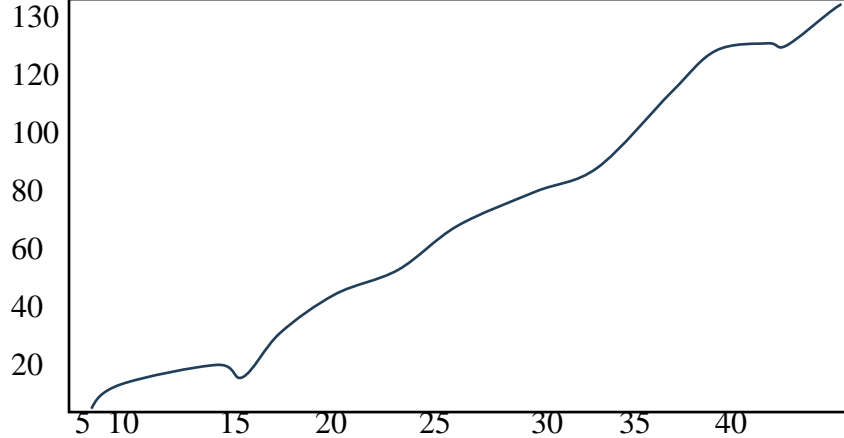


Figure 4.1.2.3: POP Trends Analysis



Source: Computed Output (E-View 9)

Figure 4.1.2.4: GOVE Trends Analysis



Source: Computed Output (E-View 9)

The graphs above show the difference data. Stationarity was achieved by differencing the data and this is confirmed by the result of the Augmented Dickey- Fuller Test given the p-value below, which is statistically significant at all levels.

The differencing was done to remove the trend component of the data. The observation now moves irregularly but reverts to its mean value and having a constant variance.

4.2.1 Stationarity Result

Table 4.2.1: Unit Root Stationarity Result

Variables	ADF Statistics	Critical Value	P-Value	Order of Integration
D(GDP)	-3.5334	-3.6210 (1%)	0.0125	I(0)
		-2.9434 (5%)		
		-2.6103 (10%)		
D(UNEMP)	-6.2778	-3.6156 (1%)	0.0000	I(1)
		-2.9411 (5%)		
		-2.6091 (10%)		
D(POP)	-4.7921	-3.6156 (1%)	0.0004	I(1)
		-2.9411 (5%)		
		-2.6091 (10%)		
D(GOVE)	-3.4567	3.2346 (1%)	0.0003	I(1)
		-2.5311 (5%)		
		-3.5091 (10%)		

Source: Computed Output (E-View 9) 2024.

The four variables (GDP, UNEMP, POP and GOVE) went through a unit root test and only GDP was found to be stationary at levels while UNEMP, POP and GOVE were stationary at first difference. This shows that there was constant mean, variance and co-variance of the variables. The result of the Augmented Dickey-fuller test shows that the variables were stationary at level and first difference because the p-value for the variables were between 1% and 5% level of significant.

4.2.2 Co-integration Test

Table 4.2.2: Co-integrating Trace Statistics for all Variables

Hypothesized No. of Co- integrated Equation(s)	Eigen Value	Trace Statistics	5 percent Critical Value	Probability Value **
None *	0.393700	30.63828	29.79707	0.0399
At most 1	0.168932	11.62385	15.49471	0.1759
At most 2 *	0.113830	4.592180	3.841460	0.0321

Source: Coumputed Output (E-View 9)

Note: Maximum Eigen test indicates 4 cointegrating eqn at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

Table 4.2.3: Co-integrating Maximum Eigen Statistics for all Variables

Hypothesized No. of Co-integrated Equation(s)	Eigen Value	Maximum Eigen Statistics	5 percent Critical Value	Probability Value **
None	0.393700	19.01443	21.13162	0.0964
At most 1	0.168932	7.031671	14.26460	0.4854
At most 2 *	0.113830	4.592180	3.841466	0.0321

Source: Coumputed Output (E-View 9) 2024.

Note: Maximum Eigen test indicates 4 cointegrating eqn at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

** MacKinnon-Haug-Michelis (1999) p-values

From table 4.2.2 and 4.2.3 above, it was observed the trace test statistics indicated two cointegrating equation while maximum eigen test statistics indicated one cointegrating equation at the 5% level of significance. Based on this evidence, we can safely reject the null hypotheses of cointegrating vectors and accept the alternative hypotheses the absence of cointegrating vectors among all variables in the specified error correction model. This implies that a long-run relationship exist among variable of the study and they were co-integrated.

4.2.3 Error Correction Estimates

Model: $AGDP_t = \beta_0 + \sum_{i=1}^p \beta_i \Delta UNEMP_{t-i} + \sum_{i=1}^p \beta_{2i} \Delta POP_{t-i} + \lambda_3 ECT_{t-1} + \epsilon_{1t}$ **Dependent Variable:**

Gross Domestic Product

Variable	Co-efficient	T-statistic
GDP(-1)	-0.1128	-0.8918
UNEMP(-1)	-0.0719	-0.4332
POP(-1)	-0.00004	-0.9048
GOVE (-1)	-0.01214	-0.0827
ECMt-1	-0.1148	-1.8621

Source: Computed Output (E-View 9)

R2 = 0.1929

Adj. R2 = 0.0314

Sum of Error Regression = 3.357748

F-Statistic = 1.194757

The ECM coefficient measures the speed of with which the economy converges to equilibrium in the long-run. The results showed that the coefficient of the error correcting term -0.1147, which is properly signed and statistically significant at 5% level of significant. The negative sign of the error correction term indicates that the adjustment is in the right direction to restore the long-run equilibrium relationship

of variables under consideration. The magnitude of the coefficient of the error correction term (i.e. 0.1147) indicates that the speed of adjustment is quite higher with 11.5% of the disequilibrium is corrected annually.

The Error Correction Model (ECM) test the short-run relationship of the model. It shows that unemployment can be treated as a long-run forcing variable explaining economic growth. This relates to Akeju and Olanipekun's (2015) analysis of Nigeria's unemployment rate and economic expansion. The Johansen cointegration test and the Error Correction Model (ECM) were used to ascertain the short- and long-term correlations among the variables included in the study. The purpose of this study was to examine the validity of Okun's law in Nigeria and the relationship between the unemployment rate and economic growth. In the majority of sub-Saharan African nations, the unemployment rate has increased throughout the past ten years. Nigeria is experiencing a low employment rate and high population expansion. The Okun's law postulates that there is a negative correlation between the rate of unemployment and economic growth. Empirical results indicate that there is a relationship between Nigeria's economic growth and unemployment rate over the long term. To lower the high unemployment rate in the nation, budgetary measures must be implemented as well as efforts to attract foreign direct investment (FDI) must be increased. Obele (2019) looked into the impact of unemployment on Nigeria's economic growth in the same vain. This investigation was conducted in Nigeria from 1986 to 2008. The ordinary least squares method was used to examine the data. Additionally, the stationary test, co-integration test, and error correction model approaches were used in this study to assess the dynamic relationship between the dependent and independent (explanatory) variables. The Co-integration test result demonstrates the existence of a long-term link between growth and employed labor. This finding supports the theory that Nigeria's unemployment rate impedes economic progress; a one percent increase in the rate results in a roughly 11.56 percent decline in GDP. It was also shown that there is a negative correlation between growth and job openings.

4.3 Interpretation and Discussion of Results

In the previous part, data were presented, analyzed and interpreted. These were done so as to reliably and accurately validate our hypotheses, and measure the correctness of the parameter estimates as well as the suitability and fitness of the estimated equation models, all in an effort to solving the research problems and achieving the research objectives. The main objective of this research is to analyze the impact of unemployment on economic growth in Nigeria.

The Jarque-Bera statistic indicated that gross domestic product growth (DGDP), unemployment, population growth and government expenditure were normally distributed with the p-value (DGDP = 0.003921), (DUNEMP= 0.082180), (DPOP = 0.243109) and (DGOVE = 0.0003). The results show that all the variables are stationary. GDP is positioned as the dependent variable. In the long-run, both unemployment and population growth hurt GDP, *ceteris paribus*.

The previous period derivation from long-run equilibrium is corrected in the current period in an adjusted speed of 11.5%; a percentage change in UNEMP is associated with a 7% decrease in GDP in the short-run; a percentage change in POP is associated with a 0.0004% decrease in GDP in an average *ceteris paribus* in the short-run. Also, the coefficient of the population growth rate depicts a negative value that did not conform to a priori expectation, indicating a kind of inverse relationship between population growth rate and economic growth. The result shows that a percentage increase in population growth decreases GDP by 0.00004% and GOVE is negative and does not conform to a priori expectation.

All the variables in the short-run are not statistically significant with GDP in Nigeria in terms of the t-statistic but statistically significant in the long-run. From the results of the (VECM), R² of 0.192866 simply means 19.3% of the dependent variable is being explained by the independent variable GDP. This result conforms to 'a priori' expectation.

4.4 Policy Implications of Findings

The main implication of these findings is that, given its negative and negligible relationship with GDP, particularly over the long term, Nigeria's unemployment rate is critical to the country's economic growth. This allows for the understanding of economics. Given the negative correlation between unemployment

and GDP, an increase in the unemployment rate is likely to result in a loss of economic output relative to what the unemployed could have created in the event that they had found employment. Consequently, it can be inferred that unemployment is a phenomena that impacts the economy's overall performance. In this instance, reducing the unemployment rate should unquestionably be part of the policy prescription for raising GDP. Our results support Okun's theory, showing that a 1% increase in unemployment will cause a 7% decline in GDP due to the negative link.

There are indications that Nigerian government has in many ways established and initiated various policies and programmes that have helped to eradicate unemployment in the country, but in view of these initiatives like; National Directorate of Employment (NDE), National Economic Employment and Development Strategy (NEEDS), National Poverty Eradication Programme (NAPEP), amongst others, the objective of the initiated programmes and policies is yet to be realized owing to high level of corruption and nepotism in the country. Unemployment if not checked will continue to deprive Nigeria of actualizing her vision and this will raise the level of poverty, crime, violence, inflation, and above all reduce country's GDP.

5.0 CONCLUSION AND RECOMMENDATIONS

The study examined the Impact of Unemployment on sustainable development in Nigeria. The importance of strategic sustainable economic growth to the achievement of the SDGs cannot overemphasized. It is often said a development strategy that uses employment and decent work for all the implementation of the SDGs in Nigeria. We need to engage all stakeholders in productive and inclusive manner. The research engaged econometric tools to analyze the data sourced from CBN statistical bulletin and NBS annual abstract. This research has shown that there is a negative impact between the unemployment rate and economic growth in Nigeria. The study has established empirically, the bond between unemployment rate and economic growth. The findings of this research show a negative relationship between unemployment rate and gross domestic product, a negative relationship between population growth and gross domestic product. The coefficients are statistically insignificant at 5% level. The situation of unemployment in Nigeria has been an increasing rate which has resulted in an increase in social vices, brain drain increases in the level of poverty, terrorism, and weak purchasing power to mention but a few consequences that could be the reasons for the negative relationship between the unemployment rate and population growth. However, the Nigerian government in previous times had put in place policies and programs that are meant to curb this menace. There are a couple of things that contributed to not yielding to expected results. This includes maladministration, corruption, lack of continuity, poor funding, the study recommends the following: Government should promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all. Government should achieve higher levels of productive of economics through diversification, technological upgrading and innovation, including through a focus on high value added and labour intensive sectors. Government should promote development-oriented policies that support productive activities, decent job creation, entrepreneurship, creativity and innovation, and encourage formalization and growth of micro-small and medium sized enterprises including true access to financial services. Government should improve progressively through 2030 global resource efficiency in consumption and production, endeavor to decouple economic growth from environmental degradation in accordance with the 10-year framework of programs on sustainable consumption and production with developed countries taking the lead. And by 2030 to achieve full and productive employment and decent work for all women and men, including for young people and persons with disabilities, and equal pay for work of equal value.

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