

Public Sector Budget and Foreign Direct Investment in Nigeria.

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ABSTRACT: The study investigated the effect of public sector budget on foreign direct investment in Nigeria. The ex-post facto research design which investigates possible cause-effect relationship, was adopted for this study. The population for this study is the Nigerian economy from the year of Nigeria independence to date. Using Census sampling technique, a sample of thirty-four (34) years (1990-2023) was considered for this study. Considering the objectives of this study and the nature of data to generate, the secondary source of data collection was employed in this study. The study employed descriptive statistics to summarize data trends and unit root tests to confirm stationarity of variables. Diagnostic and stability tests were used to ensure model reliability and validity. The ARDL model was applied to assess both short-run and long-run effects of government expenditure on investment. Moderated multiple regression was used to evaluate the interaction effect of exchange rate and inflation rate on the relationship between government spending and investment. The findings from this study revealed that budgeted health expenditure significantly influences foreign direct investment (FDI) in Nigeria over time, as evidenced by the statistically significant lagged effects observed in the ARDL analysis. Furthermore, the Moderated Multiple Regression (MMR) analysis suggests that inflation rate moderately affects the relationship between government budget expenditures and FDI, with a marginally significant interaction term. This implies that macroeconomic stability, particularly inflation control, plays a role in how government spending translates into FDI inflows, emphasizing the need for sound fiscal and monetary policies to enhance investment attractiveness. The study further suggested that the Nigerian government should prioritize and increase budgetary allocations to the health sector, ensuring effective utilization to improve workforce productivity and investor confidence, thereby boosting FDI inflows. Policymakers need to develop comprehensive strategies to enhance the attractiveness of the education and agriculture sectors for foreign investors, possibly through reforms, incentives, and infrastructure improvements.

KEYWORDS: Health, Education, and Agriculture, foreign direct investment.

INTRODUCTION

Investment plays a pivotal role in driving economic growth and development, particularly in emerging economies like Nigeria. Among various forms of investment, foreign direct investment (FDI) is essential as it brings in not only capital but also technology, managerial expertise, and access to global markets. Nigeria, being one of the largest economies in Africa, has long sought to attract substantial FDI inflows to enhance infrastructure, reduce unemployment, and improve the overall economic landscape. However, the pattern and volume of FDI inflows are often influenced by several macroeconomic variables, including the structure and implementation of public sector budgets (Eke & Igwe, 2025).

The public sector budget in Nigeria is a critical policy instrument used by the government to allocate resources, stimulate economic activity, and provide essential public services. Through fiscal policy measures—government spending and revenue generation—the budget influences investor confidence, inflation rates, exchange rates, and overall economic stability. A well-planned and transparently executed budget can enhance macroeconomic performance and signal a stable investment climate to foreign investors (Okonjo-Iweala & Osafo-Kwaako, 2023). Conversely, persistent budget deficits, inefficient public expenditure, and weak fiscal discipline could deter FDI inflows by increasing economic uncertainty.

Over the years, Nigeria has experienced fluctuating FDI inflows, often correlating with the quality of fiscal governance and budget performance. For instance, budgets that prioritize capital expenditure on critical infrastructure such as power, transport, and education tend to create a conducive environment for FDI. On the other hand, recurrent expenditures that do not contribute to productive capacity may yield minimal impact on foreign investment. According to Omojimiye and Aiyedogbon (2022), foreign investors often evaluate the composition of national budgets and the institutional framework within which fiscal policies are implemented before committing resources to any economy.

In light of the above, it becomes crucial to examine the relationship between the public sector budget and FDI in Nigeria, especially considering ongoing fiscal reforms and global economic dynamics. Understanding how budgetary allocations and fiscal performance impact FDI decisions will provide policymakers with insights for designing more investor-friendly fiscal policies. This will not only foster sustainable economic growth but also position Nigeria more competitively in the global investment landscape.

STATEMENT OF THE PROBLEM

Despite Nigeria's rich resource endowment and large market potential, the country continues to underperform in attracting consistent and substantial FDI inflows. One major concern is the apparent disconnect between the government's fiscal policy objectives—reflected in public sector budgets—and the expectations of foreign investors. Budgetary inefficiencies, corruption, recurrent fiscal deficits, and poor implementation of capital projects have raised concerns among potential investors regarding the stability and predictability of Nigeria's investment environment (Adeniran, Omotoso & Onanuga, 2023). While several studies have examined determinants of FDI in Nigeria, there is a growing need for a focused investigation into how the nature, structure, and execution of public sector budgets influence the inflow of foreign investments. Without such analysis, fiscal policy may continue to fall short in positioning Nigeria as a prime destination for FDI, thereby undermining broader economic development goals.

While previous studies have extensively examined the direct effects of government expenditure and macroeconomic variables on economic growth and foreign direct investment (FDI) in Nigeria, there remains a notable gap in understanding the sector-specific impacts of budget allocations—particularly in health, education, and agriculture—on FDI over time, as well as the moderating role of inflation in these relationships. For instance, Igwe and Eke (2025) focused on transport and public administration expenditures but did not isolate the specific effects of health, education, or agriculture on FDI, while Madueke, Anisiobi, and Okeke (2023) reported fiscal policy's overall insignificant impact on FDI without disaggregating sectoral budget components. Additionally, prior research has largely overlooked the interactive role of inflation as a moderator in these relationships (Nwaeke, 2023). The present study filled these gaps by employing a detailed Autoregressive Distributed Lag (ARDL) approach combined with Moderated Multiple Regression (MMR) analysis to reveal the significant lagged effect of health expenditure on FDI and to provide new evidence that inflation rate marginally moderates the impact of government budget components on FDI inflows. This nuanced insight advances the understanding of how targeted sectoral spending and macroeconomic stability jointly influence foreign investment attraction in Nigeria.

AIM AND OBJECTIVES OF THE STUDY

The aim of this study was to investigate the impact of public sector budget and foreign direct investment in Nigeria. Specifically, the objectives of the study are to:

- (i) assess the effect of budgeted health expenditure on foreign direct investment in Nigeria.
- (ii) establish the relationship between budgeted education expenditure on foreign direct investment in Nigeria.
- (iii) determine the impact of budgeted expenditure on agriculture on foreign direct investment in Nigeria.
- (iv) explore the moderating role of inflation rate on the effect of public sector budget on foreign direct investment in Nigeria.

RESEARCH QUESTIONS

Considering the objectives of this study, the following research questions are raised:

- (i) What is the effect of budgeted health expenditure on foreign direct investment in Nigeria?
- (ii) What is the effect of budgeted education expenditure on foreign direct investment in Nigeria?
- (iii) What impact has budgeted agricultural expenditure on foreign direct investment in Nigeria?
- (v) Does inflation rate moderate the effect of public sector budget on foreign direct investment in Nigeria?

Research Hypotheses

To answer the questions raised in this study, the following null hypotheses are formulated and tested:

H01: Budgeted health expenditure has no significant effect on foreign direct investment in Nigeria.

H02: Budgeted education expenditure does not significantly affect foreign direct investment in Nigeria.

H03: Budgeted expenditure on agriculture has on significant impact on foreign direct investment in Nigeria.

H04: Does inflation rate does not significantly moderate the effect of public sector budget on foreign direct investment in Nigeria.

LITERATURE REVIEW

Conceptual review

Public Sector Budget

The public sector budget represents the financial blueprint of government activities, outlining expected revenues and planned expenditures within a fiscal year. It serves as a critical tool for economic management and resource allocation, enabling governments to pursue macroeconomic stability, promote equitable growth, and deliver public goods. In Nigeria, the public sector budget is central to national development planning, with allocations directed toward key sectors such as health, education, infrastructure, and agriculture. Effective budgeting requires not only adequate resource allocation but also transparency, efficiency, and accountability in spending. According to Eze, Adebayo, and Ezenwafor (2023), the success of public budgets in achieving development outcomes in Nigeria is often hindered by poor implementation, corruption, and fiscal indiscipline, which undermine their impact on growth and investment.

Budgeted Health Expenditure

Budgeted health expenditure refers to the portion of the public sector budget allocated to the healthcare sector, covering spending on hospitals, medical personnel, pharmaceuticals, and public health interventions. This allocation is crucial for improving health outcomes, reducing mortality, and enhancing the productivity of the labor force. In Nigeria, however, health budgets have consistently fallen below the 15% benchmark recommended by the Abuja Declaration, raising concerns about the government's commitment to the sector. Adebayo, Aluko, and Ogunleye (2022) argue that inadequate and inconsistent health financing contributes to poor service delivery, high out-of-pocket expenses, and weak health infrastructure, which ultimately affect human capital development and economic growth.

Budgeted Education Expenditure

Budgeted education expenditure entails the financial commitment made by the government to fund various levels of the education system, including salaries of teachers, infrastructure development, curriculum enhancement, and educational technology. This expenditure is instrumental in building human capital, fostering innovation, and enhancing national competitiveness. In Nigeria, education budgets have frequently been criticized for being insufficient and poorly utilized. As observed by Nwankwo, Oboh, and Umeh (2023), the underfunding of education has contributed to dilapidated learning environments, teacher shortages, and declining quality of education, all of which hinder the country's efforts to achieve Sustainable Development Goal 4 on inclusive and equitable quality education.

Budgeted Expenditure on Agriculture

Budgeted expenditure on agriculture comprises government spending aimed at supporting the agricultural sector through subsidies, extension services, research and development, rural infrastructure, and access to credit. This expenditure is vital for food security, rural employment, and poverty alleviation. Despite Nigeria's heavy reliance on agriculture for livelihood and GDP contribution, budgetary allocations to the sector have remained low, often below the 10% target set by the Maputo Declaration. According to Yusuf, Lawal, and Okorie (2022), inadequate investment in agriculture limits productivity, value chain development, and export competitiveness, thereby reducing the sector's potential to drive inclusive economic growth and reduce rural poverty.

Foreign Direct Investment

This basically involves the transfer of resources, including capital, technology, and management and marketing expertise from one country to another. Odozi (2014), opined that resources so transferred most times extend the production capabilities of the recipient country. The concept of Foreign Direct Investment refers to the movement of capital which has to do with control and ownership of a country's firm in a different or another country. The concept behind a foreign direct investment and economic growth and development has remained on a bilateral relationship between the multinationals and the host communities and how development is appraised in these host communities. Inputs are provided for by the Multinationals at an affordable cost to buyers of downstream. This is what is in practice in developing countries in which Nigeria is a part. The nationals of these countries in question built their capacity in several sectors and with technical and managerial positions in multinational enterprises. Rents are received by host communities from multinational enterprises. It is argued that by attracting multinational firms, the host economy captures a portion of the rents that these firms generate (Glass & Saggi, 2011).

Moderating effect of inflation rate

The moderating effect of inflation rate refers to the role inflation plays in influencing the strength or direction of the relationship between two economic variables, such as government expenditure and economic development, or investment and economic growth. Inflation, when moderate and stable, can encourage investment and fiscal planning, thereby enhancing the effectiveness of government spending. However, high or unpredictable inflation often distorts prices, erodes purchasing power, and undermines investor confidence, which can weaken or even reverse the positive effects of public expenditure on economic growth (Eke & Igwe, 2025). For instance, in the context of Nigeria, excessive inflation has been shown to dampen the developmental impact of government capital spending by increasing project costs and reducing the real value of allocated funds (Igwe & Eke, 2025). Thus, inflation does not only affect macroeconomic stability directly but also indirectly moderates the outcomes of fiscal and monetary policy measures.

THEORETICAL REVIEW

Eclectic Theory of International Production (OLI Framework)

The theory as developed by John Dunning (1980), provides a useful lens for understanding the relationship between the public sector budget and foreign direct investment (FDI) in Nigeria. The theory posits that FDI decisions by multinational enterprises are influenced by three key advantages: Ownership, Location, and Internalization. In the Nigerian context, the Location advantage is particularly relevant, as it encompasses the economic, political, and infrastructural conditions that make a country attractive to foreign investors. A well-structured and transparently implemented public sector budget—particularly one that prioritizes infrastructure, education, and security—enhances Nigeria's locational appeal by improving the investment climate. For instance,

budgetary allocations that improve electricity supply, road networks, and regulatory frameworks can significantly reduce the operational risks and costs for foreign investors. As noted by Igwe and Eke (2025), consistent and strategic government spending is a critical factor in attracting and sustaining FDI inflows in developing economies like Nigeria.

Empirical review

Eke and Igwe (2025) examined the impact of exchange rate volatility on the Nigerian economy from 2000 to 2023, utilising an ex-post-facto research design that analyses data from credible sources, including the Central Bank of Nigeria (CBN) and the World Bank. The study examined the essential macroeconomic factors affecting Nigeria's Gross Domestic Product (GDP) and employed a judgemental sampling method to gather data over a span of 24 years. The research employed descriptive statistics, unit root tests, and least squares regression for data analysis. Diagnostic assessments, comprising the Breusch-Godfrey and Breusch-Pagan-Godfrey tests, were performed to ascertain the model's validity and robustness. The research indicated that fluctuations in the monetary policy rate (MPR) had a substantial positive influence on Nigeria's GDP, whereas instabilities in interest and inflation rates do not have a statistically significant effect. This underscores MPR instability as the principal monetary variable affecting economic development. Thus, the report recommended that the Nigerian government implement policies to stabilise the exchange rate by intervening in the foreign exchange market and sustaining sufficient foreign reserves. The Central Bank of Nigeria must modify its monetary policy framework to adequately address exchange rate volatility.

Igwe and Eke (2025) examined the impact of government expenditure on economic development in Nigeria, delineating six specific objectives, six research questions, and six hypotheses. An ex-post-facto research design was utilised, concentrating on data from 1981 to 2023 obtained from the Central Bank of Nigeria and the World Bank. The population included the Transport and Public Administration Sectors of the Nigerian economy, utilising a purposive sample size of 43 yearly observations. Secondary data were gathered for their dependability and consistency. The research employed descriptive statistics and inferential statistics, namely Multiple Regression and Moderated Multiple Regression, for analysis using the Statistical Package for Social Sciences (SPSS) Version 25. The findings revealed that transport services expenditure substantially boosts GDP and HDI, whereas public administration expenditure has no significant effect, and corruption greatly moderates the influence of government expenditure on economic outcomes in Nigeria. The study determined that proficient management of government expenditures and enhanced anti-corruption strategies are crucial for augmenting public spending efficiency. The study recommended that augmenting transport infrastructure investment, optimising public administration expenditures, fortifying anti-corruption measures, enhancing governance efficiency, and instituting transparency reforms will maximise the efficacy of government spending on economic growth and human development in Nigeria.

Nwaeke (2023) examined the effects of budget deficit and foreign direct investment on the Nigerian economy from 1990 to 2022. The exchange rate, foreign direct investment, government deficit finance, inflation rate, and real gross domestic product were employed as metrics and dimensions, respectively. The data utilised were obtained from World Bank Development Indicators (WDI) and the Central Bank of Nigeria (CBN). The E-Views Statistical Software was utilised to do the analysis. The Augmented Dickey-Fuller and Phillips-Perron unit root tests were utilised. The unit root tests indicate that the RGDP, EXR, FDI, and GDF variables are stationary after initial differencing, whereas the inflation rate is stationary at the level. The analytical method employed was Autoregressive Distributed Lag (ARDL). The estimates indicated that, in the long term, exchange rate (EXR), foreign direct investment (FDI), and government deficit financing (GDF) exert a positive and significant influence on real gross domestic product, whereas the inflation rate (INFR) negatively affects real gross domestic product in the Nigerian economy. The report proposes that, given the favourable and large impact of foreign direct investment on the Nigerian economy, policymakers should formulate strategies and policies to encourage substantial investment inflows into the country. Moreover, given that government deficit financing positively influences the Nigerian economy, the recorded fiscal deficits should be allocated to productive investments, such as road construction, electricity provision, and enhanced healthcare systems, which would serve as incentives for productivity by attracting foreign direct investments.

Madueke, Anisiobi, and Okeke (2023) investigated the influence of critical fiscal policy variables—government capital expenditure, government revenue, government recurrent expenditure, external debt, and tax revenue—on foreign direct investment and assessed the existence of a causal relationship between fiscal policy and foreign direct investment in Nigeria. Approach, Methodology, and Design: Time series Econometric techniques, including the Vector Autoregressive (VAR) Model, unit root test, cointegration test, lag selection test, and Granger causality test, were applied to annual data sourced from the CBN statistical bulletin and the National Bureau of Statistics, covering the period from 1985 to 2020. Results: The unit root test results indicated that foreign direct investment, government capital spending, government revenue, and taxation were stationary at first order (1), whilst recurrent expenditure and external debt were stationary at zero order (0). Furthermore, co-integration is present among all the variables in the model. The results indicated that fiscal policy exerts a minimal influence on foreign direct investment in Nigeria. This article provides significant insights into the correlation between fiscal policy and foreign direct investment, highlighting the necessity for a coherent and coordinated fiscal strategy to attract FDI in Nigeria for optimal growth and development.

This study analysed the relationship among government capital expenditure, foreign direct investment (FDI), and economic growth in Nigeria, as investigated by Kolawole and Sunkanmi (2015). The study explicitly examined the influence of government capital spending and foreign direct investment on economic growth in the country from 1980 to 2012. The relationship study utilised econometric approaches, including Ordinary Least Squares (OLS), cointegration, and Granger causality, to determine the causal relationship between variables and the degree of impact one variable had on another. The analysis indicated that government capital expenditure and growth Granger-cause each other, but a unidirectional causation was shown between growth and FDI. A Granger no-causality relationship was observed between government capital expenditure and foreign direct investment (FDI). Subsequent findings indicated that government capital investment exerted a markedly positive impact on economic growth. Consequently, the report recommends that the government allocate a greater portion of its budget to capital projects such as power, energy, infrastructure, healthcare, education, and commercial agriculture to stimulate growth and attract increased foreign direct investment into the country.

Omole (2021) conducted a research entitled “Foreign Direct Investment (FDI) in Nigeria: Opportunities, Challenges, and Way Forward.” He asserts that the importance of foreign direct investment for economic progress in Nigeria is paramount. Nigeria, being an emerging market in Africa with substantial economic potential, necessitates considerable foreign direct investment to attain sustainable economic growth and development. While key sectors of the economy have witnessed some levels of FDI flows in recent years especially in the oil and gas, food and beverage, information technology and telecommunications industries, the country has failed to maximize FDI potentials. The gap between current reality and future projections is attributable to poor infrastructure and inconsistent regulations, political risk, macroeconomic parameters, security concerns, and corruption, amongst others. These challenges have weakened the country’s future prospects of attracting desirable FDI levels commensurate with our potential. More so, the NIPC Act which protects foreign investment in Nigeria lacks the authority to assist investors to cope with the myriad ministries, departments and agencies (MDAs) in resolving trade issues and as a result, there is insufficient private sector participation in its operations. This paper recommends massive infrastructural development via increased capital expenditure budget by government, efficient monetary and fiscal policies by the Central bank of Nigeria and Ministry of Finance; and quick prosecution of corruption cases by special anticorruption courts. In addition, the security agencies must be strengthened continuously to enhance their capacity to tackle security challenges effectively especially the menace of Fulani herdsmen which currently impacts investments in Agriculture sector negatively.

Koutche (2021) examined the relationship between public investment, foreign direct investment, and budget deficit. Secondary data collected from the World Bank website representing the 76 low-income and low-middle-income countries were analyzed using multiple regression. The multiple linear regression results indicated the model was able to significantly predict budget deficit, $F(2, 73) = 14.05$, $p < .001$, $R^2 = .72$. However, public investment ($t = -1.279$, $p < .003$) was the only statistically significant predictor. A key recommendation is for public leaders to identify and promote public investment and foreign direct investment that may increase public revenue and decrease the budget deficit. The implications for positive social change include the opportunity for public leaders to improve their decision-making by promoting public investment and foreign direct investment that positively affect individuals and communities.

METHODOLOGY

The ex-post facto research design which investigates possible cause-effect relationship, was adopted for this study. The population for this study is the Nigerian economy from the year of Nigeria independence to date. Using Census sampling technique, a sample of thirty four (34) years (1990-2023) was considered for this study. Considering the objectives of this study and the nature of data to generate, the secondary source of data collection was employed in this study. The study employed descriptive statistics to summarize data trends and unit root tests to confirm stationarity of variables. Diagnostic and stability tests were used to ensure model reliability and validity. The ARDL model was applied to assess both short-run and long-run effects of government expenditure on investment. Moderated Multiple Regression was used to evaluate the interaction effect of exchange rate and inflation rate on the relationship between government spending and investment. The following models were used to test all the research hypotheses.

ARDL Model:

$$FDI = f[\alpha_0 + \beta_1 BHE_t + \beta_2 BEE_t + \beta_3 BAE_t + \dots - \mu] \dots (1)$$

MMR Model:

$$DPI = f[\alpha_0 + \beta_1 BHE_t + \beta_2 BEE_t + \beta_3 BAE_t + \beta_4 IFR_t + \beta_5 (BHE_t \times IFR_t) + \beta_6 (BEE_t \times IFR_t) + \beta_7 (BAE_t \times IFR_t) + \dots - \mu] \dots (2)$$

Where:

FDI	=	Foreign Direct Investment
BHE	=	Budgeted Health Expenditure
BEE	=	Budgeted Education Expenditure

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BAE	=	Budgeted Agriculture Expenditure
IFR	=	Inflation Rate
α	=	Regression Constant
β	=	Regression Coefficient
μ	=	Stochastic term

DATA ANALYSIS AND DISCUSSION

Data analysed here are the measures for public sector budget are budgeted health expenditure (BHE), Budgeted Education Expenditure (BEE), and Budgeted Agricultural Expenditure (BAE). Foreign Direct Investment (FDI) was used as the criterion variable while inflation rate (EXR) was used as a moderating variable.

Table 1. Descriptive Analysis

	FDI	BHE	BEE	BAE	IFR
Mean	1.462040	2.492663	2.921811	4.081082	0.966441
Median	1.571199	2.546393	2.976915	4.121815	1.000515
Maximum	2.900249	2.706402	3.181746	4.272733	1.377750
Minimum	0.183821	2.196535	2.544279	3.684932	-0.163610
Std. Dev.	0.785208	0.190859	0.237301	0.170360	0.345300
Skewness	0.169906	-0.384290	-0.325223	-0.968800	-1.587273
Kurtosis	1.987187	1.555801	1.548790	3.153865	6.376037
Jarque-Bera	1.046156	2.453389	2.318334	3.463141	19.68576
Probability	0.592693	0.293260	0.313747	0.177006	0.124953
Sum	32.16489	54.83859	64.27984	89.78380	21.26171
Sum Sq. Dev.	12.94757	0.764968	1.182546	0.609471	2.503874
Observations	34	34	34	34	34

Table 1 presents the descriptive statistics for Foreign Direct Investment (FDI), Budgeted Health Expenditure (BHE), Budgeted Education Expenditure (BEE), Budgeted Agricultural Expenditure (BAE), and Inflation Rate (IFR) in Nigeria over 34 observations. The average FDI is 1.46%, with moderate variability (standard deviation = 0.79), while BAE records the highest mean of 4.08%, indicating that agriculture received the most significant budgetary allocation during the period. BHE and BEE follow with means of 2.49% and 2.92%, respectively, suggesting consistent public investment in social sectors. The inflation rate has a lower mean of 0.97% but a relatively high standard deviation of 0.35, reflecting greater instability. Skewness and kurtosis values show that most variables are slightly skewed and platykurtic, except IFR, which is negatively skewed and leptokurtic, indicating outlier tendencies. The Jarque-Bera test results show that all variables are approximately normally distributed ($p > 0.05$), supporting the suitability of the data for further econometric analysis on how public sector budgeting influences FDI in Nigeria.

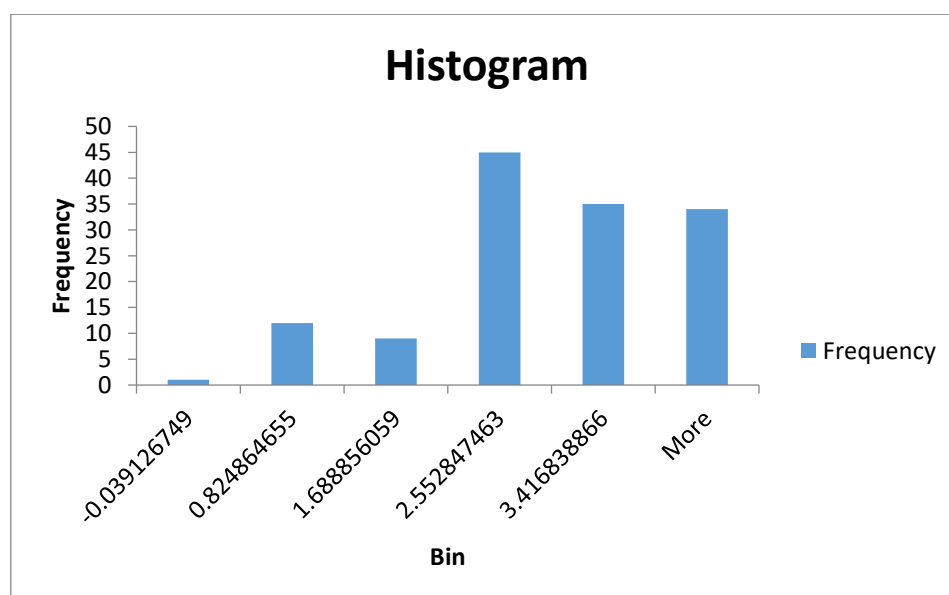


Figure 1. Histogram

The histogram illustrates the distribution of a dataset across defined bins, revealing a right-skewed pattern. Most of the data points fall within the bins ranging from approximately 2.55 to "More," indicating that the majority of observations are concentrated in the higher value ranges. Specifically, the highest frequency occurs in the 2.55–3.41 bin, followed by the 3.41–More bin, suggesting a clustering of values in the upper range of the dataset. The earlier bins show much lower frequencies, with the lowest frequencies in the first and second bins, indicating relatively fewer low-value observations in the sample. This distribution suggests that the variable under investigation tends to exhibit higher values more frequently.

Table 2. Unit Root Tests

Variable	ADF t-Statistic	ADF Prob.	ADF Result	Decision
FDI	-6.9672	0.0000	I(1)	Stationary
BHE	-4.8502	0.0398	I(1)	Stationary
BEE	-2.3573	0.0201	I(0)	Stationary
BAE	-4.1910	0.0026	I(1)	Stationary
IFR	-3.6140 & -8.0846	0.0108	I(0) & I(1)	Stationary at both levels

Table 2 presents the results of the Augmented Dickey-Fuller (ADF) unit root test used to determine the stationarity of the variables in the study. The findings reveal that foreign direct investment (FDI), budgeted health expenditure (BHE), and budgeted agricultural expenditure (BAE) are stationary at first difference, denoted as I(1), since their ADF t-statistics are statistically significant at the 5% level. Budgeted education expenditure (BEE) is stationary at level, I(0), with a probability value of 0.0201, indicating it is already mean-reverting without differencing. Interestingly, the inflation rate (IFR) is stationary at both level and first difference, with significant ADF t-statistics of –3.6140 and –8.0846, respectively. These results confirm that all variables are stationary in their respective forms, making them suitable for further time series econometric analysis without the risk of spurious regression.

Table 3. ARDL Long Run Form and Bounds Test for model 1

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.729502	10%	2.37	3.2
k	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Table 3 presents the ARDL Bounds Test results used to assess the existence of a long-run relationship among the variables in Model 1. The F-statistic value of 3.729502 exceeds the upper bound critical values at the 10% (3.20), 5% (3.67), and 2.5% (4.08) significance levels, but not at the 1% level (4.66). This implies that the null hypothesis of no level relationship is rejected at conventional significance levels (10%, 5%, and 2.5%), confirming the presence of a long-run equilibrium relationship among the model variables. Therefore, it can be concluded that public sector budget components such as health, education, and agriculture expenditures significantly influence foreign direct investment in Nigeria over the long run.

Table 4. ARDL Error Correction Regression for model 1

Dependent Variable: D(FDI)				
Selected Model: ARDL(1, 2, 2, 2)				
Case 2: Restricted Constant and No Trend				
Date: 04/14/25 Time: 15:39				
Sample: 1 34				
Included observations: 32				
ECM Regression				
Case 2: Restricted Constant and No Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(BHE)	-5.087186	5.289370	-0.961775	0.3471
D(BHE(-1))	36.93702	9.125787	4.047544	0.0006
D(BEE)	2.881108	5.000307	0.576186	0.5706
D(BEE(-1))	-12.08791	5.094357	-2.372803	0.0273

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D(BAE)	3.782124	2.991110	1.264455	0.2199
D(BAE(-1))	2.054653	2.994438	0.686156	0.5001
CointEq(-1)*	-0.628409	0.133374	-4.711626	0.0001
R-squared	0.501712	Mean dependent var	-0.021315	
Adjusted R-squared	0.382122	S.D. dependent var	0.703529	
S.E. of regression	0.553010	Akaike info criterion	1.843760	
Sum squared resid	7.645511	Schwarz criterion	2.164390	
Log likelihood	-22.50016	Hannan-Quinn criter.	1.950040	
Durbin-Watson stat	2.084341			

* p-value incompatible with t-Bounds distribution.

Table 4 presents the ARDL Error Correction Regression results for Model 1, where foreign direct investment (FDI) is the dependent variable. The model includes first-differenced values of budgeted health expenditure (BHE), budgeted education expenditure (BEE), and budgeted agricultural expenditure (BAE). The coefficient of the error correction term, CointEq(-1), is -0.628409 and statistically significant at the 1% level ($p = 0.0001$), confirming a stable long-run relationship and indicating that approximately 63% of any deviation from the long-run equilibrium is corrected within one period. Among the short-run dynamics, the first lag of BHE (D(BHE(-1))) is positively significant (36.93702; $p = 0.0006$), suggesting a strong delayed positive impact of health spending on FDI. In contrast, the first lag of BEE (D(BEE(-1))) is negatively significant (-12.08791; $p = 0.0273$), implying that increased educational expenditure may have a lagged negative short-run effect on FDI. Other variables, including current BHE, current and lagged BAE, and current BEE, are statistically insignificant. The model yields an R-squared of 0.5017, indicating that about 50% of the variations in FDI are explained by the independent variables. The Durbin-Watson statistic of 2.08 suggests no serious autocorrelation issues in the residuals. Overall, the error correction model confirms both long-run and short-run dynamics between public sector budget components and FDI in Nigeria.

Test of null hypotheses 1-3

- H01:** Budgeted health expenditure has no significant effect on foreign direct investment in Nigeria.
H02: Budgeted education expenditure does not significantly affect foreign direct investment in Nigeria.
H03: Budgeted expenditure on agriculture has on significant impact on foreign direct investment in Nigeria.

Table 5. Dependent Variable: FDI model 1

Method: ARDL
Date: 04/14/25 Time: 15:35
Sample (adjusted): 3 34
Included observations: 32 after adjustments
Dependent lags: 1 (Fixed)
Dynamic regressors (2 lags, fixed): BHE BEE BAE
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
FDI(-1)	0.371591	0.185911	1.998760	0.0587
BHE	-5.087186	6.600061	-0.770779	0.4494
BHE(-1)	28.13735	12.24217	2.298395	0.0319
BHE(-2)	-36.93702	14.75164	-2.503927	0.0206
BEE	2.881108	6.025928	0.478119	0.6375
BEE(-1)	-5.753298	8.007681	-0.718472	0.4804
BEE(-2)	12.08791	8.182249	1.477333	0.1544
BAE	3.782124	3.674890	1.029180	0.3151
BAE(-1)	-0.468189	5.035464	-0.092978	0.9268
BAE(-2)	-2.054653	4.648034	-0.442048	0.6630
C	2.705096	2.911532	0.929097	0.3634
R-squared	0.673173	Mean dependent var	1.304647	
Adjusted R-squared	0.517541	S.D. dependent var	0.868688	
S.E. of regression	0.603384	Akaike info criterion	2.093760	
Sum squared resid	7.645511	Schwarz criterion	2.597607	
Log likelihood	-22.50016	Hannan-Quinn criter.	2.260771	
F-statistic	4.325423	Durbin-Watson stat	2.084341	
Prob(F-statistic)	0.002278			

*Note: p-values and any subsequent tests do not account for model selection.

The ARDL results show that budgeted health expenditure has a significant lagged effect on foreign direct investment (FDI) in Nigeria, as evidenced by the statistically significant coefficients at lag 1 ($p = 0.0319$) and lag 2 ($p = 0.0206$), leading to the rejection of the null hypothesis that health expenditure has no effect on FDI. However, budgeted education expenditure and budgeted expenditure on agriculture do not show significant impacts on FDI, with p-values above 0.05 for all current and lagged terms, thus failing to reject their respective null hypotheses. This suggests that while investments in health may influence FDI over time, education and agriculture budget allocations do not have a measurable direct or lagged effect on FDI within the study period.

Test of null hypothesis 4

Model 2:

H04: Does inflation rate does not significantly moderate the effect of public sector budget on foreign direct investment in Nigeria.

Table 6. MMR estimation of inflation rate on the effect of public sector budget on foreign direct investment

Model Summary						
Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate	
1	.308 ^a	.095	.004		.84116	
2	.456 ^b	.208	.099		.80017	
a. Predictors: (Constant), Zscore(BAE), Zscore(BEE), Zscore(BHE)						
b. Predictors: (Constant), Zscore(BAE), Zscore(BEE), Zscore(BHE), INT						
Coefficients ^a						
Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	1.295	.144		8.978	.000
	Zscore(BHE)	.818	1.559	.971	.525	.603
	Zscore(BEE)	-1.249	1.546	-1.481	-.807	.426
	Zscore(BAE)	.240	.335	.285	.717	.479
2	(Constant)	1.251	.139		9.003	.000
	Zscore(BHE)	.151	1.519	.179	.100	.921
	Zscore(BEE)	-1.131	1.472	-1.342	-.769	.448
	Zscore(BAE)	.288	.319	.342	.904	.374
	INT	.245	.120	.690	2.038	.051

a. Dependent Variable: FDI

The Moderated Multiple Regression (MMR) results indicate that the interaction term between inflation rate and public sector budget components has a positive and marginally significant effect on foreign direct investment (FDI) in Nigeria, with a coefficient of 0.245 and a p-value of 0.051. This suggests that inflation rate moderately influences the relationship between public sector budget expenditures (health, education, agriculture) and FDI, providing weak evidence to reject the null hypothesis that inflation does not significantly moderate this effect. While the individual budget components themselves are not statistically significant predictors of FDI, the inclusion of the inflation interaction improves the model's explanatory power, increasing the adjusted R-squared from 0.004 to 0.099. Hence, inflation appears to play a moderating role in how government budget expenditures impact FDI inflows in Nigeria.

Table 7. Breusch-Godfrey Serial Correlation LM Test for model 1:

F-statistic	0.320688	Prob. F(2,19)	0.7295
Obs*R-squared	1.044939	Prob. Chi-Square(2)	0.5931

Table 5 presents the results of the Breusch-Godfrey Serial Correlation LM Test for Model 1, which assesses the presence of autocorrelation in the residuals. The F-statistic value is 0.320688 with a corresponding probability (Prob. F) of 0.7295, while the Obs*R-squared statistic is 1.044939 with a probability (Prob. Chi-Square) of 0.5931. Both p-values are greater than the 0.05 significance level, indicating that the null hypothesis of no serial correlation cannot be rejected. Therefore, the model does not suffer from serial correlation, confirming the reliability and validity of the regression estimates.

Table 8. Heteroskedasticity Test: Breusch-Pagan-Godfrey for model 1

F-statistic	1.174746	Prob. F(10,21)	0.3598
Obs*R-squared	11.47932	Prob. Chi-Square(10)	0.3214
Scaled explained SS	3.658665	Prob. Chi-Square(10)	0.9614

Table 6 displays the results of the Breusch-Pagan-Godfrey heteroskedasticity test for Model 1, which examines whether the variance of the residuals is constant (homoskedasticity) or not (heteroskedasticity). The F-statistic is 1.174746 with a p-value of 0.3598, the Obs*R-squared value is 11.47932 with a p-value of 0.3214, and the Scaled explained sum of squares is 3.658665 with a p-value of 0.9614. Since all p-values are above the 0.05 threshold, the null hypothesis of homoskedasticity is not rejected. This indicates that there is no significant evidence of heteroskedasticity in the model, suggesting that the error terms have constant variance and the model's standard errors are reliable.

Table 9. Ramsey RESET Test for model 1

Equation: UNTITLED
 Specification: FDI FDI(-1) BHE BHE(-1) BHE(-2) BEE BEE(-1) BEE(-2)
 BAE BAE(-1) BAE(-2) C
 Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.224169	20	0.8249
F-statistic	0.050252	(1, 20)	0.8249

F-test summary:			
	Sum of Sq.	df	Mean Squares
Test SSR	0.019162	1	0.019162
Restricted SSR	7.645511	21	0.364072
Unrestricted SSR	7.626350	20	0.381317

Table 7 presents the results of the Ramsey RESET Test for Model 1, which assesses the model's functional form adequacy and checks for omitted variable bias. The t-statistic is 0.224169 with 20 degrees of freedom and a corresponding p-value of 0.8249. Similarly, the F-statistic is 0.050252 with a p-value of 0.8249. Since the p-values are significantly greater than 0.05, the null hypothesis that the model is correctly specified cannot be rejected. This suggests that there is no evidence of omitted variable bias or misspecification in the functional form of the regression model, indicating that the model is well-specified.

DISCUSSION OF FINDINGS

The findings from this study revealed that budgeted health expenditure significantly influences foreign direct investment (FDI) in Nigeria over time, as evidenced by the statistically significant lagged effects observed in the ARDL analysis. This underscores the importance of health sector investments in creating an enabling environment for attracting FDI, possibly due to improved workforce health and productivity that appeal to foreign investors. In contrast, budget allocations for education and agriculture did not show significant direct or lagged impacts on FDI, indicating that these sectors, within the study period, may not have been sufficiently leveraged or perceived by investors as critical determinants for investment decisions. Furthermore, the Moderated Multiple Regression (MMR) analysis suggests that inflation rate moderately affects the relationship between government budget expenditures and FDI, with a marginally significant interaction term. This implies that macroeconomic stability, particularly inflation control, plays a role in how government spending translates into FDI inflows, emphasizing the need for sound fiscal and monetary policies to enhance investment attractiveness.

These results align with and extend prior research in the Nigerian context. For instance, studies by Eke and Igwe (2025) and Igwe and Eke (2025) highlight the critical role of macroeconomic variables and effective government expenditure management in shaping economic outcomes, including investment flows. Nwaeke (2023) further supports the positive linkage between FDI and economic growth, stressing the importance of productive government spending in sectors like health and infrastructure. However, findings from Madueke, Anisiobi, and Okeke (2023) caution that fiscal policy's direct impact on FDI can be insignificant without proper coordination, reinforcing the moderating effect of inflation observed here. Additionally, Omole (2021) and Kolawole and Sunkanmi (2015) emphasize infrastructural development and stable policies as prerequisites for maximizing FDI benefits. Overall, this study corroborates the need for targeted health investments and macroeconomic stability, particularly inflation control, to optimize the effectiveness of public sector budget in attracting foreign direct investments to Nigeria.

CONCLUSIONS AND RECOMMENDATIONS

This study concludes that budgeted health expenditure significantly impacts foreign direct investment (FDI) in Nigeria, highlighting health sector investment as a key driver for attracting foreign capital over time. Conversely, budget allocations for education and agriculture do not show a significant effect on FDI, suggesting that these sectors may require better strategic focus or complementary policies to enhance their investment appeal. Additionally, inflation rate plays a moderating role in the relationship between government budget expenditures and FDI, indicating that macroeconomic stability—particularly controlling inflation—is crucial in maximizing the positive effects of government spending on attracting foreign investments. Therefore, both targeted sectoral investments and sound macroeconomic management are essential for improving Nigeria's FDI inflows. The study further suggested that;

1. The Nigerian government should prioritize and increase budgetary allocations to the health sector, ensuring effective utilization to improve workforce productivity and investor confidence, thereby boosting FDI inflows.
2. Policymakers need to develop comprehensive strategies to enhance the attractiveness of the education and agriculture sectors for foreign investors, possibly through reforms, incentives, and infrastructure improvements.
3. Monetary authorities must implement policies aimed at maintaining low and stable inflation rates to strengthen the moderating effect of inflation on government spending and FDI, thereby fostering a more favorable investment climate.
4. There should be improved coordination between fiscal and monetary policies to optimize the impact of government expenditures on economic variables such as FDI.
5. Continuous monitoring and evaluation mechanisms should be established to assess the effectiveness of budgetary allocations and macroeconomic policies in attracting foreign direct investments, enabling timely adjustments to strategies as needed.

CONFLICT OF INTEREST

There is no conflict of interest to declare in this study. The research was conducted independently without any financial or personal relationships that could have influenced the outcomes or interpretations of the findings. All data sources used were publicly available, and no external parties had any role in the study design, data analysis, or manuscript preparation.

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