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GOVERNMENT EXPENDITURE AND ECONOMIC GROWTH IN NIGERIA

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Abstract

This article re-examines the association between federal government expenditure and economic growth in Nigeria using annual data for 1981–2023. Capital and recurrent expenditure are extracted from the Central Bank of Nigeria 2023 Statistical Bulletin; real GDP per capita, population, the GDP deflator and inflation come from the World Development Indicators. Nominal federal spending is deflated and converted to per-capita terms. We estimate an autoregressive distributed lag (ARDL) error-correction representation, test for a level relationship using finite-sample bounds inference, and estimate a lagged annual-growth model with oil-revenue and inflation controls. The ARDL(1,1,1) bounds F statistic is 4.9317; its finite-sample upper-bound p-value is 0.0659, while a 1990–2023 subsample yields F = 0.8437. A stable long-run relationship is therefore not established at the 5% level. In the preferred 1983–2023 growth model, lagged changes in real capital and recurrent spending have coefficients of 0.0100 (p = 0.3792) and 0.0166 (p = 0.4129), respectively; the joint test p-value is 0.3685. The findings do not show a robust predictive effect of either category on next-year real GDP per capita growth. Fiscal composition, project quality and oil-revenue exposure remain central to policy, but the observational estimates do not identify causal returns to expenditure.

Keywords: government expenditure; capital expenditure; recurrent expenditure; economic growth; Nigeria; ARDL.
JEL: E62, H50, O40.

1.0 Introduction

Public expenditure finances the services and infrastructure on which private production depends. In Nigeria, federal budgets also respond to oil revenue, security needs, debt service and inflation. Spending can stimulate demand and productivity when projects are delivered and services improve, while financing costs, weak execution or low-return allocations can offset those gains. The question is consequently about the composition and effectiveness of spending as well as its size (Barro, 1990; Devarajan, Swaroop, & Zou, 1996).

Capital and recurrent expenditure have different accounting meanings, although neither is inherently productive or unproductive. Federal capital expenditure records investment and related outlays, including capital repayments and transfers; recurrent expenditure maintains administration and services and includes substantial transfers and debt-service obligations in the CBN series. A completed road may reduce business costs, but an unfunded maintenance budget can erode its value. Likewise, salaries for teachers and clinicians can produce long-lived human-capital gains. Economic interpretation must therefore go beyond the budget labels.

Nigeria-specific evidence is mixed. Chandana, Adamu, and Musa (2020) report a positive capital-expenditure relationship over 1970–2019 but no significant recurrent effect. Ijirshar et al. (2023)

emphasize the moderating role of oil and non-oil revenue. Different sample periods, price adjustments and model assumptions can yield different conclusions. The attached draft reviews these channels and studies but contains no data or estimated results. This article develops and tests a transparent specification using an identifiable official expenditure series.

We ask whether changes in federal capital and recurrent expenditure are associated with subsequent real GDP per capita growth, and whether the three real per-capita level series support a stable equilibrium relation. The distinction matters: a positive level correlation among trending series does not establish that a spending increase raises future output. We specify the variables, test their integration properties, use finite-sample bounds inference, and check a lagged growth equation with macroeconomic controls and sample-period sensitivity. Our estimates are conditional associations, not fiscal multipliers or causal effects.

2.0 Literature review

Keynesian demand management gives public purchases a potential short-run output effect when there is spare capacity. The multiplier depends on import leakage, supply constraints, monetary response, financing and implementation delay. An expenditure increase recorded in a fiscal year may therefore affect output later or be offset by inflation and crowding out. This motivates lagged growth specifications rather than treating contemporaneous correlation as a policy multiplier.

Wagner's hypothesis runs in the other direction: higher national income can increase demand for public administration and social services. Reverse causality is especially plausible where oil revenue expands both GDP and fiscal space. A regression of current GDP on current expenditure cannot settle direction of influence. Lagging the expenditure change reduces immediate simultaneity but does not remove anticipated policy responses or shared shocks.

Barro (1990) models productive government services as an input into endogenous growth, with a trade-off between benefits and taxation. Aschauer (1989) provides evidence on public capital and productivity in the United States. These frameworks justify examining investment quality and the stock of usable infrastructure, neither of which is directly observed by annual Nigerian capital expenditure.

Devarajan et al. (1996) show that expenditure composition can matter in ways that depend on the existing allocation. A category regarded as productive in principle need not yield a larger marginal return if it is already overfunded or poorly executed. Their argument discourages a prior assumption that every naira of capital spending must outperform every naira of recurrent spending.

Bose, Haque, and Osborn (2007) examine disaggregated public spending in developing countries and find that composition, financing and econometric specification affect the estimated growth relationship. Their international evidence suggests useful mechanisms, but cross-country averages cannot be directly imposed on a single Nigerian federal series.

Chandana et al. (2020), in the CBN Journal of Applied Statistics, apply an ARDL model to Nigeria for 1970–2019 and report a positive significant capital-expenditure relationship, with an insignificant recurrent component. They account for breaks in their unit-root and cointegration work. The present analysis uses a different data vintage, per-capita real variables, a 2023 endpoint and an explicit finite-sample bounds check; differences in conclusions should be evaluated against those choices.

Ijirshar et al. (2023) investigate the role of oil and non-oil revenue in the Nigeria spending–growth nexus over 1981–2021. Their finding that revenue influences the relationship supports the inclusion of federal oil-revenue intensity as a control in a short-run model. Revenue, spending and output still respond jointly to oil shocks, so a revenue coefficient should not be interpreted as an exogenous causal effect.

International fiscal evidence emphasizes how resources are used. The IMF (2025) argues that reallocating spending toward high-impact infrastructure, health, education and research, and improving efficiency, can raise long-term output without expanding the overall spending envelope. This is a policy rationale for assessing project delivery and service quality; it is not a substitute for observing them in Nigerian annual data.

Measurement creates additional difficulties. CBN federal expenditure excludes most direct state and local government spending; a federal capital entry includes capital debt repayments, other transfers and net lending rather than only completed assets, and recurrent outlays include debt service. Nominal values are dominated by price-level changes over four decades. Deflating and scaling per person make time comparisons more meaningful, but the GDP deflator is an economy-wide price index rather than a construction-cost or government-purchase index.

The empirical gap is thus not simply another regression of nominal spending on nominal GDP. This study separates short-run predictive associations from an uncertain long-run level relation, distinguishes capital and recurrent spending, incorporates oil-revenue exposure, reports finite-sample bounds inference and treats instability across periods as evidence about the limits of the model. An exogenous fiscal shock and sectoral delivery measures would be needed to estimate causal returns.

3.0 Data and methodology

3.1 Sources, sample and transformations

The CBN 2023 Statistical Bulletin public-finance workbook, table B.1.1, supplies federal capital and recurrent expenditure, oil revenue and nominal GDP in ₦ billions for 1981–2023. The 2022 entries are revised and 2023 entries provisional in that bulletin. WDI supplies real GDP per capita in constant local currency (NY.GDP.PCAP.KN), population (SP.POP.TOTL), the GDP deflator (NY.GDP.DEFL.ZS) and CPI inflation (FP.CPI.TOTL.ZG). Data were extracted on 27 September 2026. The study uses all 43 annual observations without imputation. It does not present federal expenditure as consolidated general-government expenditure.

Real expenditure per person in thousands of constant-price naira is $G^R_t = [G^N_t \times 10^9 / (\text{Deflator}_t/100)] / \text{Population}_t / 1000$, where G^N is CBN spending in ₦ billions. Let y = ln(real GDP per capita), k = ln(real federal capital expenditure per capita), and r = ln(real federal recurrent expenditure per capita). Oil intensity equals 100 × CBN oil revenue / CBN nominal GDP; CPI inflation is a percent rate. The resulting log differences approximate proportional annual growth. The CBN nominal GDP is used only to form a within-source oil ratio and descriptive expenditure shares.

Table 1 Variables and provenance

Symbol	Measure	Source
y	Log real GDP per capita, constant LCU	WDI NY.GDP.PCAP.KN
k	Log real federal capital expenditure per capita	CBN B.1.1; WDI deflator and population
r	Log real federal recurrent expenditure per capita	CBN B.1.1; WDI deflator and population
oil	Federal oil revenue as % CBN nominal GDP	CBN B.1.1
π	CPI inflation, annual %	WDI FP.CPI.TOTL.ZG

3.2 Time-series strategy

We use augmented Dickey–Fuller (ADF) tests with an intercept and linear trend in levels and an intercept in first differences, choosing augmentation by AIC. These tests have low power under breaks. An ARDL(1,1,1) error-correction representation is specified before interpreting level associations: Δy_t =

$a + \lambda y_{t-1} + \theta_1 k_{t-1} + \theta_2 r_{t-1} + \varphi_1 \Delta k_t + \varphi_2 \Delta r_t + u_t$. The null of no level relationship is $\lambda = \theta_1 = \theta_2 = 0$. We apply the Pesaran, Shin, and Smith (2001) case-III bounds test (unrestricted intercept, no trend), emphasizing finite-sample simulated reference values for 42 usable observations. A 1990–2023 repeat tests sample dependence. We do not present $-\theta/\lambda$ as reliable long-run elasticities unless the bounds evidence supports cointegration.

The primary predictive specification is $\Delta y_t = \alpha + \rho \Delta y_{t-1} + \beta_1 \Delta k_{t-1} + \beta_2 \Delta r_{t-1} + \gamma oil_{t-1} + \delta \pi_{t-1} + \varepsilon_t$. It has 41 observations (1983–2023) after two annual lags. β_1 and β_2 measure the next-year association between spending growth and real GDP per capita growth, conditional on prior output growth and macroeconomic controls. We use OLS with Newey–West Bartlett HAC standard errors and two lags, report 95% normal-approximation intervals, and test $\beta_1 = \beta_2 = 0$ jointly. The expenditure coefficients are elasticities of the gross changes: 10% faster spending growth corresponds approximately to 10β percentage points faster per-capita output growth, conditional on the model.

We report Breusch–Godfrey LM(2) serial-correlation, Breusch–Pagan heteroskedasticity, Jarque–Bera normality and CUSUM stability diagnostics. We compare a model without macro controls, contemporaneous rather than lagged spending changes, 1990–2023, and a pre-2020 subsample. The last two are sensitivity checks, not independent tests. Inference remains vulnerable to omitted investment, productivity, oil-price, conflict and institutional shocks; oil revenue may itself be endogenous. EViews code accompanies the paper for rerunning the same equations. The numerical results reported here were calculated with Python statsmodels because an EViews executable was not available in this environment; EViews may differ modestly in HAC and finite-sample p-value conventions.

4.0 Results

4.1 Descriptive evidence

Federal capital expenditure fell from 4.7139% of CBN nominal GDP in 1981 to 1.9137% in 2023, while recurrent expenditure rose from 3.4791% to 6.0947%. These are spending-to-output ratios, not completed infrastructure or service-quality indicators. Nominal expenditure increases substantially over the period, but the real per-capita capital series is volatile and ends below its 1981 level under the selected GDP deflator. The expenditure series includes federal spending only.

Table 2 Selected observations and descriptive statistics

Indicator	1981	2000	2023	Mean	SD
Federal capital, ₦ bn	6.5670	239.4509	4486.2060	—	—
Federal recurrent, ₦ bn	4.8467	461.6000	14287.5645	—	—
Capital / nominal GDP, %	4.7139	3.3903	1.9137	2.9815	1.8083
Recurrent / nominal GDP, %	3.4791	6.5357	6.0947	5.2091	1.5311
Real GDP growth, %	—	—	—	2.9121	5.4108
CPI inflation, %	—	—	—	19.0795	16.2812

Note: Means and standard deviations use 43 observations, 1981–2023. The source series are reproduced in the companion CSV. Dashes indicate an intentionally unreported cell, not missing source data.

4.2 Integration and bounds inference

Table 3 Augmented Dickey–Fuller p-values

Series	Level with trend	First difference with intercept	Reading at 5%
y, log real GDP per capita	0.4555	0.0007	I(1) suggested
k, log real capital per capita	0.1128	<0.0001	I(1) suggested
r, log real recurrent per capita	0.0227	0.0034	Trend-stationary possible

The ADF tests indicate a mixture of likely I(1) and trend-stationary variables, with no tested variable showing evidence of I(2). In the full 1981–2023 ARDL(1,1,1), the bounds F statistic is 4.9317. The simulated finite-sample upper-bound p-value is 0.0659, so the 5% test is inconclusive; the asymptotic upper-bound p-value is 0.0228 and would reject. The finite-sample result is the more cautious reference for this sample. For 1990–2023 the F statistic falls to 0.8437 (finite upper p = 0.8830). This sharp period sensitivity argues against a stable long-run interpretation.

Table 4 Fixed ARDL error-correction representation, 1982–2023

Term	Coefficient	HAC SE	p-value
Constant	1.1230	0.6410	0.0798
y_{t-1}	−0.1033	0.0505	0.0409
k_{t-1}	−0.0246	0.0226	0.2772
r_{t-1}	0.0972	0.0367	0.0082
Δk_t	0.0101	0.0225	0.6534
Δr_t	0.0695	0.0333	0.0371

The recurrent coefficient in the unrestricted level equation and its contemporaneous change term are positive, while the capital terms are not individually significant. Those coefficients cannot be promoted to long-run elasticities because the finite-sample bounds decision is inconclusive and the 1990 subsample fails to support a level relation. Contemporaneous Δr also may reflect joint fiscal and output response. The level equation's R^2 is 0.3192, BG(2) p = 0.2249, Breusch–Pagan p = 0.2495 and CUSUM p = 0.0961.

4.3 Lagged growth associations

Table 5 Preferred growth equation, 1983–2023, dependent variable Δy

Regressor	Coefficient	HAC SE	p-value	95% interval
Constant	−0.0162	0.0140	0.2482	−0.0437 to 0.0113
Δy_{t-1}	0.3167	0.1526	0.0379	0.0177 to 0.6157
Δk_{t-1}	0.0100	0.0114	0.3792	−0.0123 to 0.0324
Δr_{t-1}	0.0166	0.0203	0.4129	−0.0231 to 0.0563
oil_{t-1}	0.0022	0.0011	0.0450	0.0001 to 0.0043
π_{t-1}	0.0001	0.0005	0.9067	−0.0009 to 0.0010

The capital and recurrent spending coefficients are small and imprecise. A 10% increase in real federal capital expenditure per capita is associated with about 0.1003% higher next-year real GDP per capita, and a similar recurrent increase with about 0.1659%, holding model variables fixed; neither estimate differs statistically from zero. Their joint Wald $\chi^2(2)$ is 1.9965 (p = 0.3685). Oil-revenue intensity has a positive association at the 5% threshold, whereas lagged inflation is uninformative. The fitted R^2 is 0.3054, modest for annual growth.

Diagnostics for the preferred equation are BG(2) p = 0.0975, Breusch–Pagan p = 0.6264, Jarque–Bera p = 0.0924, CUSUM p = 0.7167 and Durbin–Watson = 2.1263. These tests do not flag a 5% violation in

this specification, but their power is limited with 41 observations. A high p-value should not be mistaken for proof of correct identification or parameter stability under all possible breaks.

4.4 Specification and period sensitivity

Table 6 Spending coefficients across alternative growth equations

Model and years	N	Capital β (p)	Recurrent β (p)	BG(2) p
Contemporaneous, 1983–2023	41	0.0140 (0.5503)	0.0102 (0.6609)	0.0264
Lagged, no controls, 1983–2023	41	0.0065 (0.5467)	0.0160 (0.3296)	0.0569
Lagged controls, 1983–2023	41	0.0100 (0.3792)	0.0166 (0.4129)	0.0975
Lagged controls, 1990–2023	34	0.0201 (0.1104)	0.0052 (0.8023)	0.5603
Lagged controls, 1983–2019	37	0.0088 (0.5105)	0.0072 (0.6695)	0.0738

The sign of capital expenditure growth stays positive across the displayed equations, but none of its p-values meets 5%. Recurrent estimates are likewise imprecise; the contemporaneous 1990–2023 estimate, not shown in the lagged-control table, is negative and insignificant (−0.0128; p = 0.5592). The contemporaneous full-sample equation has residual serial correlation (BG p = 0.0264), strengthening the case for the lagged specification. Taken together, the sensitivity checks do not support a robust annual predictive effect of either federal spending category.

5.0 Discussion

The findings differ from studies reporting a strong positive capital-expenditure effect, including Chandana et al. (2020). Differences in sample endpoint, national accounts vintage, per-capita conversion, price adjustment, fiscal scope, lag structure and finite-sample cointegration inference can all matter. The present estimates do not overturn those studies; they show that the result is sensitive to reasonable choices and should be tested against project completion, sector allocation and state-level exposure before being treated as a policy return.

Several limitations are substantive. Federal budget classifications mix economic functions; capital appropriations are not a public-capital stock. The GDP deflator may not track construction and wage prices. Oil-revenue intensity is jointly determined with the macroeconomy, and no exogenous fiscal shock identifies a causal response. The 2023 expenditure observations are provisional; revised fiscal and national accounts vintages may change the findings. Breaks associated with the 1986 reform era, democratic transition, the oil cycle and COVID-19 remain difficult to model with 43 observations. The positive recurrent coefficient in one error-correction equation is not reliable evidence that recurrent spending is inherently more productive.

6.0 Conclusion and implications

Using official federal spending and WDI macroeconomic series for 1981–2023, this article finds no statistically robust next-year growth association for capital or recurrent expenditure growth after accounting for prior output growth, oil revenue and inflation. The full-period bounds evidence is inconclusive using finite-sample inference and weakens sharply when the start year moves to 1990. Policy should prioritize execution and evaluation of capital projects, service quality within recurrent budgets, transparent separation of debt service from operating costs, and better fiscal data across all tiers of government. Future work can exploit externally driven revenue shocks and regional delivery measures to estimate causal effects.

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