TRANSMISSION CHANNEL BETWEEN BUDGET DEFICITS AND UNEMPLOYMENT THROUGH ECONOMIC GROWTH IN NIGERIA

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ABSTRACT
Many economies worldwide, including both developed and emerging ones, employ deficit budgeting and deficit financing as a strategy for fiscal policy, in line with Keynesian principles. Nigeria is among the countries that follow this approach. This study investigates the potential linkage between budget deficits and unemployment through economic growth in Nigeria, using data from 1981 to 2022. Employing endogenous lag models, the study utilizes both an unrestricted vector autoregressive (VAR) model and a restricted autoregressive (vector error correction - VEC) model to determine if there is a transmission channel between budget deficits and unemployment through economic growth in Nigeria. Wald statistics significance and the error correction term coefficients were utilised to assess short-term and long-term causality respectively. The findings indicate that budget deficits stimulate economic growth in Nigeria. However, subsequent economic growth does not lead to a reduction in unemployment. This suggests the absence of a transmission channel between budget deficits and unemployment through economic growth in Nigeria. Given the findings of this study, policymakers should reassess the primary objectives of fiscal policy. The study recommends that instead of solely focusing on using deficit spending to stimulate economic growth, policymakers should consider alternative strategies to address unemployment directly. This could involve targeted interventions such as job creation programs, vocational training initiatives, or incentives for private sector employment generation. By adopting a more comprehensive approach to fiscal policy, policymakers can better address the issue of unemployment and promote inclusive economic growth.

*Keywords***:** Budget, Deficits, Financing, Unemployment, Growth, Economy
JEL Classification: H6; H62; E01; E24

1. INTRODUCTION

The insistent of deficit budgeting in both advanced and emerging economies has sparked considerable debate regarding its impact on the economy. Nations worldwide utilize deficit budgeting as a tool for fiscal and monetary policies aimed at achieving economic growth and reducing unemployment. Keynesian theory, neoclassical theory, and Ricardian Equivalence

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theory offer differing perspectives on the effects of budget deficits, ranging from positive to negative to neutral.

In the Nigerian context, the persistent pursuit of expansionary fiscal policies over the past three decades has resulted in budget deficits in most years (Oshota, 2023). This trend has prompted a reassessment of the effects of budget deficits on the economy, with concerns including high public debts, inflation, interest rates, and slow growth (Ojonugwa et al., 2022; Onwioduokit, 1999; Chimobi & Igwe, 2010).

Contemporary debates revolve around the Keynesian, Neoclassical, and Ricardian Equivalence perspectives, each proposing varying impacts of budget deficits on economic activities. Empirical studies on budget deficits in Nigeria have yielded conflicting findings, with some supporting the Ricardian hypothesis, indicating minimal impact, while others align with the neoclassical view, suggesting negative effects on economic growth (Nwogbo et al., 2023; Kolawole, 2023, Oshota, 2023, Dalyop, 2010, Keho, 2010). Meanwhile, some studies support the Keynesian perspective, emphasizing a positive correlation between deficits, government expenditure, and growth (Oladipo et al., 2023, Eze, 2023; Umar et al., 2021; Kakar, 2011; Fatima, Ahmed & Rehman, 2011; Achegbulu & Maji, 2012).

Despite the extensive literature on budget deficits and economic variables, there remains a gap in understanding the transmission channel between deficits and unemployment through economic growth in Nigeria. Existing research either focuses solely on the direct impact of deficits on unemployment or explores the broader relationship between deficits and economic variables. Insignificant attention has been given to investigating how economic growth, influenced by deficits, translates into job creation in Nigeria.

Furthermore, there is no consensus on the relationship between economic growth and unemployment in Nigeria. While some studies suggest a pattern of jobless economic growth, others propose a positive association between employment and growth (Oladipo et al., 2023). These divergent findings underscore the complexity of economic dynamics in Nigeria and raise questions about the efficacy of fiscal policies, such as deficit budgeting, in promoting sustainable job creation.

In light of these research gaps and inconsistencies, there is a pressing need to address the following questions: Does budget deficit-induced economic growth in Nigeria contribute significantly to reducing unemployment? How does the transmission channel between budget deficits, economic growth, and unemployment operate in the Nigerian context? Answering these questions is essential for informing evidence-based policymaking and fostering a comprehensive understanding of the role of fiscal policies in promoting economic development and employment in Nigeria. To this end, this current study intends to examine how budget deficits, proxied by deficit financing (foreign, domestic, and others) and budget deficit to GDP ratio can impact unemployment in Nigeria through economic growth as a transmission channel, focusing on the period 1981 to 2022. The paper is organized into sections covering a review of related literature, methodology, results and discussion, and conclusion and recommendations.

2. LITERATURE REVIEW

2.1 Conceptual Clarifications

The concept of a budget deficit, defined as the surplus resulting from planned government expenditure exceeding revenue, is fundamental in fiscal policy discussions (Likita, 1999;

Anyafo, 1996). While this definition focuses on the disparity between budgeted expenditure and revenue, it lacks a specific temporal dimension. Labonte (2010) introduces the notion of an annual federal budget deficit, highlighting the amount by which federal government outlays surpass revenues within a fiscal year. This annual delineation allows for the alignment of deficits with economic plans, often termed fiscal policy. Budget deficit and deficit financing, though often used interchangeably, represent distinct concepts: the former refers to the planned excess of public expenditure over revenue, while the latter denotes the funds used by the government to finance such deficits.

The federal budget deficit serves as a critical policy instrument within the broader context of public finance, particularly as a stabilization policy aimed at stimulating economic prosperity (Musgrave & Musgrave, 2004). Scholars such as Dang and Wayas (2018) underscore the role of budget deficits in reducing unemployment, maintaining price stability, fostering growth in the economy, and achieving equilibrium in the balance of payment. This stabilisation function of public finance is integral to achieving economic development objectives, including equitable income distribution.

Unemployment, a significant economic concept, signifies joblessness within an economy and is measured through various metrics (Owogbo et al., 2023, Udu & Agu, 2005). While definitions may vary slightly, consensus typically revolves around individuals' ability, willingness, and qualifications to work juxtaposed with their current jobless status. For instance, the International Labour Organisation defines unemployment as the state of being without work but actively looking for employment (Mehran & Bescond, 2008). In Nigeria, unemployment is measured through the unemployment rate and underemployment rate, both vital indicators for understanding labour market dynamics and formulating appropriate policy responses (National Bureau of Statistics [NBS], 2016).

Economic growth, characterized by the level of increase in real GDP, is pivotal for enhancing societal well-being and prosperity (Jhingan, 2009; Okwori & Sule, 2016; Oshota, 2023). Real GDP, representing the total value of goods and services produced within an economy, serves as a primary measure of economic output. Economic growth reflects a nation's capacity to produce goods and services over time and is typically calculated in inflation-adjusted terms to account for price fluctuations (Oshota, 2023; Oladipo et al., 2023; Okwori & Sule, 2016). Government spending, financed through both external and internal sources, plays a crucial role in producing economic growth, thus highlighting the interdependence between fiscal policy and economic performance.

2.2 Theoretical Review

Three main theoretical perspectives on budget deficits exist: Neoclassical theory, Keynesian theory, and Ricardian Equivalence theory (Bernheim, 1989). Neoclassical theory emphasizes the need to smooth tax rates and uses deficits to accommodate increasing public expenditure while maintaining tax levels (Barro, 1989). It highlights the crowding-out effect, where deficit financing through borrowing reduces private investment (Dalyop, 2010).

Keynesian theory, emerging in the 1930s, emphasizes expenditure-led growth and advocates for government intervention during economic downturns through deficit spending (Keynes, 1936). Unlike Neoclassical theory, Keynes argues that competitive markets may not naturally achieve full employment, necessitating government intervention to stimulate demand and investment.

Ricardian Equivalence Hypothesis posits that tax-induced deficits lead to future tax increases, offsetting the initial tax cut (Ussher, 1998). This theory suggests that deficits and taxation have equivalent effects on the economy, impacting aggregate demand and price levels (Barro, 1989). This study adopts the Keynesian model as its theoretical framework, emphasizing fiscal expansion during recessions to boost aggregate demand and reduce unemployment.

In line with this study, Keynesian economics suggests that budget deficits, when utilized to finance government spending on capital expenditure, social programmes, or job creation programmes, can have a positive effect on economic growth. Increased government expenditure stimulates aggregate demand, resulting in higher levels of production, investment, and employment in the economy. This, in turn, contributes to a reduction in unemployment rates as businesses expand to meet the rising demand, leading to increased hiring and job opportunities. Moreover, Keynesian theory posits that during economic downturns or periods of high unemployment, households and businesses may become reluctant to spend and invest, leading to a decrease in aggregate demand. In such situations, government intervention through deficit spending can help boost demand, restore confidence, and catalyze economic activity.

However, it's essential to consider the potential trade-offs associated with budget deficits, as emphasized by Keynesian economics. While deficit spending can stimulate short-term economic growth and job creation, there may be long-term consequences such as inflation or crowding out of private investment. Therefore, effective fiscal policy implementation is crucial to ensuring that deficit spending is targeted towards productive investments that yield sustainable economic growth and employment generation

2.3 Review of Empirical Studies

Quite a number of studies were carried out on budget deficits and macroeconomic variables. The studies by Alam et al. (2022) and Arif and Arif (2023) offer valuable insights into the factors influencing budget deficits in different contexts, which can be compared and contrasted with the proposed study on the transmission channel between budget deficits and unemployment through economic growth in Nigeria.

Alam et al. (2022) investigate the impact of selected macroeconomic variables on budget deficits in Bangladesh using a Vector Error Correction Model (VECM) and Granger Causality test. They find a bidirectional causal relationship between GDP and budget deficit, and further reveal that GDP, inflation, and money supply have a negative relationship with the budget deficit. These findings suggest that economic growth, inflation, and money supply dynamics influence budget deficits in Bangladesh. Arif and Arif (2023) explore the factors affecting budget deficits across 66 countries using panel data analysis. They discover a positive and significant association between GDP per capita and the budget deficit in the long run. This implies that as economies grow, there tends to be a corresponding increase in budget deficits.

In relation to this current study on the transmission channel between budget deficits and unemployment through economic growth in Nigeria, these studies provide important contextual information. However, a notable gap in knowledge arises concerning the specific mechanisms through which budget deficits impact unemployment in Nigeria. While Alam et al. (2022) and Arif and Arif (2023) shed light on the determinants of budget deficits and their relationship with economic variables like GDP, they do not directly address the link between budget deficits and unemployment.

Looking at the three theories of budget deficits, a few studies are in support of the Ricardian hypothesis at different levels. Keho (2010) discovered that there is no causal relationship between budget deficits and economic growth in three out of seven WAEMU (West Africa Economic and Monetary Union) countries, as determined by the Pairwise Granger causality test. Similarly, Dalyop (2010) obtained the same result for Nigeria using the OLS method..

Other studies that are in line with the neoclassical economics include Alam et al. (2022) and Keho (2010). In Bangladesh, for the period 1980–2018, Alam et al. (2022) conclude that higher budget deficits decreases economic growth. Keho (2010) carried out a cross-country study and partly concludes that the causality existing between budget deficits and economic growth in four out of the seven West African Economic and Monitoring Union (WAEMU) countries reflects an adverse effect.

Several studies (Eze, 2023; Umar et al., 2021; Fatima et al., 2011; Kakar, 2011; Alexiou, 2009; Adam & Bevan, 2002) have demonstrated a positive relationship between budget deficits, government spending, and economic growth, supporting the Keynesian proposition. For example, the research by Adam and Bevan (2001, 2002) on fiscal deficits and economic growth in developing countries identifies a budget deficit threshold of 1.5% of GDP as optimal for the average annual growth in per capita income among 45 developing countries using instrumental variables. Similarly, Alexiou (2009) conducted a cross-country study on South Eastern Europe (SEE) using generalized least squares, also showing a positive relationship between budget deficits and economic growth. However, these studies, based on panel cross-country average data, may lack reliability due to the unique economic characteristics of different countries.

Fatima, Ahmed, and Rehman (2011) examine the relationship between fiscal deficits and GDP per capita as a proxy for economic growth in Pakistan, using a two-stage least squares method. Their study finds a direct impact of fiscal deficits on real GDP per capita. Kakar (2011) investigates fiscal variables and the annual GDP growth rate as proxies for economic development in Pakistan from 1980 to 2009, utilizing an error correction model. The results indicate that fiscal policy plays a crucial role in sustaining economic growth in Pakistan. Iram, Ali, Sadaquat, and Rabbi (2011) discover that fiscal deficits have a positive and significant relationship with trade deficits and growth in Pakistan, consistent with the Keynesian perspective, using the ARDL (autoregressive distributive lag) model and the ECM. These studies focus on the Pakistani economy, which operates under a distinct political and economic system.

In Nigeria, numerous empirical studies have delved into the intricate relationship between budget deficits, economic growth, and unemployment, providing valuable insights into the complex dynamics of fiscal policy and its repercussions on the economy. Umar et al. (2021) utilized autoregressive distributed lag (ARDL) and threshold autoregressive lag (TAR) methods to scrutinize the association between budget deficits and economic growth in Nigeria from 1981 to 2022, revealing a positive correlation between these variables. Similarly, Kolawole (2023) employed the ARDL technique, uncovering a unidirectional causality from budget deficits to economic growth in Nigeria, with a direct short-run effect but an adverse long-run impact on economic growth. However, these studies failed to investigate whether this growth translated into reduced unemployment in Nigeria.

Examining the nexus between government expenditure and economic growth, Oshota (2023) employed the ARDL Bound Test method to analyze the impact of fiscal policy, particularly government expenditure, on overall output (GDP) in Nigeria, identifying a significant negative effect. Correspondingly, Oladipo et al. (2023) utilized ARDL to explore the effect of fiscal

policy on industrial sector development in Nigeria, discovering a positive effect of government capital expenditure on the output of the mining and quarrying sector. Nonetheless, these studies did not establish whether the economic growth resulting from increased government expenditure led to job creation in the economy.

Regarding the influence of budget deficits on the current account balance, Eze (2023) conducted a study using multiple regression to analyze the influence of changes in budget deficits on the current account balance in Nigeria from 1980 to 2022, revealing that budget deficits indeed influence the current account balance. Similarly, Ojonugwa et al. (2022) employed the Toda-Yamamoto procedure to test the validity of the Twin Deficit Hypothesis in Nigeria, finding that fiscal deficits cause current account deficits in the country. However, these studies did not explore the effects of deficits on both economic growth and unemployment.

Osinubi and Olaleru (2006) investigated the impact of external debt deficit financing on economic growth in Nigeria from 1970 to 2003 using ordinary least squares (OLS) regression. They found a nonlinear relationship, where low levels of external debt deficit financing positively affected growth, while high levels had a negative impact. Similarly, Achegbulu and Maji (2012) identified a positive and significant relationship between fiscal deficit financing and economic growth using OLS regression. However, neither study examined how economic growth influences unemployment in Nigeria.

The literature has also explored the relationship between government spending, economic growth, and employment. Fofana (2001) and Sodipe and Ogunirinola (2011) examined employment and economic growth in Côte d'Ivoire and Nigeria, respectively. Fofana found a negative correlation between economic growth and employment in Côte d'Ivoire, while Sodipe and Ogunirinola identified a positive relationship between employment and economic growth in Nigeria. Additionally, Nwogbo et al. (2023) conducted a survey on the relationship between government policy and the unemployment crisis in Nigeria, concluding that government efforts had not changed the unemployment rate. Wasiu et al. (2023) investigated the causal relationship between government expenditure and quality of life, as measured by the Human Development Index (HDI), in Nigeria, finding unidirectional causality from government expenditure to HDI.

Despite these extensive studies, significant gaps persist in understanding the indirect effect of budget deficits on unemployment through economic growth in Nigeria. Ene (2018) underscored the necessity for advanced econometric tools to explore the long-run relationship between budget deficits, economic growth, and unemployment. This current study aims to fill this gap by examining how budget deficits influence unemployment through economic growth in Nigeria. By focusing specifically on the Nigerian context and exploring the transmission channel between budget deficits, economic growth, and unemployment, the study will provide insights into the effectiveness of fiscal policy measures in addressing unemployment challenges and promoting inclusive growth. Thus, while existing studies contribute valuable insights into the broader determinants of budget deficits, the current study will offer a nuanced understanding of the implications of budget deficits for unemployment dynamics in Nigeria.

3. METHODOLOGY
3.1 Research Design

This study is an empirical one and employs an ex-post facto research design to address the research problem. This study employs econometric techniques to analyse time series data obtained on budget deficits, economic growth and unemployment, following the

methodologies of Alexiou (2009), Aruwa et al. (2013), and Ene (2018). Econometric analysis is chosen due to its effectiveness in model estimation, incorporating economic theory, data, and models.

The specific econometric techniques used, tailored to the data type, include:

a) **Augmented Dickey–Fuller Test:** To check for a unit root in individual data series of the study's variables.

b) **Johansen Co-integration Test:** To assess the integration of all data series of the study's variables.

c) **Vector Error Correction (VEC) Model:** Utilizing Wald statistics to test for causality among budget deficits, economic growth and unemployment within the dynamic system.

The significance of the Wald statistics was used to test for causality among budget deficits, economic growth and unemployment in the VEC model, referencing the work of Gaurisankar et al. (2011), Aruwa (2011), Hossain (2012), and Alam et al. (2022). Time series data from the National Bureau of Statistics (NBS) various publications, CBN Statistical Bulletin, and Medium-Term Fiscal Framework of the Federal Government of Nigeria were collected.

3.2 Theoretical Framework
The theoretical framework for examining the transmission channel between budget deficits and unemployment through economic growth in Nigeria is grounded in Keynesian Theory. Keynesian economics highlights the importance of government intervention in stabilizing the economy, especially during times of recession or high unemployment. According to Keynesian theory, government spending is essential for stimulating aggregate demand and fostering economic growth, which in turn helps to reduce unemployment. The theoretical framework based on Keynesian economics provides a lens through which to analyze how budget deficits can influence economic growth and unemployment in Nigeria.

Incorporating Keynesian theory into a theoretical framework for the study on the transmission channel between budget deficits and unemployment through economic growth in Nigeria involves considering the relationship between government spending, aggregate demand, economic growth, and unemployment. This can be represented by the following equation:
$Y=C+I+G+(X-M)$ …………………………………………………..i
Where:
- *Y* represents the level of output or real GDP (economic growth).
- *C* denotes consumption expenditure by households.
- *I* represents investment expenditure by businesses.
- *G* denotes government expenditure.
- *X* represents exports.
- *M* denotes imports.

Additionally, the equation can be expanded to incorporate the impact of budget deficits (*BD*) on government expenditure (*G*):
$G=T+BD$ ……………………………………………………....ii
Where:
- *T* represents tax revenue collected by the government.

The inclusion of budget deficits (*BD*) reflects the Keynesian view that during periods of economic downturns or insufficient aggregate demand, governments may engage in deficit spending to stimulate economic activity and reduce unemployment. This additional equation

emphasizes the role of fiscal policy in influencing government expenditure and, consequently, overall economic activity and employment levels.

By incorporating these equations into the theoretical framework, the study can analyze how changes in government expenditure, including deficit spending, affect aggregate demand, economic growth, and ultimately, unemployment in Nigeria, thereby providing insights into the transmission channel between budget deficits and unemployment.

3.3 Specification of Vector Autoregressive (VAR) Models

Two hypotheses are stated here in their null forms as follows:

H_{01}: There is no transmission channel between budget deficit to GDP ratio and unemployment rate through economic growth in Nigeria.

H_{02}: There is no transmission channel between budget deficit financing and unemployment through economic growth in Nigeria.

The model specifications to test the above hypotheses are as follows:

Models for Hypothesis 1 (H_{01}) (VEC): UNEMP, RGDP and BUDRA

$$\Delta RGDP_t= \beta_0+ \beta_1\Delta RGDP_{t-1}+ \beta_2\Delta UNEMP_{t-1}+ \beta_3\Delta BUDRA_{t-1}+ECT_{t-1}+ \mu_t ....(1)$$

$$\Delta UNEMP_t=\alpha_0+\alpha_1\Delta UNEMP_{t-1}+\alpha_2\Delta BUDRA_{t-1}+\alpha_3\Delta RGDP_{t-1}+ECT_{t-1}+\mu_t ………(2)$$

Models for Hypothesis 2 (H_{02}) (VEC): UNEMP, RGDP and BUDEF

$$\Delta RGDP_t= \beta_0+ \beta_1\Delta RGDP_{t-1}+ \beta_2\Delta UNEMP_{t-1}+ \beta_3\Delta BUDEF_{t-1}+ECT_{t-1}+ \mu_t ....(3)$$

$$\Delta UNEMP_t=\alpha_0+\alpha_1\Delta UNEMP_{t-1}+\alpha_2\Delta BUDEF_{t-1}+\alpha_3\Delta RGDP_{t-1}+ECT_{t-1}+\mu_t ………(4)$$

Where:
UNEMP = Natural logarithm of Unemployment Rate as defined in Table 1
BUDRA = Natural logarithms of Budget Deficit to GDP Ratio as defined in Table 1
BUDEF = Natural logarithm of Budget Deficit Financing as defined in Table 1
RGDP = Natural logarithm of Real Gross Domestic Product as defined in Table 1

In the regression models, $\alpha 0$ and $\beta 0$ are constants, while $\alpha 1$, $\alpha 2$, $\alpha 3$, $\beta 1$, $\beta 2$, and $\beta 3$ are coefficients. The error correction term is denoted by ECT, the error term by μ, and time by t. The a priori expectation from these models is that a causal relationship exists between budget deficits and unemployment through economic growth in Nigeria. Specifically, it is anticipated that an increase in budget deficits will reduce unemployment by stimulating economic growth, acting as the transmission channel. This aligns with the Keynesian theory, which suggests that government expenditure, even when leading to budget deficits, can boost economic growth and subsequently decrease unemployment. The study utilizes a vector autoregressive model to test this hypothesis, examining whether the expansion of public expenditure, as posited by Keynesian economics, stimulates economic growth to reduce unemployment in Nigeria. Table 1 shows the explanations of the variables of this study and the justification of their usage.

Table 1: Summary of Variable Measurement

Variable	Code	Definition/ Measurement	Source
Dependent Variable:			
Unemployment	UNEMP	Unemployment Rate, measured by the summation of the percentage rates of unemployment and underemployment	Dang and Wayas (2018)
Independent Variables:			
Budget Deficit Financing	BUDEF	Summation of external deficit financing, domestic deficit financing, and other deficit financing, measured by the absolute amount of all deficit financing.	Dang (2016), and Dang and Wayas (2018)
Budget Deficits Ratio	BUDRA	The ratio of budget deficit to GDP, measured by Budget Deficits as % of GDP	Dang (2016), and Dang and Wayas (2018)
Transmission Channel/ Mediating Variable:			
Economic Growth	RGDP	Real Gross Domestic Product, measured by the absolute figures of RGDP	Aruwa, et al. (2013)

Source: Author's compilation (2024)

4. RESULTS AND DISCUSSION

4.1 Stationarity Test using Augmented Dickey-Fuller Technique

In this section, the properties of individual time series data on budget deficits, economic growth and unemployment are examined after converting them to their natural logarithms. The Augmented Dickey-Fuller (ADF) unit root test is applied to each variable time series data, with lag lengths automatically selected based on the Schwarz Information Criterion (SIC) using the EViews software. The stationarity of the variables is tested both at their levels and at their first differences. The ADF test results are summarized in Table 2.

According to Table 2, all variables become stationary at the first difference, indicating they are integrated of order 1, i.e., I(1). The order of integration affects the choice of the causality test model. If variables are I(1), they may co-integrate in the long run, making the Vector Error Correction (VEC) model suitable for testing causality. Conversely, if the variables are not I(1) and do not co-integrate, the unrestricted Vector Autoregressive (VAR) model is more appropriate for testing causality (Dang & Wayas, 2018).

Table 2: Augmented Dickey-Fuller Unit Root Test Results

VARIABLE	ADF RESULTS		
LEVEL	t-Stat.	Critical Value	Prob.
BUDEF	-1.66	-2.96	0.44
BUDRA	-1.66	-1.95	0.09
UNEMP	-2.27	-3.57	0.44
RGDP	2.25	-2.96	0.10
IST DIFF.			
BUDEF	-7.23	-2.97	0.00*
BUDRA	-7.98	-1.95	0.00*
UNEMP	-6.04	-3.58	0.00*
RGDP	-37.81	-2.96	0.00*
STATIONA-RITY			Order
BUDEF			1(1)
BUDRA			1(1)
UNEMP			1(1)
RGDP			1(1)

Source: Authors' Computation using EViews 8 (2024).
* Stationary at 5% level of significance

4.2 Cointegration Test

In this study, the Johansen Cointegration method is employed to examine the long-term relationship among the time series variables (budget deficits, economic growth and unemployment). Both Trace statistics and Max-Eigen statistics are utilized to determine the causality test to be conducted using endogenous lag models. Table 3 presents the results of the cointegration test conducted using the Johansen Cointegration method.

Table 3: Johansen Cointegration Test Results

Variables	Lag Length Selection	Trace Statistics	At 5%Critical Value	P-value	No. of Cointegration Equations	Type of Causality Type
Objective 1						
LUNEMP LBUDRA LRGDP	1	33.8200	29.8000	0.0163	1 Cointegrating Equation	VEC
Objective 2						
LUNEMP LBUDEF LRGDP	1	19.4900	15.4900	0.0118	1 Cointegrating Equation	VEC
Variables	Lag Length Selection	Trace Statistics	At 5%Critical Value	P-value	No. of Cointegration Equations	Type of Causality Type
Objective 1						
LUNEMP LBUDRA LRGDP	1	20.8000	21.1300	0.0500	1 Cointegrating Equation	VEC
Objective 2						
LUNEMP LBUDEF LRGDP	1	26.6800	21.1300	0.0074	1 Cointegrating Equation	VEC

Source: Authors' Computation using EViews8 (2024)

Table 3 indicates the presence of one cointegrating equation between RGDP, UNEMP, and BUDRA as well as between RGDP, UNEMP, and BUDEF, making the VEC model suitable for conducting the causality test. The lag order was determined using the VAR Order Selection Criteria, which includes the Akaike Information Criterion, Schwarz Information Criterion, Hannan-Quinn Information Criterion, and others. These selected lag orders were then utilized in both the cointegration testing and the VEC models.

4.3 Hypotheses and Causality Testing based on the VEC Model

The hypotheses of this study are evaluated based on the probability values obtained from the Wald Test Chi-square within the VEC models. Utilizing EViews 8, systems are developed from the VEC estimates, and the equations are individually estimated using Ordinary Least Squares (OLS) to determine the p-values of the coefficients (refer to Table 4). Before employing Wald Statistics for the Granger causality test at a 5% significance level, these preliminary p-values provide an understanding of the coefficients' significance. Additionally, related diagnostic tests and model validations are conducted to ensure the robustness and reliability of the results. The findings are detailed below:

H_{01}: D(RGDP) = C(1)*(RGDP(-1) - 0.0916419670286*BUDRA(-1) - 1.92445153266*UNEMP(-1) - 8.55691656348) + C(2)*D(RGDP(-1)) + C(3)*D(RGDP(-2)) + C(4)*D(BUDRA(-1)) + C(5)*D(BUDRA(-2)) + C(6)*D(UNEMP(-1)) + C(7)*D(UNEMP(-2)) + C(8)-------**Equation 5**

D(UNEMP) = C(17)*(RGDP(-1) - 0.0916419670286*BUDRA(-1) - 1.92445153266*UNEMP(-1) - 8.55691656348) + C(18)*D(RGDP(-1)) + C(19)*D(RGDP(-2)) + C(20)*D(BUDRA(-1)) + C(21)*D(BUDRA(-2)) +C(22)*D(UNEMP(-1)) + C(23)*D(UNEMP(-2)) +C(24)----**Equation 6**

H_{02}: D(RGDP) = C(1)*(RGDP(-1) - 0.163616171046*BUDEF(-1) - 0.685571865333*UNEMP(-1) - 9.51336104761) + C(2)*D(RGDP(-1)) + C(3)*D(RGDP(-2)) + C(4)*D(BUDEF(-1)) + C(5)*D(BUDEF(-2)) + C(6)*D(UNEMP(-1)) + C(7)*D(UNEMP(-2)) + C(8)-------**Equation 7**

D(UNEMP) = C(17)*(RGDP(-1) - 0.163616171046*BUDEF(-1) - 0.685571865333*UNEMP(-1) - 9.51336104761) + C(18)*D(RGDP(-1)) + C(19)*D(RGDP(-2)) + C(20)*D(BUDEF(-1)) + C(21)*D(BUDEF(-2)) + C(22)*D(UNEMP(-1)) + C(23)*D(UNEMP(-2)) +C(24)   ------.**Equation 8**

Table 4: VEC Models Estimations from Equations 5 to 8

Hypothesis/Variables	Equation ( )	Equation ( )	Test of Causality	Decision
Objective 1: Transmission Channel from BUDRA to UNEMP through RGDP				
Hypothesis (H_{01})	**ΔLRGDPt (5)**	**ΔLUNEMPt (6)**		
Ect	-0.0350	-0.1346	VEC	BUDRA causes RGDP but RGDP does not cause UNEMP, meaning that there exists no transmission channel between BUDRA and UNEMP through RGDP
Wald Test Chi-Square	1.3273	4.4794		
Ect P-value	0.0067	0.0696		
Wald Test P-value	0.5110	0.1065		
Objective 2: Transmission Channel from BUDEF to UNEMP through RGDP				

Hypothesis (H$_{02}$)	ΔLRGDPt (7)	ΔLUNEMPt (8)		
Ect	-0.1151	-0.1400		BUDEF causes RGDP but RGDP does not cause UNEMP, meaning that there exists no transmission channel between BUDEF and UNEMP through RGDP
Wald Test Chi-Square	4.8243	1.9189	VEC	
Ect P-value	0.0007	0.5110		
Wald Test P-value	0.0896	0.3883		

Source: Authors' computation from VEC estimates and OLS estimates using EViews 8

Equation 5 Analysis: According to the Wald test results in Equation 5, the null hypothesis (H0) cannot be rejected at the 5% significance level, with a p-value of 0.5150. This indicates that BUDRA does not influence RGDP in the short term. However, the error correction term is both significant and negative (p-value of 0.0067), suggesting the existence of long-term causality from BUDRA to RGDP.

Equation 6 Analysis: In Equation 6, the Wald test shows that H0 cannot be rejected at the 5% significance level, with a chi-square p-value of 0.1065. This means that RGDP does not affect UNEMP in the short term. The error correction term in Equation 6, while negative, is not significant (p-value of 0.0696), indicating no long-term causality from RGDP to UNEMP.

Summary of Equations 5 and 6:

The results from Equations 5 and 6 demonstrate no short-term causality in either model. However, there is a long-term unidirectional causal relationship from the budget deficit (BUDRA) to economic growth (RGDP), without any causality from economic growth to unemployment in Nigeria. Thus, H$_{01}$ cannot be rejected, indicating no transmission channel from the budget deficit through economic growth to unemployment in Nigeria.

Implications: These findings imply that the budget deficit ratio impacts economic growth in the long term but does not reduce unemployment in Nigeria. This contradicts the Keynesian theory, which suggests that economic growth driven by budget deficit financing should lead to job creation and reduced unemployment.

Equation 7 Analysis: From Equation 7, the Wald test indicates that H0 cannot be rejected at the 5% significance level, with a p-value of 0.0896. This suggests that BUDEF does not influence RGDP in the short run. However, the error correction term in Equation 8 is significant and negative (p-value of 0.0067), indicating long-term causality from BUDEF to RGDP.

Equation 8 Analysis: For Equation 8, the Wald test shows that H0 cannot be rejected at the 5% significance level, with a chi-square p-value of 0.3831, indicating RGDP does not cause UNEMP in the short run. The error correction term, though negative, is not significant (p-value of 0.5110), suggesting no long-term causality from RGDP to UNEMP.

Summary of Equations 7 and 8:

The results from Equations 7 and 8 reveal no short-term causality in either model but confirm a long-term unidirectional causality from budget deficit financing (BUDEF) to economic growth (RGDP). There is no causality from economic growth to unemployment in Nigeria. Consequently, H$_{02}$ cannot be rejected, indicating no transmission channel from budget deficit financing through economic growth to unemployment in Nigeria.

Implications: These findings indicate that budget deficit financing fosters long-term economic growth but does not reduce unemployment in Nigeria, contrary to Keynesian expectations. This suggests that while budget deficits can spur economic growth, they do not directly translate into job creation and reduced unemployment.

Overall Findings:

The study concludes that budget deficits, whether represented by the budget deficit ratio or budget deficit financing, lead to economic growth (measured by RGDP) but do not affect unemployment in Nigeria. This finding implies the absence of a transmission channel from budget deficits to unemployment through economic growth. The study's results differ from those of Fofona (2001), Ayinde (2008), Sodipe and Ogunrinola (2011), and Ojong and Owui (2013), but align with Richard and Chinedu (2015) and Ayogueze and Anidiobu (2017).

Alam et al. (2022) investigated the impact of selected macroeconomic variables on budget deficits in Bangladesh, finding a bidirectional causality between GDP and budget deficits, emphasizing the relationship between economic growth and fiscal deficits. While this aligns with the positive relationship between budget deficits and economic growth found in Nigeria, the negative relationship between GDP, inflation, and money supply with budget deficits in Bangladesh contrasts with Nigeria's positive influence of budget deficits on economic growth. These differences may reflect variations in economic structures and policy environments between the two countries.

5. CONCLUSIONS AND RECOMMENDATIONS

Based on the findings, this study concludes that while there is a causal relationship between budget deficits and economic growth, it does not lead to a reduction in unemployment in Nigeria, as suggested by Keynesian theory. This indicates that there is no transmission channel from budget deficits to unemployment through economic growth in Nigeria. The study contributes to the existing body of knowledge by investigating the potential transmission channel between budget deficits and unemployment reduction via economic growth in Nigeria. This addresses a previously existing gap in the proxies and methodology used, particularly in the context of Nigerian studies.

To achieve the study's significance, the following recommendations are made based on the findings and conclusions:

1. **Re-evaluate Fiscal Policy Objectives:** Given that budget deficits have been found to positively influence economic growth but do not lead to a reduction in unemployment, policymakers should reassess the primary objectives of fiscal policy. Instead of solely focusing on using deficit spending to stimulate economic growth, policymakers should consider alternative strategies to address unemployment directly. This could involve targeted interventions such as job creation programs, vocational training initiatives, or incentives for private-sector employment generation. By adopting a more comprehensive approach to fiscal policy, policymakers can better address the issue of unemployment and promote inclusive economic growth.

2. **Enhance Labor Market Policies:** Since economic growth alone does not appear to translate into reduced unemployment in Nigeria, there is a need to strengthen labor market policies to ensure that growth is accompanied by job creation. This may include reforms aimed at improving labor market flexibility, enhancing education and skill development programs to meet the demands of the evolving economy, and promoting entrepreneurship and small business development. Additionally, measures to reduce barriers to entry into the labor market, such as addressing informal employment and enhancing access to formal employment opportunities, could help reduce unemployment rates. By focusing on targeted labor market policies alongside fiscal measures, policymakers can better address the challenge of unemployment and promote sustainable economic development in Nigeria.

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