Effects of Unemployment Rate on Economic Growth in Nigeria

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ABSTRACT
The study examined the effects of unemployment rate on economic growth of Nigeria from (1990-2022). The research focuses on determining the causes and effects of unemployment and how the problem of unemployment in Nigeria was reduced to a minimal level or even eradicated. It focuses on this objective: to determine the relationship between unemployment and economic growth in Nigeria (GDP).The method of analysis used in testing the hypothesis is the t-test, f-test e.t.c. Data for the study were obtained from the World Development Indicators Website for Nigeria.. The major findings were that unemployment rate has a negative effect on the gross domestic product (GDP) of the Nigerian economy. Therefore it was concluded that unemployment rate has negative effects on gross domestic product, government expenditure as well as gross fix capital formation amongst others in Nigeria. based on the results of the study, it was recommended that i. Labour intensive and production in other sectors should be encouraged because; production is more skewed to the oil sector. Better still employment should be created in other sectors of the economy and youth unemployment should also be tackled; these will address the issue of robbery, kidnapping and other social vices presently in the country. There should be concerted effort by the government to make the Nigeria currency more valuable, so as to encourage export especially non-oil export hence inclusive economic growth. This will moderate inflation rate in Nigeria, so that it will not discourage consumption hence economic growth.

INTRODUCTION

Background to the Study

Unemployment is generally seen as a macro-economic problem as well as socio-economic problem .Unemployment arises as a result of insufficient and non-availability of jobs to correspond with the growing population, even those who are employed sometimes live with the fear of being unemployed due to job insecurity and retrenchment of workers. There is employment of factors of production if they are engaged in production. The term unemployment could be used in relation to any of the factors of production which is idle and not being utilized properly for production. The international labour force organization (ILO) defines unemployment as the proportion of the labour force which was available for but did not work for at least one hour in the week preceding the survey period. National Bureau of statistics (N.B.S). Nigeria defines unemployment as the proportion of the labour force that is available for work but did not work for at least thirty nine (39) hours in the week preceding survey period.

Unemployment is an important issue in developing countries. The high rate of unemployment means that the country is not using the labor resource efficiently. Unemployment is the greatest economic problem because of its negative effect on the individual and the society and the speed of spreading in the world, such as the drug addiction and crime in many countries (Anbaraki and Ismaili (2020). The issue of unemployment in Jordan reached its highest level in 2019 (around 19%). It created a state of the economic recession caused by a decrease in demand for goods and services that led to a decrease in the production rate. The unemployment problem in Jordan is very serious, and it is mainly among the youth (15–24 years), 35% among males, and 40% among females. These drastic figures reflect unemployment among university graduates and school levers (International Labor Organization as cited in Hjazeen, Seraj and Ozdeser, 2021).

However, with reference to labour, there is unemployment if it is not possible to find jobs for all those who are eligible and able to work. Labour is said to be underemployed if it is working below capacity or not fully utilized in production (R.A.I Anyawuocha 2013). Unemployment can either be voluntary or involuntary. Voluntary in the sense that one chooses not to work because he or she has means of support other than employment. Example is an idle rich man. On the other hand, involuntary unemployment exist when persons who are eligible and willing to work at the prevailing rate of pay are unable to find work. (Anyanwa, 2015).

According to the central bank of Nigeria (2014), unemployment rose to 30% during 2014 statistics on unemployment rate. Unemployment has been seen as a world-wide economic problem and has been categorized as one of the serious impediments to social progress .Apart from representing a huge waste of a country's manpower resources, it generates welfare loss in terms of lower output thereby leading to lower income and well-being of the people (Akinboyo, 2017, and Raheem 2013). Unemployment is a very serious issue in Africa (Vandemortele, 2018, and Rama 2018), and particularly in Nigeria (Oladeyi, 2014 and Umo, 2016). The need to avert the negative effect of unemployment has made the tackling of unemployment problems to feature very prominently in the development objectives of many developing countries.

In the study of unemployment in Africa Okonkwo (2015) identified three (3) cause of unemployment, the educational system, the choice of technology which can either be labour intensive or capital intensive and inadequate attention to agriculture. The use of machines to replace work done by labour and computerization has contributed to these social problems in the sense that what for example forty (40) men can do manually a machine will only need like five (5) men. Therefore, the remaining thirty five (35) are unemployed.

The problem can also be attributed to the rate of population growth in Nigeria, which is not proportional to job opportunities, the situation in which birth rate is rising, death rate is between 2.5% to 3%, and unemployment is bound to exist. There had been also total neglect of the agricultural sector and consequent mass exodus of able bodies youths move from the rural to urban areas in search of the non-existing white-collar-job, this further reduces unemployment and put pressure on the existing urban jobs (Agbaje, Lawal, Adebayo 2013).

It is commonly accepted that economic growth is good for both industrialized and non-industrialized countries as it tend to reduce poverty and income inequalities (World Bank 2015, Fofana 2018). The stylized fact available in Nigeria, Iwayemi (2016) point of vivid picture of the unemployment according to the international labour organization (ILO), is among the biggest social threats to social societies in many countries (including Nigeria), putting the global rate at

12.6% (ILO, 2022). When compared with her counterparts in the continent, Negeria's unemployment crisis is more serious, for instance, South Africa's unemployment rates 25.2% and Ghana about 14% in 2010, while Nigeria is around 37% (ILO 2014).

Asoluka (2019) explained that the Keynesians revolution of 1930's which commanded that explosive attack on economic orthodoxy apparently treated unemployment as the central issue of great concern. Following the predecessors, economist at all time and in all ages have expressed various degrees of concern over the threat of the monster called unemployment.

A lack of balanced demographic transition according to Ayoyinka (2018) is one amongst the causes of unfavorable employment situation. Nigeria demographic trend is characterized by rapid population growth rate (an average annual rate of about 3% and one of the fastest in the world); a population structure that is highly skewed towards young people, resulting in high dependency ratio (a factor that exert immerse sliold financial resources, thereby deepening the poverty gap) and high urbanization (NBS 2016).

The relationship between economic growth and unemployment shows that there is a high correlation between the economic growth rate and the decrease in unemployment rates. An increase in the growth rate increases the employment rate or decreases the unemployment rate. The relationship between economic growth and unemployment has been studied experimentally in the economic literature based on what is known as the Okun law, which shows that there is an inversely proportional relationship between the change in the growth rate (GDP) and the change in the unemployment rate. Okun in Hjazeen Seraj and Ozdeser (2021) has succeeded to show that there is a reciprocal correlation between unemployment and economic growth. He found that if unemployment decreased by (1%), then this would be due to an increase in real gross domestic product (RGDP) by (3%) and vice versa, and when an increase in the RGDP occurs, an increase in employment is achieved.

It has been observed that there is an application of supply and demand theory that can be applied in this case. Similarly, the Keynesian Economics theory is also presented by Eichengreen (2020) that applied different factors of macroeconomics to understand the aspects of economics and the methods of employment. As referred to the study of Efrianti, Marwa , Tarmizi and Yuliana (2018),, there are different statements and arguments provided by the authors regarding to the impact and relationship of employment and economic growth that have supported the different aspects of employment and economic growth. Based on the assessment of Soylu in in Hjazeen Seraj and Ozdeser (2021) and Efrianti, Marwa , Tarmizi and Yuliana (2018), it has been highlighted that the increasing economic growth in any country brings a huge increase in the GDP and labor productivity that can be effective for creating the opportunities for employment in the country. Similarly, Chand, Tiwari and Phuyal (2017) have also supported the fact that the increasing economy can contribute toward the rapid growth of labor force and will ultimately decrease the rate of unemployment in the country. On the other hand, Mihajlović (2020) has presented the arguments that the absence of productivity in any country can also result in failing economy in the country and may also give rise to unemployment in this regard. The government and the policy makers have designed different methods that can contribute toward the increasing rate of employment and can provide better quality of life and standard of living to the people based on Al-Sawaiea (2020). Therefore, it can be stated that the countries might get better means of economic growth that can support the common people in terms of getting the employment

opportunities and contributing toward the overall progress and profitability of the country. However, there is one reason that can cause unemployment not to be related to the economic factors that include the company's recession period and jobs are not utilized in an effective manner and it causes the demand of products to be affected (Folawewo & Adeboje, 2017).

Economic growth is the main goal of the governments that is an indicator of welfare, quality of living standard, and reduction in poverty. Some studies have empirically examined the linkage between economic growth and unemployment by implementing Okun's law. Al-Habees in Hjazeen Seraj and Ozdeser (2021) studied the linkage between unemployment and the economic growth in some Arab countries, and focused on Jordan as the main case study, by adopting a simple model of Okun law. The results showed a significant correlation exists between growth and changing rates of unemployment and revealed the efficiency of the economic policies strive to reduce the unemployment rate with a balanced rate of economic growth. At this point there is sufficient ground to examine the effect of unemployment on economic growth in Nigeria examining the trend, dating back when they neglect of agricultural sector started during the 1970s.

REVIEW OF RELATED LITERATURE

The chapter reviewed related literature under the following headings: Theoretical Review, Conceptual Review, Review of Related Empirical Studies and Summary of literature Review

Theoretical Framework

This study will be guided by the Solow growth theory and the search theory of unemployment.

The Solow Growth Theory

In the mid- 1950s, economist Robert Solow introduced a new model of economic growth that represent an important step forward from the Harod-Domar framework. Solow recognized the problems that arose from the rigid production function in the Harod-Momar model, which did not allow for substitution between the factors of production. Solow's answer to drop fixed coefficients production function and replace it with a neoclassic production function that allows for more flexibility and substitution (Perkin 2018).

In effect, in the Solow's model, the capital –output and capital labour ratios are no longer fixed but vary depending on the relative endowment of capital and labour in the economy and the production process. The Solow's model is understood easily by expressing all the key variables in per-work terms. To do so, we divided both sides of the production function by L so that it takes the form. The equation shows that output per workers is a function of capital per worker. If we use notation in which small case letters represents quantities in per-workers term then y is output per-worker (that is y=) and the k is capital per-worker (k =). This gives us the first equation of the Solow model which the production function can be written simply as: y = f (k)

The Solow's model assumes a production function with the familiar property of diminishing returns to capital with fixed labour, giving workers an initial machinery to work which result the large gains in output. But as the same are giving more and more machinery, the addition to output from each new machine gets smaller and smaller. The second key equation of the model focuses on the determination of changes of capital per worker. It shows that capital accumulated depend on saving per worker. It states that the change in capital per worker ( ) is determined by these three factors. Dk is positively related to saving (investment) per worker. Since is the saving and y is income per worker, the term sY is equal to saving per worker. Dk is negative related to population growth by the term nk. Each year, because of growth in the population and labour force,

there are nL new workers. Depreciation erodes the capital stock. Each year, the amount per capital for worker will be the amount dk simple because of depreciation. Therefore saving (and investment) adds to capital per worker while labour force growth and depreciation reduce capital per worker. However, it was criticized on the ground that he ignored the problem of reducing technical progress through the process of learning, investment in research and capital accumulation. This led to the new endogenous growth theory which was developed in reaction to omission in the Solow's neoclassic model.

The Search Theory of Unemployment

This theory was put forth by Terry (2018) who believes that workers have different skills requirements. Hence, workers need to find well-paying, desirable jobs, while firms need to find the most productive workers. According to Terry (2018) neither firms nor workers have all the information they need about the options available to them as a result, they must engage in search since, search is costly and time consuming hence; both firms and workers must use some of their resources to find a good match.

On the part of workers, it is assumed that they only search when they are unemployed. Hence, they are faced with an uncertain environment as firm do on their part. When a worker gets a job wage offer, for instance, he/she must decide whether to accept it or continue searching for a better offer because accepting such offer means foregoing the chance of a higher wage offer later; while continuing the search means losing the wages he/she would have earned if she had accepted the offer and started working. The wage at which the worker is indifferent between continuing the search and accepting the current job is called the reservation wage as a result the workers accept all job offers above the wage and turn down all offers below it.

Sequel to the above when a search is successful, that is when there is a match between the needs of the workers and the firm. The worker leaves unemployment. Hence, the theory pinpointed that, the wage offered by the firm is directly related to the workers' productivity all things being equal. .Suppose, that there is an economy-wide increase in productivity that workers are not aware of. Then, there is the tendency that such higher productivity can make it more attractive for the firm to increase employment by allowing it to do so by increasing the wage it offers to workers. This in turn increases the likelihood that the average worker will find an acceptable job offer and reduces the time she is likely to spend searching. Thus, the unemployment rate will decline in response to the increase in productivity.

Furthermore, the search theory of unemployment is a way in which improvement in technology could have a long lasting effect on the rate of unemployment if it leads to permanent increase in the rate at which searching firms and workers find the right match. The foregoing further buttressed the study of Gomme (2018)which suggested that the internet has made this possible because firms now routinely post vacancies on the internet, so that workers can look for jobs in multiple locations at almost no cost.

Conceptual Framework

Economic Growth

As normally defined, this concept can be seen as the increase in a country's productive capacity as measured by comparing Gross Domestic Product (GDP) in a year with the GDP of previous year, when the current year GDP is higher than the previous year, we say that some level of economic growth has been attained. Ashley (2013), sees economic growth as a country's general

economic health which can be measured by looking at the country's Gross Domestic Product (GDP); generally speaking, gross domestic product is an economic model that reflects the value of a country's output. In other words, a country's GDP is total monetary value of goods and services produced by that country over a specific period of time. It can be viewed as the capacity of or increase in capacity of an economy to produce goods and services compared from one period of time to another and this can be measured in norminal terms or real terms (Kemi and Dayo 2014) Samuelson and Nirdhaeus (2010), Economic growth refers to the process by which economies regulates larger quantities of capital equipment, push out the frontiers of technological knowledge, and become steadily more productive. From a concise encyclopedia of economics, economic growth occurs whenever people take resources and rearrange them in ways that are more valuable. It is seen as an increase in the capacity of an economy to produce goods and services compared from period of time to another. Economic growth can be measured in norminal terms, which include inflation or in real in terms, which are adjusted for inflation.

Unemployment

Unemployment is generally seen as an economic condition marked by facts that individuals actively seeking for jobs remain unhired. Balogun (2013), defined unemployment as the percentage of labour force that is without jobs but is able and willing to work, i.e, unemployment includes ability and willingness to work. The Keynesian economic see unemployment as a situation in which the number of people able and willing to work at a prevailing wage exceeds the number of jobs available and at the time, firms are unable to sell all the goods they will like to sell. Hyman (2019); defined unemployed as a situation where by a person who is actively searching for employment is often used as a measure of the health of the economy. The most cited measure of unemployment is the unemployment rate. From a concise encyclopedia of economics, economic growth occurs whenever people take resources and rearrange them in ways that are more valuable. It is seen as an increase in the capacity of an economy to produce goods and services compared from one period of time to another. Economics growth can be measured in nominal terms, which include inflation or in real terms, which are adjusted for inflation. Jhingan (2017); one of the most important objective of macroeconomic policies in recent years has been the rapid growth of an economy. Economic growth is defined as "the process whereby the real per-capital income of a country increases over a long period of time". Economic growth is measured by the increase in the amount of goods and services produced in a country. Quoted by Danjos and Yusufu (2014), let us now look at some types of unemployment an economy can face according to Ojo (2018).

Empirical Review

Durosinmi (2022) investigated on the impact of unemployment on economic growth in Nigeria for 41 years period (1970 – 2010). The researcher focused on determining the causes and impact of unemployment and how the problem of unemployment In Nigeria will be reduce to a minimal level or even eradicated. The method used for analysis is the OLS and in testing the hypothesis is the T-test, F –test. The major finding in his research was that unemployment has a negative impact on the Gross Domestic Product (GDP) of Nigeria.

Funlayo (2022) investigated the impact economic growth in Nigeria had on employment generation. The Johnson vector-Error correlation model was used in the investigation and it was found out that although economic growth has positive relationship with employment, the

relationship in not sufficient. Foreign private investment has negative impact while public expenditures has positive and significant impact on employment, it was concluded that the growth in Nigeria, in some ways, can support employment if government gears expenditure towards areas like labour intensive industry that can create more employment.

Hjazeen, Seraj and Ozdeser (2021) investigated the nexus between the economic growth and unemployment in Jordan. The main objective of this study is to investigate the impact of unemployment on Jordan's economy over the period 1991–2019. This study used the auto-regressive distributed lag (ARDL) model to investigate the relationship between the unemployment rate and the other variables. Also, we employ the ARDL bootstrap cointegration approach to examine the correlation and long-run relationship among the variables. The empirical finding indicated a long-run relationship between the unemployment rate, economic growth, education, female population, and urban population in Jordan. Our finding shows the negative linkage between economic growth and unemployment, and a positive relationship among the education, female population, and urban population and unemployment in Jordan.

Hull (2019), in her investigation of the relationship between economic growth, employment, and poverty reduction, identifies sectors as 'more productive' and 'less productive', such that growth in a sector will not directly lead to general benefits to all sectors of the economy. This highlights the relevance of the productivity intensity of sectors as a tool for profiling growth.

Walterskirchen (2019) analysed the link between economic growth and the labour market. He found that the relationship between GDP growth and change in unemployment is divided into two components viz: those changes in employment and unemployment rates governed by economic factors as well as those governed by demographic influences and labour market policies. He employed time series analysis for individual EU country, while for all the countries he employed the use of panel data. The finding of the study showed a strong positive correlation between GDP growth and change in the level of employment.

Ayoyinka (2018) investigated on the employment rate and economic growth in Nigeria. Amid the rising growth rate and increase in output, unemployment has been pervasive in the Nigeria economy. There is invidence in this in Sweden, Vietnam and cote d'voire. He set out to ascertain the occurrence of this phenomenon in the Nigeria economy, specifically investigated those factors determining the level of employment and employment growth in Nigeria with a view towards estimating the employment elasticity of economic growth for the period of 2012-2016. A simple model of employment and employment growth was formulated using the ordinary least square (OLS) technique before and after correcting for stationary and time series data which he used Hodrick-Prescott filter using Eviews Quantitative Software Package for his descriptive and econometric analysis, he found out a negative and significant relationship was observed between Employment growth rate and growth rate of GDP in the economy.

Geidenhuys and Marinkov (2017) tried to give answer to the question of unemployment responds to changes in output in South Africa. For this reason, they estimated the relationship between economic activity a unemployment rate. The results indicated the presence of an Okun's law relationship in South Africa over the period 1970 -2015 with more evidence in favour of asymmetries during recessions.

Knotek (2017) also estimated Okun's law using its difference, effects on unemployment rate by current output, past output level, past unemployment rate and analyzed that slowdown in economy coincided with increase in unemployment rate is not always the case in both short long run.

Swane and Vistrand (2016) examined the GDP-employment growth relationship in Sweden. Using the employment-population ratio as a measure of the extent of employment generation, the study found a significant and positive relationship between GDP and employment growth. This finding supports the strand of theory suggesting that the positive relationship between GDP and employment is normal and that any observed jobless growth might just be a temporary deviation.

Summary of Review of Related Literature

The section of the study provided a comprehensive review of related literature under various headings. Firstly, the theoretical review examines key economic theories that will guide the study. These include the Solow growth theory, the search theory of unemployment. The Solow growth theory will serve as a foundation for understanding the relationship between unemployment and economic growth in Nigeria. It explores the factors that contribute to long-term economic growth, such as technological progress, capital accumulation, and labor market dynamics.

The search theory of unemployment focuses on the frictions and inefficiencies in the labor market that result in unemployment. It emphasizes the process of job search by individuals and the matching of workers with available job vacancies. In addition to the theoretical frameworks, the chapter also includes a conceptual review, which clarifies the key concepts and terms used in the study. Furthermore, a review of related empirical studies provides an overview of previous research conducted in the field, highlighting the methodologies, findings, and gaps in existing literature. Finally, the chapter concludes with a summary of the literature review, synthesizing the key insights and establishing the foundation for the subsequent analysis of the effect of rising unemployment on economic growth in Nigeria.

Researchers over the years have been analyzing unemployment rate and its effect on economic growth using data that are not up to date; from the empirical review, Durosinmi (2022) investigated on the impact of unemployment on economic growth in Nigeria (1970 to 2010). Thus, research work is attempting to examine the rising unemployment rate especially after the adoption of structural adjustment programme with several economic reforms with the expectation of triggering economic activities and the period to be covered is 1990-2022. Having reviewed empirics, it is seen that foreign direct investment, exchange and gross fixed capital formation has always been left out the in their model specification, thus, having the knowledge of how adverse the effect can be on GDP, it is on this grounds that they are incorporated into the model along with other independent variables.

METHODOLOGY

This manuscript employed quasi-experimental research design approach adopted from the work of Hanan N (2015) and Vector Error Correction Model (VECM) technique for the data analysis. Data for this study were the annual panel ranging from 1990 through 2021. The variables include Gross Domestic Product (GDP), Unemployment rate (UNEMP), Government Expenditure (GEXP) and Money Supply (MS). This was because the data required mainly secondary data on variables were all sourced from the World development indicators (WDI).

The type of research design in this research work is the "casual comparative research design". A casual comparative research design is a research design that seeks to find relationships between independent variables after an action or event has already occurred. The researcher goal is to determine whether the independent variable(s) affected the outcome, or dependent variable, by comparing two or more groups of individuals (Ernest and Kubn 2013). Thus, since the research work is basically to study the effect, relationship and trend of unemployment and economic growth, the casual-comparative research design is employed to ascertain the effect of rising unemployment rate on economic growth in Nigeria.

Model Specification

The model employed in this study was adapted from the empirical framework of Durosinmi (2022). The researcher employed the OLS to examine whether or not unemployment has an impact on economic growth, thus, he set out to investigate whether there is a linear relationship between unemployment and economic growth. His variables are GDP (which is a proxy for economic growth), unemployment rate, government expenditure and money supply. We are incorporating three new variables in the model and removing money supply. This is because this research work is attempting a more broader investigation by including foreign direct investment, exchange rate and gross fixed capital formation in the model. His model is specified as follows:

GDP = F(UNEMP, GEXP, MS)

Where;

GDP = Gross Domestic Product

UNEMP = Unemployment rate

GEXP = Government Expenditure

MS = Money Supply.

However, with the modification, our new model for this research work was specified as follows:

GDP = F(UMPL, FDI, GEXP, EXR, GFCF)

Where;

GDP = Gross Domestic Product (growth rate)

UMPL = Unemployment rate

GEXP = Growth rate of government expenditure

EXR = Exchange Rate

GFCF = Gross Fixed Capital Formation

U_t = Error Term

The following represents the Mathematical form is

$GDP = b_0 + b_1UMPL + b_2FDI + b_3GEXP + b_4EXR + b_5GFCF + U_t$ --------3.4

Representing this relationship in a functional VAR framework;

$$GDP_{-1} = \beta_0 + \beta_1 UMPL_{-1} + \beta_2 FDI_{-1} + \beta_3 GEXP_{-1} + \beta_4 EXR_{-1} + \beta_5 GFCF_{-1} + U_1 ------eqn.3.5$$

$$UMPL_{-1} = \beta_0 + \beta_1 GDP_{-1} + \beta_2 FDI_{-1} + \beta_3 GEXP_{-1} + \beta_4 EXR_{-1} + \beta_5 GFCF_{-1} + U_1 ------eqn.3.6$$

$$FDI_{-1} = \beta_0 + \beta_1 UMPL_{-1} + \beta_2 GDP_{-1} + \beta_3 GEXP_{-1} + \beta_4 EXR_{-1} + \beta_5 GFCF_{-1} + U_1 ------eqn.3.7$$

$$GEXP_{-1} = \beta_0 + \beta_1 UMPL_{-1} + \beta_2 FDI_{-1} + \beta_3 GDP_{-1} + \beta_4 EXR_{-1} + \beta_5 GFCF_{-1} + U_1 ------eqn.3.8$$

$$EXR_{-1} = \beta_0 + \beta_1 UMPL_{-1} + \beta_2 FDI_{-1} + \beta_3 GEXP_{-1} + \beta_4 EXR_{-1} + \beta_5 GFCF_{-1} + U_1 ------eqn.3.9$$

$$GFCF_{-1} = \beta_0 + \beta_1 UMPL_{-1} + \beta_2 FDI_{-1} + \beta_3 GEXP_{-1} + \beta_4 EXR_{-1} + \beta_5 GDP_{-1} + U_1 ------eqn.3.10$$

β = Intercept of the Regression equation
$\beta_1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6$ = Regression Coefficients
The use of VAR in this study in achieving objective three lies in the predictive and forecasting power especially that it is one of the most flexible method of analysis because it has more efficient coefficient estimates and tool for authenticating results.
The Vector Error Correction Model is given as:

$$\Delta GDP_{t-1} = \beta_0 + \beta_1 \Delta UMPL_{t-1} + \beta_2 \Delta FDI_{t-1} + \beta_3 \Delta GEXP_{t-1} + \beta_4 \Delta EXR_{t-1} + \beta_5 \Delta GFCF_{t-1} + ECM_{t-1} + \nu_{t-1} ----------eqn.3.11$$

Given the use of time series data for the analysis of this study, diagnostic test will be carried out; these include stationarity test, co-integration test and error correction model.

Data Analysis Technique

In this research work, the data covered a period of 32 years (1990-2022). The main tool of analysis is the Johansen Cointegration Test and Vector Error Correctiion Method under the VAR framework. To avoid the misleading characteristics of time series data which in most cases exhibit non-stationarity analysis, this study examined the time series characteristics of the variables under investigation using the Augumented Dickey Fuller (ADF) test. The combination of two or more non-stationary variables could however be stationary if these series share some common long-run equilibrium relationship. Data were analyzed using the E-views statistical package.

DATA PRESENTATION, INTERPRETATION AND ANALYSIS OF RESULTS

4.1.1 Descriptive Analysis

Table 4.2: Descriptive Statistics

	GDP	UMPL	FDI	GEXP	EXR	GFCF
Mean	37209.18	11.30768	368.3017	1530.358	37.32342	1028.065
Median	6313.601	09.30101	116.4010	743.3010	102.1101	331.1010
Maximum	73865.10	72.01010	1360.401	5185.301	111.0701	4009.701
Minimum	134.6010	1.701010	0.401010	13.01010	0.870101	8.801010
Std. Dev.	30405.71	3.618737	431.6171	1345.076	63.47705	0967.134
Skewness	1.537716	0.360104	0.772221	0.861763	-0.051402	1.098115
Kurtosis	3.723506	1.323673	2.463377	2.213533	1.222683	2.737283
Jarque-Bera	13.36311	2.360508	4.337747	4.630554	4.073840	6.581377
Probability	0.010954	0.251515	0.071632	0.078388	0.130132	0.033231
Sum	116533.3	350.6010	11430.36	48681.10	7231.550	31830.01
Sum Sq. Dev.	2.57E+10	1341.443	5588852.	71360353	137763.7	48372053
Observations	32	32	32	32	32	32

Source: Source: Authors' Computation from Eviews 7.0, November, 2023
From the table above, 32 observations were used in the work (1990-2022). The gross domestic product (GDP) has a mean value of 37209.2 and median of 6313.6 the table shows that the

maximum and minimum values for the year studies were 73865.1 billion and 134.6 billion respectively, UMPL revealed a mean value of 11.3% and the middle value was 09.3%, also the maximum and the minimum values for UMPL were 72.0% and 1.7% respectively. FDI has an average value of 368.3 and a middle value of 116.4, while the maximum and minimum values were 1360 and 0.40 respectively. GEXP has an average value of 1530.3 with a middle value of 743.3 and maximum and minimum values 5185.3 and 13.0 respectively. EXR has a mean value of 37.3% with media of 102.1%, while the maximum and minimum values were 111.0% and 0.87% respectively. The coefficient of GFCF has a mean value of 1028.1 with media of 331.1 while the maximum and minimum values were 4009.7 and 8.8 respectively in Nigeria for the years studied.

The Jarque-Bera (JB) test of normality is conducted to determine if the data being analysed using OLS technique conforms to the conditions of normality that is, having a mean of 0 and a constant variance. The JB test of normality is based on OLS residuals – using skewness and kurtosis (under normality, S = 0 and K =3). It is used to determine the joint hypothesis that S and K are 0 and 3 respectively. Skewness is the measure of asymmetry of a probability distribution about its mean while kurtosis is the measure of tallness or flatness of the slope.

If K < 3, then it is platykurtic (flat or short tailed); if K > 3, then it is leptokurtic (slim or long tailed) and if K = 3, then it is mesokurtic (normal distribution). Hence, from the table above: UMPL, FDI, GEXP EXR and GFCF are negatively skewed and platykurtic while only GDP is positively skewed and leptokurtic. This shows that the nominal data have violated the normality assumption of OLS. This is further substantiated by the probability values of the statistics, which have reported above 5% level of significance. The researcher therefore, further converted the respective data into a log form for empirical estimation of the time series which set the basis for further tests.

Table 4.2.1: Unit Root Test

Variable	ADF Test Statistic at Level	ADF Test Statistic at 1st Diff	1% Critical Value	5% Critical Value	10% Critical Value	Prob.	Order of Integration
GDP	-1.15	-5.63	-3.63	-2.76	-2.11	0.0101	I(1)
UMPL	-0.53	-6.48	-3.11	-2.76	-2.11	0.0101	I(1)
FDI	0.55	-3.87	-3.63	-2.76	-2.11	0.0101	I(1)
GEXP	-2.03	-3.82	-3.67	-2.73	-2.11	0.0111	I(1)
EXR	-0.52	-5.17	-3.63	-2.76	-2.11	0.0102	I(1)
GFCF	-2.05	-3.33	-3.67	-2.73	-2.11	0.0138	I(1)

Source: Source: Authors' Computation from Eviews 7.0, November, 2023

In executing the tests captured in the table above, it is assumed that the series of the various variables possess an intercept but no trend. The result of the ADF tests shows that all the series were stationary at first difference. This follows the verity that their probability values were all less than 5%. As such, the variables are set for Johansen co-integration analysis.

Johansen Cointegration Analysis

Having substantiated that all the variables in our model are non-level stationary from the ADF tests, we proceed to present the result of the Johansen Cointegration test. The choice for this method lies in the fact that the variables are stationary of the same order (first difference). The cointegration test for our model was based on the assumption of a linear deterministic trend in the

data. Also the assumption which allows for intercept but no trend in cointegration equation was used. The result is presented below:

The VAR model is used to estimate the long run and short run dynamics of the data series. The Johansen Cointegration and the Vector Error Correction Method are used as augmenting analysis. The Johansen cointegration is analysed via the Trace statistic and Maximum Eigen value. The decision rule is that if either is greater than the 5% critical value, we reject the null hypothesis of no cointegration among the variables. Their respective results are shown below.

Table 4.2.3: Cointegration Test

Null Hypothesis	Trace Statistic	0.05 Critical Value	Null Hypothesis	Max-Eigen Statistic	0.05 Critical Value
r = 0*	151.25	75.35	r = 0*	57.06	40.03
r ≤ 1*	72.18	67.81	r ≤ 1*	35.23	33.83
r ≤ 2*	56.70	43.85	r ≤ 2*	28.88	23.58
r ≤ 3	28.02	30.37	r ≤ 3	13.17	21.13
r ≤ 4	10.82	15.47	r ≤ 4	6.74	14.26
R≤ 5	3.83	3.84	r ≤ 5	3.83	3.84

Source: Authors' Computation from Eviews 7.0, November, 2023

Note: r represents number of cointegrating vectors. Trace statistic and Max-Eigen statistic indicates 3 and 3 cointegrating equations each. * denotes rejection of the hypothesis at the 0.05 level

Table 2 revealed that there is co-integration among the variables. This is because the Trace and Max-Eigen Statistic of 73.16, 52.33 and 40.83 is greater than the critical values of 67.81, 43.86 and 33.83 at 5% level of significance respectively. We reject the null hypothesis of none* of the hypothesized number of co-integrating equations. Accordingly, Trace and Max-Eigen statistic test indicates 2 and 1 co-integrating equation at 5 percent level of significance. For the remaining number of hypothesized co-integrating Equation, we do not reject the null hypotheses as their trace and Max-Eigen statistic values are less than the critical values at 5 percent level of significance.

Vector Error Correction Model

The vector error correction (VEC) model is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. The VEC has cointegration relations built into the specification so that it restricts the long run behaviour of the endogenous variables to converge to their cointegrating relationships while allowing for short-run adjustment dynamics. The cointegration term (known as the error correction term) corrects gradually the deviation from long-run equilibrium through a series of partial short-run adjustments. The error correction model is given as:

Table 4.2.4: Vector Error Correction Model

Variable	Coefficient	Standard Error	T statistics
ECM	-0.58	0.72	-2.44
D(GDP(-2))	0.03	0.21	3.23
D(UMPL(-2))	0.55	0.05	2.65
D(FDI(-2))	0.22	0.07	1.83

D(GEXP(-2))	-0.48	0.32	-2.34
D(EXR(-2))	-0.05	0.02	-3.23
D(GFCF(-2))	0.53	0.21	2.35
R^2 = 0.33, Adjusted R^2 = 0.68, F statistics = 2.87			

Source: Authors' Computation from Eviews 7.0, November, 2023

UNEMP has a positive relationship with GDP in Nigeria, but statistically significant as revealed by its low standard error and high t-statistics and it is contrary to a prior expectation. Giving this development, government in recent times has come up with several programmes geared towards reducing unemployment in Nigeria.

The coefficient of foreign direct investment (FDI) is positively signed and statistically significant at 5% level. This implies that, within the period of the study, FDI has contributed relatively to the gross domestic product though the contribution is negligible owing to the fact that FDI in recent years has been channeled to oil sector.

From the short run model above GEXP has a negative relationship with GDP in Nigeria, a percentage decrease in GEXP will lead to about -0.48 units decrease in GDP of Nigeria in the short run and it is statistically not significant, this is contrary to the a prior expectation, this could be the fact that, several government investment are long term in nature.

EXR rate has a negative relationship in Nigeria, one percent increase in EXR will reduce GDP by -0.05 units and it is statistically significant as revealed by it high t-statistics this conform to apriori expectation. This result could be attributed to recent rising exchange rate especially between Naira and Dollar which is the main currency used at the international market and this discourages domestic production giving the high cost of importing inputs from foreign countries.

The value of gross fixed capital formation (GFCF) is positively signed and statistically significant at 5% level. The implication is that, the continuous rise in the figure of GFCF, the more the economic activities will trigger.

The error correction model (ECM) conforms to the economic criteria as it has a negative value, it revealed that it will take the series approximately 58% to realign back to equilibrium in case of any distortion.

The model revealed an R^2 value of 33% and 68% for R^2 adjusted, meaning that about 68% of the variations in the dependent variables are accounted for by the independent variables, also, the F-statistics values of 2.87 is high enough to conclude that the variables, also, the f-statistics values of 2.87 is high enough to conclude that the data fits the model, also the econometrics criteria were all verified as the residuals of the model were normally distributed, heteroskedastic and there was no autocorrelation.

Examining the Direction of Causation between Rising Unemployment Rate on the Economic Growth in Nigeria

Table 4.2.5 Granger Causality Test

To ascertain the direction of causation among the variables, the study employed pairwise Granger causality, the decision rule is that if the probability value is less than 5%, we reject the null hypothesis but if otherwise we accept.

Null Hypothesis:	**Obs**	**F-Statistic**	**Prob.**
UMPL does not Granger Cause GDP	32	0.38605	0.0100

GDP does not Granger Cause UMPL		3.15653	0.0100
FDI does not Granger Cause GDP	32	1.37111	0.0100
GDP does not Granger Cause FDI		1.72101	0.0100
GEXP does not Granger Cause GDP	32	2.64357	0.0100
GDP does not Granger Cause GEXP		1.02663	0.0100
EXR does not Granger Cause GDP	32	1.41133	0.0100
GDP does not Granger Cause EXR		2.66743	0.0100
GFCF does not Granger Cause GDP	32	4.05733	0.0100
GDP does not Granger Cause GFCF		0.76022	0.0100

Source: Authors' Computation from Eviews 7.0, November, 2023

The pairwise causality test from Table 4.2.4 shows that there is unidirecational causation between GDP and UMPL, no causality between FDI and GDP. The coefficient of GEXP shows unidirecational with GDP same goes with EXR and GDP and GFCF. This is evidence from the fact that all the probability values are less than 5% which give us the confidence to reject the null hypothesis and conclude that there is causation among the variables in the model except for FDI and GDP which shows no causation.

Test of Hypothesis

The null hypothesis (H0) will be tested using the long run equations. And the standard error was employed for hypothesis testing.

H_0= rising unemployment rate has no significant effect on economic growth in Nigeria.

H_1= rising unemployment rate has a significant effect on economic growth in Nigeria.

Decision rule:

S.E (B_1) <1/2B_1. Reject the null hypothesis

S.E (B_1) > 1/2B_1. Accept the null hypothesis

From the long run equation, half of the coefficient of unemployment (UNEMP) was 0.06 while the standard error was 0.01. looking at the decision rule stated earlier, we reject the null hypothesis and accept the alternate that unemployment has significant effect on economic growth in Nigeria within the years studied.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The research work analysis the effect of economic growth and unemployment in Nigeria covering the period, 1990-2022, data were sourced from secondary sources under the theoretical underpinning of Okun's law which shows the relationship of unemployment and economic growth. The variables used were Gross Domestic Product Growth Rate (GDP), Unemployment Rate (UNPL), Government Expenditure (GEXP), Foreign Direct Investment (FDI), Exchange Rate (EXR) and Gross Fixed Capital Formation (GFCF). The main objective of the research work is to examine the effect of rising Unemployment rate on Economic Growth in Nigeria, the types of analytical tools used in analyzing the research work was the descriptive and analytical techniques

of units root which was used to test for stationarity and the results shows that all the variables were not stationary at level but stationary at first difference. The Johansen co-integration test was used to determine the long run relationship among the variables and the results shows that the variables had a long run relationship and the long run model shows that there exist a negative relationship between rising unemployment rate and economic growth in Nigeria. This permits the use of error correction model to account for the short run relationship and the speed at which the variables could realign back to its equilibrium point in case of a distortion; the ECM model found that rising unemployment has a positive effect on economic growth in Nigeria in the short run which might be due to short term government programmes geared towards reducing the rate of rising unemployment in Nigeria such programmes as the YOUWIN, NAPEP, Sure-P programme etc. Based on the findings, we conclude that Unemployment has a significant effect on Economic Growth negatively thereby hindering the Growth and Development of the Economy, it is seen that a percentage increase in Unemployment leads to a proportionate degrease in Economic Growth and vice versa. Thus we can conclude that unemployment is detrimental to economic growth in Nigeria.

Recommendations

This research work will be useless if it ends without an advice to the policy makers and government executives. Policies are fundamental instruments for achieving specific desired economic outcomes. Against this background, we carefully derive policy advice for Nigeria, aimed at keeping the unemployment rate at a bearable level. The recommendations are as follows:

i. Labour intensive and production in other sectors should be encouraged because; production is more skewed to the oil sector. Better still employment should be created in other sectors of the economy and youth unemployment should also be tackled; these will address the issue of robbery, kidnapping and other social vices presently in the country.

ii. There should be concerted effort by the government to make the Nigeria currency more valuable, so as to encourage export especially non-oil export hence inclusive economic growth. This will moderate inflation rate in Nigeria, so that it will not discourage consumption hence economic growth.

iii. Government budget should efficiently and effectively allocated and effort should be made to ensure that all the projects are implemented.

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