Review Article

OPEN ACCESS

Budget Deficit, Budget Reform and Employment in Nigeria: A Vector Error Correction Model Approach

Okoruwa David Ehizuelen and Ene Ene Edet

Department of Economics, University of Calabar, Nigeria.

Email: kingdavidoko@yahoo.com, meetene29@gmail.com

ABSTRACT: This study investigated the impact of budget deficit and budget reform on employment in Nigeria from 1981 to 2024 using the Vector Error Correction Model approach (VECM). The VECM result indicates that, the previous one and two periods lagged of budget reform index, two period lagged of budget deficit, one period lagged foreign direct investment and two period lagged of wage rate has a positive impact on employment level in Nigeria. On the other hand, budget policy shift had a negative impact on employment level in Nigeria. Statistically, the previous two periods lagged of budget deficit, one period lagged of budget policy shift and one period lagged foreign direct investment was significant at 5 percent indicating a significant impact of budget reforms and budget deficit on employment level in Nigeria. Based on the findings, the study recommended increase in budgetary allocations to sectors that will generate more employment opportunities such as agriculture, manufacturing and construction sectors. Secondly, the Nigerian government should improve budget transparency and execution by strengthening the medium for budget implementation, monitoring, and accountability. Thirdly, the authorities should harmonized fiscal policies with the country's frameworks for employment to ascertain that employment data aligns with budgetary framework, among others.

KEYWORDS: Budget Deficit, Budget Reform, Employment, Vector Error Correction Model, Nigeria.

INTRODUCTION

Nigeria, Africa's largest economy by population, has faced persistent fiscal challenges characterized by recurring budget deficits, limited implementation of budget reforms, and high unemployment rates. A budget deficit occurs when government expenditure surpasses revenue, often requiring borrowing to bridge the gap (Okonjo-Iweala & Osafo-Kwaako, 2007). In recent years, Nigeria's budgetary operations have been marked by excessive recurrent spending, rising debt service obligations, and underinvestment in growth-stimulating sectors (Onodugo, 2022). These fiscal imbalances have compounded the nation's employment crisis, particularly among the youth population.

In response to these challenges, Nigeria has introduced several budget reforms aimed at improving fiscal sustainability, including the implementation of the Medium-Term Expenditure Framework (MTEF) and efforts to expand the non-oil tax base (Ariyo & Raheem, 2019). However, these reforms have yielded limited results due to structural inefficiencies,

policy inconsistency, and political resistance. Meanwhile, the unemployment rate remains critically high, standing at over 33% in recent reports, with youth unemployment significantly higher (National Bureau of Statistics [NBS], 2023). The relationship between fiscal policy, especially budget deficits and reforms, and employment generation is critical to Nigeria's macroeconomic stability and inclusive development.

Despite ongoing fiscal reforms and increased government spending, Nigeria continues to grapple with a persistent budget deficit and worsening unemployment. The budget deficit, which stood at ₦7.05 trillion by Q3 2024, is projected to rise to ₦13.08 trillion in 2025, representing 3.87% of GDP (Nairametrics, 2024). This growing fiscal imbalance raises concerns about the sustainability of public finances and the effectiveness of budgetary policies in promoting employment.

Several budget reforms have been implemented to address inefficiencies and improve public financial management. These include expenditure rationalization, subsidy removal, and improved tax mobilization strategies (Ariyo & Raheem, 2019). However, the intended outcomes, particularly employment creation and poverty reduction, remain largely unmet due to poor implementation, corruption, and weak institutional frameworks (Okon & Odigwe, 2021). Moreover, a significant portion of the national budget is channeled toward recurrent expenditure and debt servicing, leaving limited fiscal space for productive investments that can stimulate job creation.

The unemployment crisis, especially among the youth, is a pressing national concern. Despite government interventions such as the National Social Investment Programme and Youth Empowerment Schemes, the impact on employment remains minimal (NBS, 2023). The disconnect between fiscal spending patterns and employment outcomes indicates a need for a more targeted and coherent fiscal strategy. Thus, understanding the nexus between budget deficits, reform policies, and employment is critical for addressing Nigeria's economic challenges and promoting inclusive growth.

It is based on these problems that this study seeks answers to the following questions: what is the impact of budget deficit on employment in Nigeria? And what is the impact of budget reform on employment in Nigeria?

LITERATURE REVIEW AND THEORETICAL FRAMEWORK

Empirical Literature

Ayogueze and Anidiobu (2017) study objective was to assess the impact of government budget deficits on the rate of unemployment in Nigeria. Data spanning the sampled period, 1986 – 2015 was abstracted from the Nigeria (CBN) Statistical Bulletin of various years and the National Bureau of Statistics (NBS). The results of the Ordinary Least Square (OLS) econometric technique showed a positive but insignificant effect of budget deficit on the rate of unemployment in Nigeria.

A Nigerian based study was undertaken by Eze and Nwambeke (2015) to determine the effects of deficit financing on unemployment rate in Nigeria using time series annual data from 1970-2013. The study specifically broke down deficit financing into four sourcing mechanisms: external financing (EXF), ways and means (WM), banking system financing (BSF), non-banking public financing (NBPF). The findings of the error correction model (ECM) showed that while banking system source of deficit financing (BSF), non-banking public source of deficit financing (NBPF), had a positive and significant relationship with unemployment, a

negative and insignificant relationship was found between external source of deficit financing (EXF), ways and means source of deficit financing (WM) and the rate of unemployment in Nigeria.

Lama and Medina Guzman (2015) sought to examine fiscal consolidation during times of high unemployment for the Swedish economy. The study established simultaneity in reduction found in fiscal deficit and unemployment rates. The authors said this phenomenon can be traceable to two main factors, the high rate of growth in total factor productivity and sustained wage restraint that occurred around the study period. Specifically, the study found that through an expansion in fiscal revenues and taxation fiscal deficits generated an increase in GDP by 8 percent.

Chinwenduu, Eme and Otonye (2017) aimed at determining whether fiscal deficit stimulate employment in Nigeria. The study used a vector autoregressive model (VAR) inculcating data. The study established a long-run co-moving relationship between unemployment and endogenous variables like budget deficits and GDP per capita, domestic credit to the private sector, domestic borrowing financed deficit, external borrowing financed deficit and foreign direct investment. The results of the econometric results showed a positive and significant relationship between budget deficits and unemployment situation in Nigeria. Specifically, the study averred that mounting public debt burden pose an obstacle to initiating new critical development projects that could generate employment.

Okoye, Evbuomwan and Modebe (2016) sought to determine the relationships between fiscal deficits and macroeconomic performance in Nigeria using time series annual data from 1981-2014. Data was obtained for four key macroeconomic variables – unemployment, exchange rate, inflation rate and gross fixed capital formation. Specific to unemployment the findings of the causality test showed a one-way causality running from budget deficit to unemployment and the results of the vector error correction methodology (VECM) showed a significant negative relationship between budget deficit and unemployment.

Ene (2018) examined budget deficit-unemployment nexus for Nigeria using Vector Error Correction Mechanisms (VECM). The results revealed significant positive effect of the Government's Annual Deficit on Unemployment Rate in Nigeria. Based on the findings the authors concluded that increase in budget deficit decreases the unemployment rate in Nigeria.

In the course of the empirical literature review, there is gap in the literature since there is no study on the link between budget deficit, budget reforms and employment in Nigeria. Hence, this present study investigates the nexus between budget deficit, budget reforms and employment in Nigeria from 1981 to 2024.

Theoretical Framework

Keynesian Theory of Employment: The Keynesian theory of employment, developed by John Maynard Keynes in his seminal work The General Theory of Employment, Interest and Money (1936), posits that total demand (aggregate demand) in an economy is the primary driver of employment levels. According to Keynes, unemployment results from insufficient aggregate demand for goods and services. He challenged classical economic theories that assumed markets are self-correcting and always tend toward full employment.

Relevance to the theory to the study: Keynesian theory supports the use of deficit financing where government expenditures exceed revenues during economic slowdowns to stimulate demand and reduce unemployment. In Nigeria's context, budget deficits are often viewed

negatively due to concerns about debt sustainability. However, Keynesian economics suggests that if deficits are used to finance productive spending (e.g., infrastructure, education, healthcare), they can boost aggregate demand and employment.

More so, Keynesian principles advocate reallocating government expenditure toward sectors with high employment potential. Nigeria's recent budget reforms, such as increased taxation and reduced subsidies, aim to reduce deficits and improve fiscal discipline. However, if not carefully designed, such reforms may reduce disposable income and aggregate demand, worsening unemployment in the short term.

The Keynesian theory of employment remains highly relevant to Nigeria's economic challenges. It offers a framework for understanding how budget deficits when directed toward productive public spending, can be a tool for reducing unemployment. Budget reforms must be carefully structured to support, rather than hinder, demand and job creation. For Nigeria, adopting a Keynesian-oriented fiscal policy approach could help address persistent unemployment and stimulate inclusive economic growth.

METHODOLOGY

The model specification for this study is adapted from Okoruwa (2021).

$$EMP_{ti} = f(BRI_{t1}, BDF_{t2}, BPS_{t3}, WAGR_{t4}, FDI_{t5}) \qquad \dots 3.1$$

> *where:*
>
> EMP_{ti} = Employment
> BRI_{t1} = Budget Reform Index
> BDF_{t2} = Budget deficit
> BPS_{t3} = Budget policy shift
> $WAGR_{t4}$ = Wage rate
> FDI_{t5} = Foreign Direct Investment

Econometrically, the form of equation (3.1) will be express as:

$$EMP_{ti} = \psi_0 + \psi_2 BRI_{t1} + \psi_2 BDF_{t2} + \psi_3 BPS_{t3} + \psi_4 WAGR_{t4} + \psi_5 FDI_{t5} + \mu_3 \qquad \dots 3.2$$

> *where:*
>
> $\Psi_1, > 0; \quad \psi_3 > 0; \quad \psi_4 > 0; \quad \psi_5 > 0; \quad \psi_2 > 0.$

DATA ANALYSIS AND DISCUSSIONS OF FINDINGS

Analysis of Vector Error Correction for Employment Equation

The result of the vector error correction mechanism (VECM) as presented in table 4.1 has a correct negative sign and also statistically significant. This is in line with theoretical expectation. Also, as depicted in the table, the error correction variable has expected negative coefficient of 0.3926, which implies that the previous year error would be corrected in the following year at an adjustment rate of 39.26 percent. This result indicates a fairly slow speed of adjustment from the disequilibrium in the short run to equilibrium in the long run. Furthermore, the high value of R-squared of 0.6304 shows that the overall model has a good fit and a high explanatory power. Specifically, the R-squared of 0.6304 shows that about 63 percent of the total variations in the dependent variable has been explained by the independent explanatory variables. This implies that, the model has a good fit on the data and has relatively high explanatory power.

Table 4.1: Vector Error Correction Result for Employment Equation

Error Correction	D(LEMP)	D(BRI)	D(BDF)	D(BPS)	D(WAGR)	D(FDI)
CointEq1	-0.392626	-0.288192	7174.498	- 1.586873	-20.74534	0.126746
	(0.14281)	(4.32317)	(2425.09)	(2.61273)	(11.3761)	(0.06875)
	[-2.74928]	[-0.06666]	[2.95845]	[- 0.60736]	[-1.82358]	[1.84363]
D(LEMP(-1))	-0.173282	-5.504886	-47007.87	-10.63150	66.03651	-2.293236
	(0.39599)	(39.9918)	(22433.4)	(24.1692)	(105.236)	(0.63596)
	[-0.43759]	[-0.13765]	[-2.09544]	[-0.43988]	[0.62751]	[-3.60595]
D(LEMP(-2))	-0.062873	-49.95751	-17350.18	-7.670918	199.2710	0.703940
	(0.36835)	(37.2005)	(20867.7)	(22.4824)	(97.8907)	(0.59157)
	[-0.17069]	[-1.34292]	[-0.83144]	[-0.34120]	[2.03565]	[1.18995]
D(BRI(-1))	0.003550	-0.351992	344.0813	0.141964	-1.153587	-0.000816
	(0.00287)	(0.29006)	(162.709)	(0.17530)	(0.76327)	(0.00461)
	[1.23620]	[-1.21352]	[2.11471]	[0.80984]	[-1.51137]	[-0.17682]
D(BRI(-2))	0.002288	-0.381742	-54.26562	0.043769	0.134405	0.007321
	(0.00258)	(0.26023)	(145.978)	(0.15727)	(0.68479)	(0.00414)
	[0.88682]	[-1.46692]	[-0.37174]	[0.27830]	[0.19627]	[1.76919]
D(BDF(-1))	-0.014257	-0.000183	0.852829	8.53E-05	0.001233	3.59E-06
	(0.00824)	(0.00046)	(0.26056)	(0.00028)	(0.00122)	(7.4E-06)
	[-1.73021]	[-0.39497]	[3.27308]	[0.30386]	[1.00853]	[0.48589]
D(BDF(-2))	0.026806	6.38E-05	-0.778143	-4.49E-05	-0.000915	-3.60E-06
	(0.00616)	(0.00045)	(0.25156)	(0.00027)	(0.00118)	(7.1E-06)
	[4.35162]	[0.14225]	[-3.09327]	[-0.16568]	[-0.77531]	[-0.50455]
D(BPS(-1))	-0.004766	0.331179	-1248.522	-0.149073	0.859509	-0.037515
	(0.00629)	(0.63496)	(356.180)	(0.38374)	(1.67085)	(0.01010)
	[-0.75771]	[0.52158]	[-3.50531]	[-0.38847]	[0.51441]	[-3.71538]
D(BPS(-2))	-0.022515	-0.835839	-105.8896	-0.159279	4.846491	0.029562
	(0.00772)	(0.77923)	(437.112)	(0.47093)	(2.05050)	(0.01239)
	[-2.91645]	[-1.07264]	[-0.24225]	[-0.33822]	[2.36356]	[2.38565]
D(WAGR(-1))	-0.001315	-0.067964	24.65576	0.003526	-0.183265	-0.003482
	(0.00070)	(0.07112)	(39.8942)	(0.04298)	(0.18714)	(0.00113)
	[-1.87857]	[-0.95564]	[0.61803]	[0.08203]	[-0.97927]	[-3.07906]
D(WAGR(-2))	0.003267	-0.027790	-59.72872	0.011684	-0.321472	2.99E-05
	(0.00684)	(0.08438)	(47.3313)	(0.05099)	(0.22203)	(0.00134)
	[0.47763]	[-0.32936]	[-1.26193]	[0.22912]	[-1.44786]	[0.02231]
D(FDI(-1))	0.377582	-6.208506	-6476.638	1.720493	-58.73920	0.450978
	(0.14970)	(15.1187)	(8480.82)	(9.13705)	(39.7838)	(0.24042)
	[2.52222]	[-0.41065]	[-0.76368]	[0.18830]	[-1.47646]	[1.87579]
D(FDI(-2))	-0.029370	8.213131	14414.46	7.075010	-33.56324	0.285301
	(0.15745)	(15.9015)	(8919.93)	(9.61014)	(41.8436)	(0.25287)
	[-0.18653]	[0.51650]	[1.61598]	[0.73620]	[-0.80211]	[1.12826]
C	0.010779	0.607954	578.7712	0.186745	-2.303935	0.017500
	(0.00583)	(0.58834)	(330.032)	(0.35557)	(1.54819)	(0.00936)
	[1.85019]	[1.03333]	[1.75368]	[0.52520]	[-1.48815]	[1.87043]
R-squared	0.630416	0.367032	0.759091	0.072284	0.454246	0.660891
Adj. R-squared	0.529722	-0.024805	0.609957	-0.502016	0.116399	0.450967

Sum sq. resids	0.000242	2.467406	776407.5	0.901210	17.08541	0.000624
S.E. equation	0.003394	0.342776	192.2805	0.207159	0.901993	0.005451
F-statistic	3.824651	0.936695	5.089987	0.125865	1.344531	3.148236

[Source: Author's computation (2025)]

In the same vein, the F-statistic value of 3.824 showed that the overall model is statistically significant at five percent level of significance. This is because the F-statistics calculated value of 3.824 is greater than the critical value of 2 at five percent level of significance. This means that the explanatory variables have joint impact on the dependent variable in the model, during the evaluation period. However, one and two periods lagged of budget reform index has a positive coefficient which is consistent with theoretical expectation. This means that a one percent increase in the previous one and two periods lagged of budget reform index resulted to increase in the total level of employment by 0.003 percent and 0.002 percent respectively, ceteris paribus.

Moreover, the negative sign of the coefficient of one period lagged of budget deficit shows that there is a negative impact of budget deficit on employment level in Nigeria in line with apriori expectation. This is because a one percent increase in previous one period lagged of budget deficit resulted to a reduction in the total employment level by 0.014, ceteris paribus. While in the second year, budget deficit has a positive and significant impact on employment level which does not agree with relevant theory, implying that a one percent increase in budget deficit financing resulted to an increase in the level of employment in the current period by 0.026 percent, other things being equal. However, two period lagged of budget deficit was statistically significant in influencing the current level of employment in Nigeria because the calculated t-statistic value of 4.351 is greater than the critical value of 2, at five percent level of significance.

The negative signs of the coefficients of one and two periods lagged of budget policy shift (BPS) shows that there is a negative impact of changes in statutory budget reform on employment level in the Nigerian which does not conform to apriori expectation. This is because a unit change in the previous one and two periods lagged of a comprehensive budget reform policy resulted to a reduction in the total level of employment by 0.004 percent and 0.0.002 percent respectively, ceteris paribus. Two period lagged of budget policy shift was statistically significant in influencing the current level of employment in Nigeria because the calculated t-statistic value of 2.011 is greater than the critical value of 2, at five percent level of significance.

In addition, the coefficient of previous one period lagged of wage rate is negative implying a negative impact of wage rate on employment generation in Nigeria. This result is consistent with apriori expectation showing that a one percent increase in previous one period lagged of wage rate resulted to a reduction in the level of employment in the current period by 0.001 percent, other things being equal. While in the second year, the coefficient of the previous two period lagged of wage rate is positive. This implies that a one percent increase in wage rate will result to increase in employment level by 0.003 percent which does not agree with relevant economic theory, ceteris paribus.

Finally, one period lagged of foreign direct investment is positive; implying a positive impact of foreign direct investment on employment in Nigeria. This result is consistent with apriori expectation, showing that a one percent increase in the previous one period lagged of foreign direct investment increased the total level of employment by 0.377 percent, respectively.

Statistically, the previous one period lagged of foreign direct investment has a statistically significant impact on employment level because the calculated t-statistic value of 2.522 is greater than the critical value of 2, at five percent level of significance. While in the second year, foreign direct investment has a negative impact on employment level, indicating a negative coefficient of 0.029 percent, other things being equal.

Discussions of Findings

The VECM result indicates, two period lagged of budget deficit, one and two periods lagged of budget reform index, one period lagged foreign direct investment and two period lagged of wage rate has a positive impact on employment level in Nigeria. This result can be espoused within the budget reform context of Nigeria especially with the specific sectoral reforms like Tertiary Education Trust Fund (i.e. 2.5 percent of Tax revenue), Universal Basic Education (first on line charge, counter-part funding and statutory deductions for basic education), Primary Health Care Act (one percent of Consolidated Revenue Fund channeled to Primary Health Care Centre) that have led to an improvement in the funding of basic education, research and development. This reforms in the budgeting process have improved the funding to this sectors that are believed to be human capital development sectors increasing global competitiveness of domestic labour force and HDI in Nigeria.

On the other hand, budget policy shift had a negative impact on employment level in Nigeria. Statistically, the previous two periods lagged of budget deficit, one period lagged of budget policy shift and one period lagged foreign direct investment was significant at 5 percent indicating a significant impact of budget deficit and budget reform on employment level in Nigeria. This result agrees with finding by Chinwendu, Eme and Otonye (2017), who aimed at determining whether fiscal deficit stimulate employment in Nigeria using VAR estimate to establish a long run relationship among the endogenous variables such as; budget deficit, GDP per capita, domestic credit to the private sector, domestic borrowing financed deficit, external borrowing financed deficit and foreign direct investment. The results revealed a positive and significant relationship between budget deficit and employment in Nigeria.

However, those of contrary opinion could be found in the study conducted by Okoye, Evbuomwan and Modebe (2016), who investigated the relationship between fiscal deficits and macroeconomic performance in Nigeria using such macroeconomic variables as; unemployment, exchange rate, inflation rate, and gross fixed capital formation. The findings showed a significant negative relationship between budget deficit and unemployment in Nigeria.

CONCLUSION

This study investigated the impact of budget deficit and budget reform on employment in Nigeria from 1981 to 2024. The VECM result indicates that, the previous one and two periods lagged of budget reform index, two period lagged of budget deficit, one period lagged foreign direct investment and two period lagged of wage rate has a positive impact on employment level in Nigeria. On the other hand, budget policy shift had a negative impact on employment level in Nigeria. Statistically, the previous two periods lagged of budget deficit, one period lagged of budget policy shift and one period lagged foreign direct investment was significant at 5 percent indicating a significant impact of budget reforms and budget deficit on employment level in Nigeria. Based on the findings and conclusions, the recommendations become imperative. The negative relationship between budget policy shift and employment, calls for policies that will increase budgetary allocations to sectors that will generate more employment

opportunities such as agriculture, manufacturing and construction sectors. Secondly, the Nigerian government should improve budget transparency and execution by strengthening the medium for budget implementation, monitoring, and accountability. Thirdly, the authorities should harmonize fiscal policies with the country's frameworks for employment to ascertain that employment data aligns with a budgetary framework.

REFERENCES

[1] Ariyo, A. and Raheem, M. I. (2019). Fiscal Policy Reforms and Economic Development in Nigeria. African Journal of Economic Policy, 26(1), 113–129.

[2] Ayogueze, N. F. and Anidiobu, G.A (2017). Assessment of Impact of Government Budget Deficits on Unemployment Rate in Nigeria. Journal of Economics and Finance, 8(6), 18–26.

[3] Chinwendu, N. W., Eme, K. I. and Otonye, T. S. (2017). Does Fiscal Deficit Stimulate Employment? Evidence from Nigeria's Experience: VAR Approach. Greener Journal of Economics and Accountancy, 6 (3), 065-081.

[4] Ene, E. E. (2018). An Empirical Analysis of the Budget Deficit and Unemployment Nexus in Nigeria. An Empirical Analysis of the Budget Deficit and Unemployment Nexus in Nigeria. International Journal of Multidisciplinary Research and Publications (IJMRAP), 1(3), 3-11.

[5] Eze, O. R. and Nwambeke, G. C. (2015). Effect of deficit financing on unemployment rate in Nigeria: an error correction model. International journal of small Business and Entrepreneurship Research, 3(7), 28-46.

[6] Lama, R. and Medina Guzman, J. P. (2015). Fiscal Consolidation during Times of High Unemployment: The Role of Productivity Gains and Wage Restraint. IMF Working Paper, WP/15/262.

[7] National Bureau of Statistics (NBS). (2023). Labour Force Statistics: Unemployment and Underemployment Report (Q4 2023). Retrieved from https://nigerianstat.gov.ng.

[8] Nairametrics (2024). Nigeria running on N7 trillion fiscal deficit as of Q3 2024. Retrieved from https://nairametrics.com.

[9] Okon, E. E. and Odigwe, C. F. (2021). Budgetary Reforms and Fiscal Performance in Nigeria. Journal of Public Administration and Policy Research, 13(2).

[10] Okoye, L. U., Evbuomwan, G. O., Modebe, N. J. and Ezeji, F. N. (2016). Macroeconomic Performance and Government Fiscal Deficits-Evidence from Nigeria. Nigerian Journal of Management Technology & Development, 7(2).