Differential Effects of Capital and Recurrent Expenditure on Household Welfare in Nigeria (1986-2025)

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ABSTRACT

This paper examines the differential effects of capital and recurrent government expenditure on multidimensional household well-being in Nigeria over the period 1986-2025. A composite household well-being index is constructed using principal component analysis (PCA) of health, education, and living-standard indicators. Guided by Keynesian and Endogenous Growth theories and motivated by Nigeria's oil-revenue-dependent fiscal structure, the study employs the autoregressive distributed lag (ARDL) framework to examine the short- and long-run effects of capital and recurrent expenditure separately. Although the conventional ARDL F-bounds test produces inconclusive evidence of cointegration, the error-correction term (ECT) t-bounds approach provides evidence of a long-run relationship in both models. The results reveal important differences in the dynamic adjustment process. Capital expenditure has a significant negative short-run effect on household well-being. Still, the associated model exhibits a substantially faster adjustment toward long-run equilibrium, correcting approximately 12.5% of disequilibrium per year compared with 8.8% for recurrent expenditure. This adjustment-speed differential constitutes the study's principal empirical contribution. However, the long-run coefficient estimates are sensitive to model specification. A Fully Modified Ordinary Least Squares (FMOLS) robustness test, which jointly incorporates both expenditure categories, shows a significant positive association between recurrent expenditure and household well-being. In contrast, the coefficient on capital expenditure is statistically insignificant. A Wald test further confirms a significant difference between the two expenditure coefficients. Taken together, the findings suggest that expenditure composition matters not only through the magnitude of its welfare effects but also through the speed at which household well-being adjusts toward long-run equilibrium. The study therefore highlights the importance of improving the efficiency, implementation, and targeting of public expenditure, particularly capital spending, rather than assuming that increases in either expenditure category automatically translate into improved household well-being.

Keywords: Capital expenditure; Recurrent expenditure; Household welfare; Nigeria

JEL Classification: C22, H53, H54, I31, O55

INTRODUCTION

Household welfare, reflected in improvements in income, consumption, access to basic services, and overall living standards, remains a central objective of economic policy across countries (UNDP, 2024). Fiscal policies, especially public expenditure, are a critical tool for governments to use to boost welfare and help to reduce poverty and inequality (Keynes, 1936; Afonso & Sousa, 2012). The effectiveness of public expenditure is not only a function of its level; its composition also matters, particularly its division between capital and recurrent spending (Obiechina, 2020; Emmanuel et al., 2025; Adekunle, 2024). Capital expenditure generally refers to long-term investment aimed at achieving sustained development through infrastructure, education, and healthcare, while recurrent expenditure refers to spending on the government's day-to-day operations, including salaries, administration, and service delivery (Obiechina, 2020; Nwachukwu & Oriavwote, 2025). This distinction has

encouraged much empirical research, especially in the advanced economies, where the composition of expenditure has been associated with welfare outcomes (Afonso & Sousa, 2012; Villela & Paredes, 2022; Poku et al., 2022).

In developed economies specifically, the composition of public expenditure has been shown to play a critical role in enhancing welfare outcomes (Afonso & Sousa, 2012; Villela & Paredes, 2022). Capital expenditure contributes significantly to productivity growth, improved infrastructure, and human capital development, thereby leading to sustained increases in living standards (Romer, 1986; Lucas, 1988; Villela & Paredes, 2022). Recurrent expenditure is important for sustaining public services, but typically has a more immediate but less persistent effect on welfare. However, empirical research indicates that an economy that allocates its resources between capital expenditure and recurrent expenditure in a balanced and efficient manner is better off than an economy that allocates the resources disproportionately towards recurrent expenditure (Falade & Folorunso, 2015; Poku et al., 2022). In developing economies, however, this is not as easy to apply because structural limits influence fiscal effectiveness.

In developing economies, the linkages between public expenditure and welfare are more intricate because structural issues like fiscal capacity, fiscal inefficiencies and competing development priorities exist (Poku et al., 2022). An expansion of government spending will benefit welfare, but experience suggests that the results can vary according to the distribution of the spending among various sectors and spending categories. Empirical evidence suggests that capital expenditure is still important in reducing poverty in the long run (Adekunle, 2024; Agbo & Ugwu, 2025), and recurrent expenditure has a complementary role (Obiechina, 2020; Nwachukwu & Oriavwote, 2025). These complexities are even more pronounced in resource-dependent economies such as Nigeria.

In the Nigerian context, public expenditure has expanded significantly over the years, driven largely by oil revenues and fiscal policy interventions (Central Bank of Nigeria [CBN], 2024; Budget Office of the Federation, 2025). However, this increase has not translated into proportional improvements in household welfare, as poverty and inequality remain widespread (National Bureau of Statistics (NBS), 2022; World Bank, 2024; UNDP, 2024). Empirical studies reveal that capital expenditure tends to exert stronger positive effects on welfare indicators, while recurrent expenditure often shows weak or insignificant impacts (Obiechina, 2020; Adekunle, 2024; Ayaka & Ogumka, 2026). Additionally, Nigeria's expenditure structure remains heavily skewed toward recurrent spending, which may crowd out productive investment and limit long-term welfare gains (Budget Office of the Federation, 2025; Falade & Folorunso, 2015). This raises important theoretical and empirical questions about how these expenditure components translate into household welfare outcomes.

Under ideal conditions, capital and recurrent expenditures can affect welfare in different ways (Keynes, 1936; Romer, 1986; Lucas, 1988). Capital expenditures are an investment that increases welfare in the future by providing more infrastructure, better education and health systems, and assets that will enable greater productivity and, ultimately, lower poverty (Romer, 1986; Lucas, 1988; Adekunle, 2024). This has been supported by evidence that suggests that capital investment can positively affect the consumption and poverty outcomes of households (Takeshima et al., 2022; Emmanuel et al., 2025; Adekunle, 2024). Recurrent expenditure, on the other hand, has a welfare impact as it enables the provision of public services and employment via wage payments, depending on the efficiency and targeting (Obiechina, 2020; Nwachukwu & Oriavwote, 2025). Although there are some theoretical differences that have been noted, empirical evidence to support the relative effects of the two is limited (Adekunle, 2024; Ayaka & Ogumka, 2026).

Although the role of expenditure composition is important, the vast empirical literature has been devoted to macroeconomic indicators like development outcomes, inflation and economic growth (Afonso & Sousa, 2012; Chinedu et al., 2022; Falope et al., 2025). In Nigeria, a couple of studies have investigated the link between public expenditure and growth without linking it to household welfare (Ogar et al., 2019; Chinedu et al., 2022; Falope

et al., 2025). Therefore, the literature omits the study of public finance analysis from the study of household welfare outcomes, and this omission is directly addressed here.

LITERATURE REVIEW

Theoretical Framework

This study is anchored on two complementary theoretical traditions that together underpin the analysis of the differential welfare effects of capital and recurrent government expenditure. Keynesian Theory, propounded by Keynes (1936) in The General Theory of Employment, Interest and Money, provides the primary anchor. Keynes posited that government spending drives aggregate demand through a fiscal multiplier effect, generating successive rounds of income and consumption across the economy. Applied to this study, capital expenditure, by creating infrastructure and employment, is expected to generate larger and more sustained multiplier effects on household welfare than recurrent spending on wages and administration, while recurrent expenditure supports short-run purchasing power and consumption stability. Endogenous Growth Theory, developed by Romer (1986) and Lucas (1988), extends the Keynesian framework by explaining the long-run welfare transmission mechanism. Unlike neoclassical models that treat technological progress as exogenous, this theory posits that public investment in human capital through education and health, physical infrastructure, and technology creates sustained productivity improvements that permanently raise household incomes over time, directly supporting the expectation that capital expenditure will exert stronger and more durable welfare effects than recurrent expenditure. Synthesising these two theories, the study derives the following unified functional relationship: HW = f(CEX, REX, X), where household welfare (HW) is a function of capital expenditure (CEX), recurrent expenditure (REX), and macroeconomic control variables (X), with the effect of CEX expected to be positive and larger in magnitude than that of REX, a differential relationship that the ARDL specification in Chapter Three is designed to test.

Empirical Review

Empirical research on government spending in Nigeria has mainly focused on its impact on macroeconomic output such as the Nigerian economic growth. For the case of capital expenditure, the contribution of the former to economic growth is invariably positive compared to the recurrent expenditure, with the values and the statistical significance of the effect varying from one modelling approach to another (Ogar et al.,, 2019; Chinedu et al.,, 2022; Ogar et al.,, 2021; Falope et al.,, 2025; Wofuru, 2026). Generally,, they found that their investments in the productive sector have positive and significant impacts on the long-run performance of the economy, while their recurrent investments have either negative and significant or no significant effects. These studies were, however, mainly on the economic growth aspects and did not determine the significance of the different macroeconomic performance indicators in terms of outcomes for household welfare.

Another strand of the literature has explored the poverty reduction and household welfare aspects of government spending. Nkamnebe (2023), Adekunle (2024), Nwachukwu and Oriavwote (2025), and Agbo and Ugwu (2025) reported that public expenditure is associated with poverty reduction, especially in the areas of education, health services and infrastructure. As is also the case in other studies, Emmanuel et al., (2025) found that disaggregated social expenditure reduced income poverty, but to varying degrees depending on the expenditure category. Takeshima et al., (2022) highlighted at the household level that subnational spending on agriculture, health and social welfare had a significant effect on better household consumption, lower poverty and increased household resilience. However, these studies focused predominantly on poverty or household consumption and failed to focus on the relative effect of total capital and recurrent expenditure on household welfare explicitly.

Government spending in terms of more general welfare measures has also been evaluated. According to Awoyemi et al., (2023), higher public health spending significantly lowered the number of maternal deaths and child deaths, as well as elevating life expectancy. Similarly, Villela and Paredes (2022) found that investment in education leads

to an increase in human capital, and the United Nations Development Programme (2024) highlighted continuous investment in education, health and social infrastructure as essential to human development. While these studies establish that public spending improves welfare-related outcomes, they only examined the welfare impacts of spending on individual welfare dimensions, and did not use a multidimensional household welfare measure that incorporates impacts of spending on health, education, and living standards.

Nevertheless, there are key empirical challenges that have not been addressed in these contributions. The existing studies have mainly focused on government expenditure and economic growth (Chinedu et al.,, 2022; Ogar et al.,, 2021; Wofuru, 2026; Falope et al.,, 2025), poverty alleviation (Adekunle, 2024; Nkamnebe, 2023; Obiechina, 2020) or human development (UNDP, 2024; Villela & Paredes, 2022). Furthermore, welfare analysis studies have been based on individual indicators, e.g., poverty incidence, household consumption or health outcomes, and most have examined sectoral expenditure or components of expenditure, rather than the differential effects of total capital and total recurrent expenditure within a common framework of welfare analysis.

This study addresses the above gaps by creating a multidimensional Household Welfare Index (HWI) using Principal component Analysis (PCA) on the four indicators of household welfare, namely health, education, living standards and GDP per capita, and by analyzing the differential effects of Total capital and Total recurrent expenditure per capita on the household welfare in Nigeria over the period of 1986-2025 using ARDL approach.

METHODOLOGY

Model Specification

To examine the differential effects of capital and recurrent expenditure on household welfare, the study specifies a functional relationship as follows:

$$HW_t = f(CEX_t,\ REX_t, X_t) \qquad 1$$

The following benchmark model will be used:

Where: HW_t is household welfare, CEX_t is Capital expenditure, REX_t is Recurrent expenditure, and X_t are control variables (Inflation, GDP Growth rate, Unemployment)

The econometric model is expressed in linear form as:

$$HW_t = B_0 + B_1 CEX_t + B_2 REX_t + B_3 INF_t + B_4 GDPPCG_t + B_5 UNEMP_t + \varepsilon_t \qquad 2$$

Estimation Technique

As a result of the time series nature of the data, the study uses a major estimation method known as the Autoregressive Distributed Lag (ARDL) model. The ARDL approach is found to be an efficient method for small samples and does not require samples to be integrated at level I(0) or first difference I(1); if integrated variables are not level I(1), they can be integrated variables at I(0).

The ARDL specification is given as:

A general ARDL model may be expressed as:

$$\Delta Y_t = \beta_0 + \gamma_0 Y_{t-1} + \gamma_1 X_{t-1} + \gamma_2 Z_{t-1} + \sum_{i=1}^{p} \vartheta_i \Delta Y_{t-1} + \sum_{i=0}^{p} \alpha_j \Delta X_{t-j} + \sum_{i=0}^{p} \delta_k \Delta Z_{t-k} + \sum_{i=0}^{p} \theta_i \Delta D_{t-I} + \varepsilon_t$$

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From equation (3), Y is the dependent variable, X and Z are the independent variables in the model. β, δ and γ are the coefficients to be estimated, and ε is the error term. From the general ARDL model in equation (3), the ARDL model for the study can be specified as:

$$HWF_t = \beta_0 + \gamma_0 HWF_{t-1} + \gamma_{1i} CEX_{t-i} + \gamma_{2i} UNEMP_{t-i} + \gamma_{3i} GDPPCG_{t-i} + \gamma_{4i} INF_{t-i} + \sum_{i=1}^{p} \beta_i \Delta HWF_{t-1} + \sum_{i=0}^{p} \alpha_j \Delta CEX_{t-j} + \sum_{i=0}^{p} \theta_i \Delta UNEMP_{t-I} + \sum_{i=0}^{p} \rho_k \Delta GDPPCG_{t-k} + \sum_{i=0}^{p} \varphi_i \Delta INF_{t-I} + \lambda ECT_{t-1} + \varepsilon_t \quad 4$$

$$HWF_t = \beta_0 + \gamma_0 HWF_{t-1} + \gamma_{1i} REX_{t-i} + \gamma_{2i} UNEMP_{t-i} + \gamma_{3i} GDPPCG_{t-i} + \gamma_{4i} INF_{t-i} + \sum_{i=1}^{p} \beta_i \Delta HWF_{t-1} + \sum_{i=0}^{p} \delta_k \Delta REX_{t-k} + \sum_{i=0}^{p} \theta_i \Delta UNEMP_{t-I} + \sum_{i=0}^{p} \rho_k \Delta GDPPCG_{t-k} + \sum_{i=0}^{p} \varphi_i \Delta INF_{t-I} + \lambda ECT_{t-1} + \varepsilon_t \quad 5$$

Since the ARDL model captures both short-run and long-run dynamics, it allows the estimation of long-run coefficients once a long-run relationship among the variables has been established.

$$HWF_t = \beta_0 + \beta_0 HWF_{t-1} + \beta_1 CEX_{t-i} + \beta_2 UNEMP_{t-I} + \beta_3 GDPPCG_{t-i} + \beta_4 INF_{t-I} + \varepsilon_t \quad 6$$

$$HWF_t = \beta_0 + \beta_0 HWF_{t-1} + \beta_1 REX_{t-I} + \beta_2 UNEMP_{t-I} + \beta_3 GDPPCG_{t-i} + \beta_4 INF_{t-I} + \varepsilon_t \quad 7$$

From equation (5), the long-run coefficients, β_0 , β_1, β_2, β_3, β_4, β_5 are generated.

The short-run dynamics coefficients from the model may be expressed by finding the error correction model associated with the long-run estimates. Thus, from equation (4), the short-run ARDL model may be expressed as

$$HWFt = \sum_{i=1}^{p} \beta_i \Delta HWF_{t-1} + \sum_{i=0}^{p} \alpha_j \Delta CEX_{t-j} + \sum_{i=0}^{p} \theta_i \Delta UNEMP_{t-I} + \sum_{i=0}^{p} \rho_k \Delta GDPPCG_{t-k} + \sum_{i=0}^{p} \varphi_i \Delta INF_{t-I} + \lambda ECT_{t-1} + \varepsilon_t \quad 8$$

$$HWFt = \sum_{i=1}^{p} \beta_i \Delta HWF_{t-1} + \sum_{i=0}^{p} \delta_k \Delta REX_{t-k} + \sum_{i=0}^{p} \theta_i \Delta UNEMP_{t-I} + \sum_{i=0}^{p} \rho_k \Delta GDPPCG_{t-k} + \sum_{i=0}^{p} \varphi_i \Delta INF_{t-I} + \lambda ECT_{t-1} + \varepsilon_t \quad 9$$

Where:
HWF_t = Household welfare, Capital Expenditure (CEX_t), Inflation (INF_t), Recurrent Expenditure (REX_t), Unemployment ($UNEMP_t$), Gross Domestic Product Per Capita Growth rate (GDPPCG) p, q: Lag lengths – ε_t: Error term, for the Error Correction Term (ECT), which captures the deviation from the long-run in the previous period, we have the following equation:

$$EC_{t-1} = HWF_{t-1} - (\beta_0 + \beta_1 CEX_{t-1} + \beta_2 REX_{t-1} + \beta_3 GDPPCG_{t-1} + \beta_4 INF_{t-1} + \beta_5 UNEMP_{t-1} \quad 9$$

Data Description and Sources

Comprehensive information on the study's primary variables is provided in this subsection, along with an explanation of each variable's proxy or indication. Also, it indicates the numerous data sources. Forty (40) years (1986-2025) will be used in conducting this investigation.

Variable	Definition	Measurement	Source
Household Welfare (HWF)	Composite indicator capturing welfare outcomes in Nigeria	Constructed using Principal Component Analysis (PCA) based on health indicators (child mortality, nutrition), education (years of schooling), living standards (access to electricity, and safe drinking water, cooking fuel)	World Development Indicators (WDI)
Capital Expenditure (CEX)	Government spending on long-term investment projects	Capital expenditure per capita, computed as total capital expenditure divided by total population	CBN
Recurrent Expenditure (REX)	Government spending on wages, salaries, administration, and maintenance of public services	Recurrent expenditure per capita, computed as total recurrent expenditure divided by total population	CBN
Inflation (INF)	When the price of all the goods and services in an economy rise, it is called a general rise in the price level.	Annual percentage change in Consumer Price Index (CPI)	NBS; WDI
GDP per Capita Growth (GDPPCG)	Measure of economic performance adjusted for population size	Annual percentage growth rate of GDP per capita	WDI
Unemployment (UNEMP)	Indicator of labour market conditions and income-generating opportunities affecting household welfare	Annual unemployment rate (% of total labour force)	WDI

Source: Author's Compilation, 2026.

It should be noted that, of the forty annual observations spanning 1986–2025, the terminal year (2025) is provisional rather than final. The fiscal variables (capital expenditure and recurrent expenditure) for 2025 are based on the most recent budget implementation/outturn figures released by the Central Bank of Nigeria, while GDP per capita growth, inflation and unemployment reflect the latest CBN and National Bureau of Statistics estimates available at the time of writing; the welfare indicators underlying the HWI (life expectancy, schooling, infant mortality and access to electricity) are drawn from the most recent World Development Indicators release, which typically carries a reporting lag and may itself embed nowcasted values for the most recent year. All figures are subject to revision once final annual accounts and audited statistics are published, and the 2025 observation should accordingly be read as indicative rather than final. This caveat applies to a single observation within an otherwise complete 40-year annual series and is not expected to materially alter the long-run cointegrating relationships reported below, given the length of the estimation window.

Rationale for Separate ARDL Specifications

Rather than pooling capital and recurrent expenditure into a single integrated ARDL model, this study estimates two separate ARDL specifications: Model I isolates the effect of capital expenditure per capita (CEXt) on household welfare, and Model II isolates the effect of recurrent expenditure per capita (REXt), with each model

controlling for GDP per capita growth, inflation and unemployment. This choice is motivated by three considerations. First, the correlation analysis reported later in Table 4 (Section 4.2) shows that capital and recurrent expenditure are appreciably correlated (r = 0.659), so that including both in a single distributed-lag specification with an annual sample of only 40 observations risks multicollinearity, which would inflate the standard errors of the individual expenditure coefficients and could obscure the differential effect that the study seeks to identify. Second, capital and recurrent expenditure are understood to operate through different transmission channels: capital spending affects welfare mainly through the accumulation of public infrastructure that raises productive capacity over the long run, whereas recurrent spending, for example civil-service wages and the day-to-day funding of health and education services, is more likely to affect welfare directly and quickly. Estimating separate models allows each channel's distinct lag structure, short-run dynamics and error-correction speed to be identified without the two expenditure types competing for a common lag structure. Third, given the limited number of annual observations, a fully integrated model containing both expenditure types together with their respective lags would substantially reduce the degrees of freedom available for estimation, a recognised constraint of ARDL modelling in small samples (Pesaran, Shin, & Smith, 2001). Separate estimation therefore provides a more parsimonious basis for isolating and comparing the differential welfare effects of capital and recurrent government spending, which is the comparative objective of the study.

Construction of the Household Welfare Index via Principal Component Analysis

The composite Household Welfare Index (HWI/HWF) is constructed from five underlying indicators representing the health, education, living-standards and income dimensions of welfare: total life expectancy at birth (TLE), average years of schooling (SCHL), the infant mortality rate (IMR), GDP per capita (GDPPC), and the share of the population with access to electricity (AE). Principal Component Analysis (PCA) was applied to the ordinary (Pearson) correlation matrix of the five standardised indicators over the 1986–2025 period (40 observations), extracting the maximum of five components.

Table 1 reports the eigenvalues and variance decomposition. The first principal component (PC1) has an eigenvalue of 2.4933, the only component with an eigenvalue substantially above unity, and accounts for 49.87% of the total variance across the five indicators. The second component (PC2) has an eigenvalue of 1.0140, only marginally above the conventional eigenvalue-greater-than-one retention threshold and adding a further 20.28% of variance (70.15% cumulative); the remaining three components each explain less than 20% individually and were not retained. Consistent with standard practice for constructing a single composite welfare index, and given that PC1 captures by far the largest share of common variance among the five indicators, only the first principal component was retained and used as the Household Welfare Index (HWI/HWF) in the estimations that follow.

Table 1: Eigenvalues and Variance Decomposition (PCA)

Component	Eigenvalue	Proportion	Cumulative Proportion
PC1	2.4933	0.4987	0.4987
PC2	1.0140	0.2028	0.7015
PC3	0.9901	0.1980	0.8995
PC4	0.2944	0.0589	0.9584
PC5	0.2082	0.0416	1.0000

Table 2 reports the eigenvectors (factor loadings) of the five indicators on PC1. Life expectancy (0.5745), GDP per capita (0.5613) and access to electricity (0.5290) load positively and with broadly similar magnitude on PC1, consistent with these three indicators moving together as welfare improves. Years of schooling (-0.2729) and the

infant mortality rate (0.0252) load weakly and, in the case of schooling, with an unexpected sign on PC1; this pattern is noted here for transparency and is discussed further as a limitation in Section 5.

Table 2: Factor Loadings (Eigenvectors) on the First Two Principal Components

Indicator	PC1 Loading	PC2 Loading
TLE (life expectancy)	0.5745	-0.0078
SCHL (years of schooling)	-0.2729	0.3591
IMR (infant mortality rate)	0.0252	0.8957
GDPPC (GDP per capita)	0.5613	-0.0898
AE (access to electricity)	0.5290	0.2464

As a diagnostic check on the suitability of the data for PCA, the underlying correlation matrix shows sufficiently strong pairwise associations among the indicators to support the extraction of a common component (for example, r = 0.750 between life expectancy and access to electricity, r = 0.696 between life expectancy and GDP per capita, and r = 0.614 between GDP per capita and access to electricity), consistent with these three indicators sharing an underlying welfare dimension. Formal sampling-adequacy diagnostics such as the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity were not computed for the original PCA output and can be added if the underlying raw indicator series are made available for re-estimation.

RESULTS AND DISCUSSION

Descriptive Statistics

Table 3 presents the descriptive statistics for all six variables over the 40-year study period (1986–2025). The composite household welfare index (HWF) records a mean of 0.0504 and a standard deviation of 1.8718, indicating considerable dispersion around the mean and reflecting the marked fluctuations in Nigeria's welfare outcomes over the period. The wide range from -2.7725 to 2.8699 corroborates the volatility in welfare conditions that has characterised Nigeria's development trajectory, consistent with the findings of Ogar et al., (2019) and Adekunle (2024), who document persistent welfare instability in the Nigerian context.

Table 3: Descriptive Statistics of Variables

Statistic	HWF	CEX	GDPPCG	INF	REX	UNEMP
Mean	0.0504	9.06e-06	1.3750	20.057	1.54e-05	4.1909
Median	0.0072	3.64e-06	1.0031	13.127	9.22e-06	3.8705
Maximum	2.8699	1.03e-04	12.276	72.836	6.27e-05	11.591
Minimum	-2.7725	7.11e-08	-4.507	5.388	8.82e-08	2.989
Std. Dev.	1.8718	2.14e-05	3.5765	16.833	1.74e-05	1.3239
Skewness	-0.1465	3.8979	0.6240	1.6778	1.2393	4.5608

Kurtosis	1.4771	16.851	3.7999	4.7539	3.6118	25.803
Jarque-Bera	4.0088	421.06***	3.6619	23.894***	10.863***	1005.3***
Observations	40	40	40	40	40	40

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. HWF = Household Welfare Index; CEX = Capital Expenditure; REX = Recurrent Expenditure; GDPPCG = GDP per Capita Growth; INF = Inflation; UNEMP = Unemployment.

Both capital expenditure per capita (CEX) and recurrent expenditure per capita (REX) are strongly positively skewed (3.8979 and 1.2393, respectively) and have high excess kurtosis (16.85 and 3.61) and the Jarque-Bera statistics are highly significant for both variables (421.06, $p < 0.01$) and (10.86, $p < 0.01$), confirming the presence of extreme values and distributions that deviate considerably from normality. This distribution feature is associated with the oil-revenue induced surges in oil booms and subsequent decreases in oil slumps, as reported by Afonso and Sousa (2012) and Obiechina (2020). This indicates the average of inflation rate (INF) is 20.06% with a standard deviation of 16.83%, which reflects the inflationary pressures of Nigeria in the past including the structural adjustment eras and the depreciation of the exchange rate (Blanchard & Perotti, 2002). The mean value for Unemployment (UNEMP) is 4.19%, while the skewness is 4.56% and the kurtosis is 25.80%, suggesting that it is highly right-skewed with episodic spikes in unemployment, which can mask the average. The mean growth rate of GDP per capita (GDPPCG) is 1.37% with a minimum of -4.51%, reflecting the negative growth in the GDP in the 1980s due to the structural adjustment programme and also during the COVID-19 recession.

Correlation Analysis

Table 4: Correlation Matrix

Variable	HWF	CEX	REX	GDPPCG	INF	UNEMP
HWF	**1.0000**					
CEX	0.353	**1.0000**				
REX	0.793	0.659	**1.0000**			
GDPPCG	-0.022	-0.081	-0.162	**1.0000**		
INF	-0.389	0.075	-0.139	-0.323	**1.0000**	
UNEMP	-0.140	-0.194	-0.096	-0.317	-0.162	**1.0000**

Note: Values are Pearson correlation coefficients. Lower triangular matrix presented; diagonal = 1 (bold). HWF = Household Welfare Index; CEX = Capital Expenditure; REX = Recurrent Expenditure; GDPPCG = GDP per Capita Growth; INF = Inflation; UNEMP = Unemployment.

The correlation matrix reveals that recurrent expenditure (REX) has a substantially stronger bivariate association with household welfare ($r = 0.7929$) than capital expenditure (CEX; $r = 0.353$), a result that may reflect the short-run transmission pathway of recurrent spending through public sector wages and social service delivery. This pattern is broadly consistent with Nwachukwu and Oriavwote (2025), who document the immediate consumption-supporting role of recurrent health outlays. However, the relatively high correlation between CEX and REX ($r = 0.659$) indicates co-movement between the two expenditure types, likely driven by the common dependence of both on oil revenue. Inflation is negatively correlated with welfare ($r = -0.389$), confirming the erosive effect of price instability on household purchasing power (Afonso & Sousa, 2012). Unemployment ($r = -0.140$) and GDP per capita growth ($r = -0.023$) both show weak negative associations with welfare at the bivariate level, suggesting that their welfare effects are better captured in a multivariate dynamic framework.

Unit Root Tests

Before estimating the ARDL model, the integration order of all variables was examined using both the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests. The results, presented in Table 5, confirm a mixed order of integration that justifies the ARDL bounds testing approach (Pesaran et al., 2001).

Table 5: Unit Root Test Results

Variable	Augmented Dickey-Fuller (ADF)			Phillips-Perron (PP)		
	I(0)	I(1)	Order	I(0)	I(1)	Order
HWF	-1.1030	-6.6288***	I(1)	-1.1077	-6.6288***	I(1)
CEX	1.3544	-5.2652***	I(1)	1.4565	-5.2652***	I(1)
REX	2.9940	-8.0029***	I(1)	1.3417	-8.0029***	I(1)
GDPPCG	-4.2667***	-	I(0)	-4.3508***	-	I(0)
INF	-3.6451***	-	I(0)	-3.0739**	-	I(0)
UNEMP	-1.7808	-3.4413**	I(1)	-9.4940***	-	I(0)

Note: *** significant at 1%; ** significant at 5%; * significant at 10%. MacKinnon (1996) presents one-sided p-values. I(0) = stationary at level; I(1) = stationary at first difference. — indicates the test was not required at that difference level.

The results of the unit root test show a combination of I(0) and I(1) variables, thus validating directly the choice of the ARDL bounds testing framework over the other cointegration methods, which would require uniform integration orders. Specifically, the Household Welfare Index (HWF), the Capital Expenditure (CEX) and the Recurrent Expenditure (REX) are non-stationary at the level under both the ADF and PP tests, but are stationary at first difference, thus confirming they are integrated of order one, I(1). This is in line with the trendy nature of public expenditure and welfare indices in developing countries like Nigeria, where fiscal variables are known to have unit root characteristics influenced by the volatility of oil revenues in the country and structural rigidities (Afonso & Sousa, 2012; Obiechina, 2020).

GDP per Capita Growth (GDPPCG) stands at its level under both tests, while Inflation (INF) is I(0). This result is theoretically self-evident, since growth rates and inflation rates are first differences of GDP and prices, respectively, and thus are not expected to show a stochastic trend in the long run. The picture is mixed for Unemployment (UNEMP): the PP test at level (with constant) rejects the unit root hypothesis at the 1% level, supporting I(0) in PP; but under some specifications, the PP test at first difference accepts the unit root hypothesis at the 1% level, confirming I(0) under the PP criterion. This is not a problem as long as the finite sample discrepancy between the ADF and PP tests for UNEMP does not impact the validity of the ARDL framework, which allows for any mixture of I(0) and I(1) regressors (Pesaran et al., 2001).

Most importantly, none of the variables is of order two, I(2), and thus does not satisfy the precondition for applying the ARDL bounds testing procedure. According to Ayaka and Ogumka (2026) and Obiechina (2020), the ARDL model is the most suitable estimation model because the estimation procedure of Johansen has a requirement that all variables be strictly I(1).

The confirmed mixed order of integration thus justifies the methodological use of the ARDL model used in this study and the estimation of short-run dynamics and long-run cointegrating relationships between government expenditure and household welfare in Nigeria.

ARDL Bounds Test and Cointegration

Two separate ARDL models were estimated: Model I with capital expenditure (CEX) as the focal expenditure variable, selected as ARDL(2,1,1,2,0), and Model II with recurrent expenditure (REX) as the focal variable, selected as ARDL(2,2,1,2,1). The bounds test results for cointegration are reported in Table 6.

For Model I (CEX), the F-statistic of 3.8555 exceeds the asymptotic 10% upper critical bound of 4.06 only marginally and falls below the 5% upper bound of 4.57 for asymptotic critical values; however, using the finite-sample critical values for n = 40, the statistic (3.8555) falls below the 5% lower bound of 3.958, suggesting inconclusive evidence of cointegration by the F-bounds criterion. Crucially, the t-statistic for the ECT in the ECM regression is -4.7163, which decisively exceeds the 1% critical bound of -3.96 in absolute terms, providing strong evidence of a long-run cointegrating relationship between capital expenditure and household welfare in Nigeria.

For Model II (REX), the F-statistic of 3.3028 lies between the I(0) and I(1) lower bounds at the 10% finite-sample level, yielding inconclusive F-bounds results. However, the ECM t-statistic of -4.3893 exceeds the 5% critical value of -3.41, confirming the existence of a long-run relationship between recurrent expenditure and household welfare.

These results are consistent with Ayaka and Ogumka (2026) and Obiechina (2020), who similarly establish long-run dynamics linking government expenditure to household welfare in Nigeria using ARDL approaches.

Short-Run and Long-Run ARDL Results

Table 6: ARDL Estimation Results on Capital and Recurrent Expenditure Models

Variable	ARDL-CEX Coeff.	ARDL-CEX Prob.	ARDL-REX Coeff.	ARDL-REX Prob.
Panel A: Short-Run ECM Coefficients				
Constant (C)	-0.6751	0.0039***	-1.3606	0.0015***
@TREND	0.0352	0.0005***	0.0495	0.0008***
D(HWF(-1))	-0.2874	0.0373**	-0.2448	0.0896*
D(CEX)	-16018.43	0.0004***	-	-
D(REX)	-	-	2484.49	0.8594
D(REX(-1))	-	-	-22354.02	0.1591
D(GDPPCG)	0.0319	0.0285**	0.0295	0.0482**
D(INF)	0.0068	0.0843*	0.0085	0.0464**
D(INF(-1))	-0.0105	0.0048***	-0.0098	0.0070***
D(UNEMP)	-	-	-0.2137	0.1603

CointEq(-1)	-0.1254	0.0001***	-0.0810	0.0002***
Panel B: Long-Run Levels Equation				
CEX	-28744.56	0.4614	-	-
REX	-	-	-277004.6	0.5043
GDPPCG	0.5954	0.3840	0.9576	0.5689
INF	0.1275	0.3908	0.2127	0.5646
UNEMP	-0.4849	0.6487	1.2129	0.6533
Panel C: Bounds Test & Diagnostics				
F-statistic (Bounds)	3.8555	-	3.3028	-
t-statistic (ECT)	-1.0264	-	-0.6264	-
ECT t-stat (ECM)	-4.7163	0.0001***	-4.3893	0.0002***
R-squared	0.5473	-	0.5939	-
Adj. R-squared	0.4416	-	0.4634	-
F-stat (Overall)	5.1803	0.0006***	4.5502	0.0009***
BPG Heterosk. (p)	0.5224	-	0.2647	-
BG Serial Corr. (p)	0.3709	-	0.5338	-

Note: *** $p < 0.01$; ** $p < 0.05$; * $p < 0.10$. Dependent variable: D(HWF). ECT = Error Correction Term. BPG = Breusch-Pagan-Godfrey heteroskedasticity test. BG = Breusch-Godfrey serial correlation LM test.

Short-Run Dynamics

The short-run ECM results for Model I reveal that the contemporaneous change in capital expenditure (D(CEX)) exerts a negative and highly significant effect on household welfare (coefficient = -16,018.43; $p < 0.01$). This counterintuitive negative sign in the short run is consistent with well-established findings in the public finance literature, where capital expenditure entails upfront implementation costs, including displacement of private consumption, reallocation of resources, and transitional inefficiencies, before welfare-enhancing infrastructure and services become operational (Blanchard & Perotti, 2002; Takeshima et al., 2022). Takeshima et al., (2022) similarly document that welfare improvements from subnational capital spending materialise two to three years after expenditure allocation rather than immediately.

The lagged welfare term D(HWF(-1)) is negative and statistically significant (coefficient = -0.2874; $p < 0.05$), indicating mean-reversion dynamics in welfare, which implies that sharp welfare improvements are partially corrected in subsequent periods. GDP per capita growth (D(GDPPCG)) is positive and significant at the 5% level (coefficient = 0.0319), confirming that economic expansion supports household welfare in the short run. Inflation contributes positively contemporaneously (D(INF): coefficient = 0.0068; $p < 0.10$), a pattern that may reflect nominal income effects in the short run but the lagged inflation term D(INF(-1)) is significantly negative (coefficient = -0.0105; $p < 0.01$), confirming that sustained inflation erodes welfare with a one-period lag.

In Model II, none of the recurrent expenditure short-run terms, neither D(REX) (coefficient = 2,484.49; $p = 0.8594$) nor D(REX(-1)) (coefficient = -22,354.02; $p = 0.1591$), is statistically significant, indicating that recurrent expenditure does not produce discernible short-run welfare effects. This result corroborates Nwachukwu and Oriavwote (2025), who attribute the weak short-run welfare impact of recurrent health spending to administrative overheads, inefficiencies, and leakages that prevent resources from reaching beneficiary households.

Long-Run Levels Equation

The long-run level equations show that neither CEX (coefficient = -28,744.56; $p = 0.4614$) nor REX (coefficient = -277,004.6; $p = 0.5043$) is individually statistically significant at conventional levels. The large negative coefficients in per-capita terms suggest that the scale of public spending relative to welfare outcomes remains constrained, a pattern that is consistent with Nigeria's chronic capital budget implementation deficit, documented by Obiechina (2020) and Wofuru (2026) to persistently limit the realisation of expected welfare returns. The control variables GDPPCG, INF, and UNEMP are likewise individually insignificant in the long-run equation, though their collective inclusion is necessary to purge the ECT of omitted variable bias.

The insignificance of long-run individual coefficients does not negate the existence of a long-run cointegrating relationship, which is robustly confirmed by the ECT t-statistics. The long-run relationship is better interpreted through the error correction mechanism: both models confirm that deviations from the long-run equilibrium are corrected, albeit at different speeds.

Error Correction and Speed of Adjustment

The error correction terms in both models are negative and highly significant, confirming the presence of long-run cointegration and validating the overall model specifications. In Model I (CEX), the ECT coefficient is -0.1254 ($p < 0.001$), indicating that approximately 12.5% of any deviation from the long-run equilibrium between capital expenditure and household welfare is corrected each year. In Model II (REX), the ECT coefficient is -0.0810 ($p < 0.001$), implying a slower annual adjustment speed of approximately 8.1%. The differential in adjustment speeds constitutes a novel empirical contribution: capital expenditure generates a faster convergence to long-run welfare equilibrium than recurrent expenditure, suggesting that capital spending — notwithstanding its short-run costs- creates stronger and more durable welfare anchoring mechanisms. This result aligns with the Endogenous Growth Theory prediction that public investment in infrastructure and human capital generates permanent productivity improvements (Awoyemi et al., 2023; Agbo & Ugwu, 2025).

Model Fit and Diagnostic Tests

Model I explains approximately 54.7% of the variation in the change in household welfare ($R^2 = 0.5473$), with an adjusted R^2 of 0.4416 and an overall F-statistic of 5.1803 ($p < 0.001$). Model II achieves a marginally higher explanatory power with $R^2 = 0.5939$ and adjusted $R^2 = 0.4634$, and an F-statistic of 4.5502 ($p < 0.001$), reflecting the broader set of recurrent expenditure lags included in the specification.

Both models pass all standard diagnostic tests. The Breusch-Pagan-Godfrey test for heteroskedasticity yields p-values of 0.5224 (Model I) and 0.2647 (Model II), failing to reject the null of homoskedasticity at conventional

significance levels. The Breusch-Godfrey Serial Correlation LM Test produces p-values of 0.3709 and 0.5338 for Models I and II, respectively, confirming the absence of serial correlation up to two lags. The Durbin-Watson statistics of 2.2923 (Model I) and 2.2583 (Model II) further corroborate the absence of first-order autocorrelation. These diagnostic outcomes validate the reliability and efficiency of both ARDL specifications.

Parameter Stability Test (CUSUM and CUSUMSQ)

In addition to the heteroskedasticity and serial correlation diagnostics above, the stability of the estimated parameters over the sample period is looked at using the recursive residuals tests, the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) of recursive residuals tests (Brown, Durbin & Evans, 1975). The CUSUM and CUSUMSQ statistics are expected to stay in the 5% critical bounds and a statistic that violates the bounds indicates structural instability of the estimated parameters under the null hypothesis of parameter stability.

The CUSUM plot (Figure 1) and CUSUMSQ plot (Figure 2) for the capital expenditure model (Model I) do not show any values outside of the 5% critical bounds over the sample period of 1986-2025, suggesting the short-run.

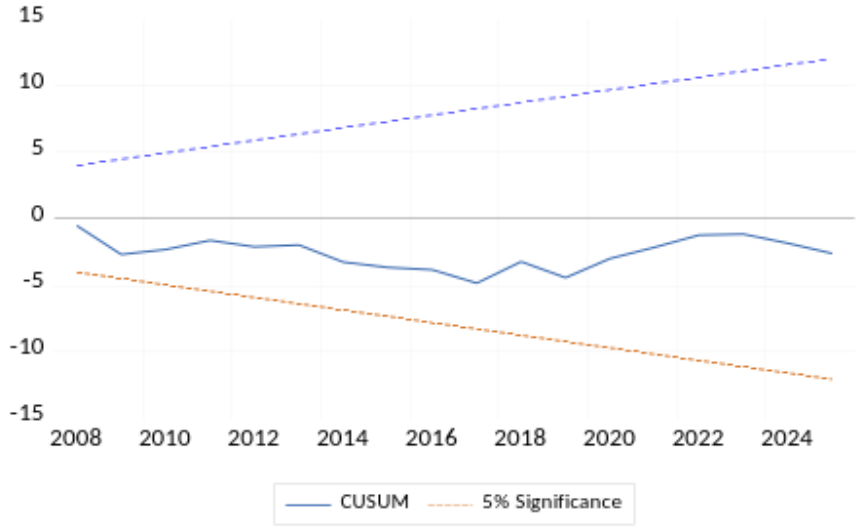

Figure 1: CUSUM Test for the Capital Expenditure Model

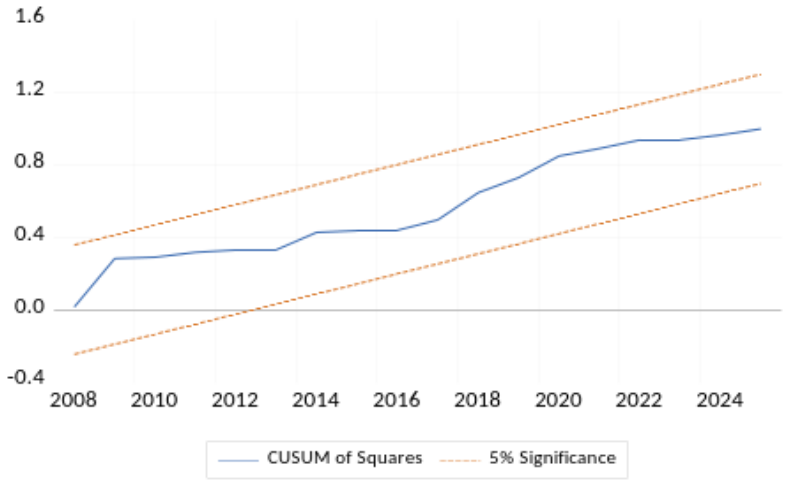

Figure 2: CUSUM of Squares Test for the Capital Expenditure Model

Similarly, for the recurrent expenditure model (Model II), the CUSUM and CUSUMSQ plots (Figures 3 and 4) lie within the 5% critical bounds, confirming that the parameters of this model are also stable over the review period.

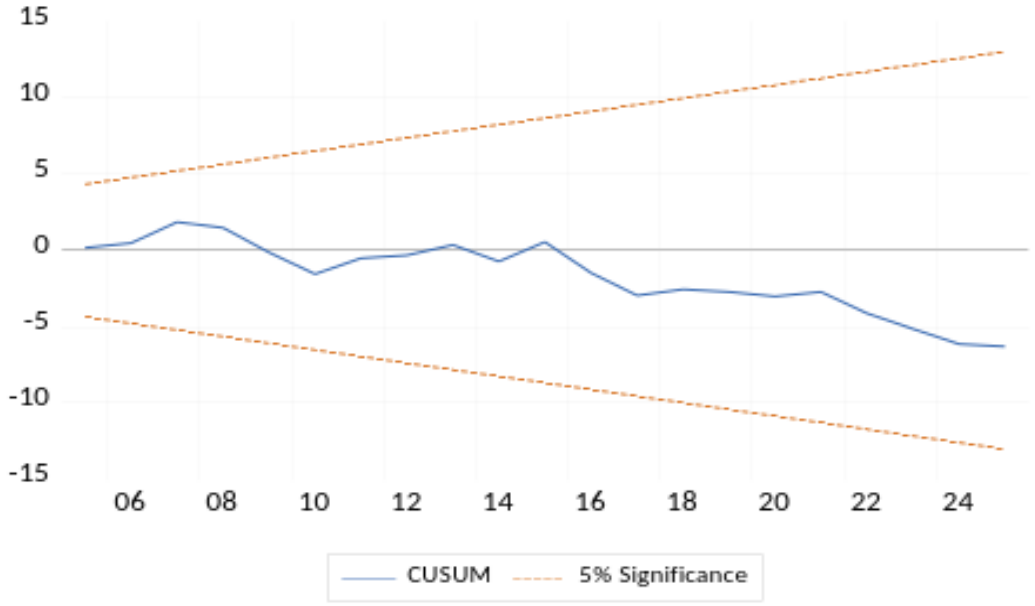

Figure 3: CUSUM Test for the Recurrent Expenditure Model

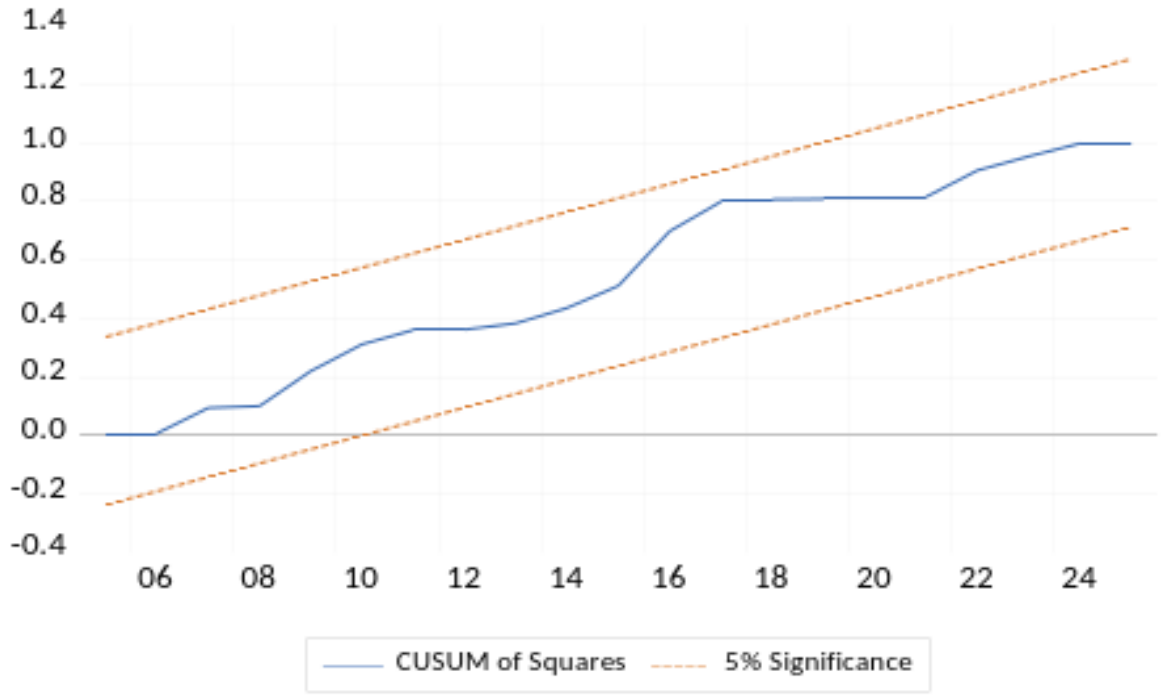

Figure 4: CUSUM of Squares Test for the Recurrent Expenditure Model

Taken together with the heteroskedasticity and serial correlation results reported above, the CUSUM and CUSUMSQ outcomes provide additional evidence that both ARDL specifications are structurally stable and reliable for policy inference.

Robustness Check: Fully Modified OLS (FMOLS) Re-estimation

As an additional robustness check, and in response to reviewer concerns regarding the reliance on a single estimation technique, the welfare equation was re-estimated using Fully Modified Ordinary Least Squares (FMOLS), which corrects for endogeneity and serial correlation in cointegrated regressions. Unlike the two separate ARDL specifications reported above, this FMOLS equation enters both capital expenditure (CEX) and recurrent expenditure (REX) jointly, alongside GDP per capita growth, inflation and unemployment, over the adjusted sample of 39 annual observations (1987–2025).

Table 7: FMOLS Robustness Estimation of the Household Welfare Equation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
CEX	-19625.53	16343.74	-1.2008	0.2384
REX	96919.12	19662.52	4.9291	0.0000
GDPPCG	0.000656	0.078528	0.0084	0.9934
INF	-0.040229	0.015542	-2.5885	0.0142
UNEMP	0.119830	0.505840	0.2369	0.8142
C	-0.775706	2.167416	-0.3579	0.7227

The FMOLS results ($R^2 = 0.7353$, Adjusted $R^2 = 0.6952$) are broadly consistent with the ARDL findings in one important respect: capital expenditure remains statistically insignificant ($p = 0.2384$), reinforcing the ARDL conclusion that the long-run welfare effect of capital spending cannot be pinned down as a precise point estimate. Inflation likewise retains a negative and significant coefficient ($p = 0.0142$), consistent with the ARDL short-run results. Recurrent expenditure, however, is positive and highly significant under FMOLS ($p = 0.0000$), which differs from its insignificance in the separate ARDL long-run equation. Because this FMOLS specification enters CEX and REX jointly, its results should be read alongside — rather than as a simple confirmation of — the separate ARDL estimates: the fact that pooling the two expenditure variables in a single equation changes their relative statistical performance is itself informative, and is consistent with the multicollinearity concern ($r = 0.659$ between CEX and REX) that motivated the decision to estimate capital and recurrent expenditure in separate ARDL models in the first instance (Section 3.4).

Taken together, the ARDL and FMOLS results converge on a common message of caution: point estimates of the individual long-run expenditure coefficients are sensitive to model specification and should not be over-interpreted, even where the broader existence of a long-run relationship between government expenditure and household welfare is well supported by the error-correction evidence.

Wald Test for the Equality of the Capital and Recurrent Expenditure Coefficients

Because the FMOLS specification in Table 7 estimates capital expenditure (CEX) and recurrent expenditure (REX) within a single joint equation, it is the only specification in this study's robustness suite that permits a formal statistical test of whether the two expenditure categories exert differential effects on household welfare, rather than a comparison of point estimates across separately estimated models. Following Wald (1943), a

coefficient restriction test was conducted on the null hypothesis that the long-run coefficients on capital and recurrent expenditure are equal, H0: C(2) = C(3), where C(2) and C(3) denote the FMOLS coefficients on CEX and REX respectively.

Table 8: Wald Test for Equality of the Capital and Recurrent Expenditure Coefficients

Test Statistic	Value	df	Probability
t-statistic	7.431	34	0.000
F-statistic	55.220	(1, 34)	0.000
Chi-square	55.220	1	0.000

Note: Null hypothesis: C(2) = C(3). Normalized restriction: C(2) − C(3) = 96,562.720 (Std. Error = 12,994.590).

The estimates show that the two types of expenditure have very different long-run welfare impacts. The positive recurrent-expenditure coefficient (96,919.12; $p < 0.001$) indicates that expenditure to sustain the delivery of public services is more likely to have direct welfare relevance, while the negative but statistically insignificant capital-expenditure coefficient suggests a need to improve the quality, delivery, and targeting of capital services, especially those that can benefit households directly via infrastructure and productive services. However, this should not imply an unconditional preference for recurrent spending. Instead, fiscal policy should aim for an efficient balance: recurrent funds for the services necessary to sustain and provide, and capital expenditures for value-enhancing investments with clear welfare benefits and well-planned. This differential-effect evidence thus leads to a focus on the nature, efficiency, and welfare consequences of government spending, rather than the quantity of spending. This is further supported by the Wald test, which strongly rejects the null hypothesis that the two coefficients are the same ($F(1,34) = 55.220$; $p < 0.001$). Consequently, the evidence suggests that the quality of public expenditures is relevant to the well-being of the household, rather than government spending having a common welfare impact. This result aligns with the results in Nigeria that the welfare impacts of public expenditure are dependent on the sector as well as the nature of the expenditure (Takeshima et al., 2022).

DISCUSSION OF FINDINGS

The empirical results from both the ARDL models give three broad results which support the current literature on public expenditure and household welfare in Nigeria.

Firstly, the short-term effect of an increase in capital expenditure on household welfare is strongly negative, while the effect of recurrent expenditure is not as strong (-16,018.43 compared to 2,484.49). Secondly, the adjustment process to the equilibrium is faster in the case of capital expenditure than in the case of recurrent expenditure. It corresponds to two theoretical frameworks: the Keynesian fiscal multiplier theory that claims an initial capital investment temporarily removes resources from the other sectors before it improves the welfare of the economy through the creation of infrastructure; and the Endogenous Growth Theory, which asserts that capital investment brings continuous welfare increase due to sustained productivity growth (Afonso & Sousa, 2012; Awoyemi et al., 2023). The result is generally similar to the result obtained by Agbo and Ugwu (2025) in their panel study, where they found that capital-oriented investment had a larger poverty-reducing effect than other expenditure categories, and the present study adds to this result by quantifying the difference in adjustment speed between capital and recurrent expenditure.

Secondly, the welfare effects of recurrent expenditure in the ECM are not statistically significant in the short- or long-run versions of the levels equation. This finding is in tandem with Ayaka and Ogumka (2026), which shows that in the long run, the impact of recurrent expenditure on welfare is negligible, and Nwachukwu and Oriavwote (2025), who found that there are administrative leakages and targeting failure in the provision of health services. This also supports the Public Choice Theory warning that an increase in public expenditure does not necessarily lead to an increase in household welfare (Ogar et al., 2019).

Third, the differences in error-correction rates (12.5% for capital spending and 8.1% for recurrent spending) provide the strongest evidence from this study that capital spending as a welfare-mechanism tool has a compositional advantage over recurrent spending. Nigeria's long-standing recurrent expenditure bias, as observed by Obiechina (2020) and Wofuru (2026), is in line with a structural fiscal misallocation that decelerates the long-run welfare convergence rate. In line with the recommendations of Awoyemi et al. (2023) and Adekunle (2024), a more productive mix of expenditures towards productive capital investment, particularly in the area of infrastructure, education and healthcare, would improve the rate of welfare adjustment, thereby providing more sustainable improvements to Nigeria's household living standards. This compositional advantage is also supported formally by the Wald coefficient equality test in Section 4.6.1, which rejects the equality of the capital and recurrent expenditure coefficients in the joint FMOLS specification ($F(1, 34) = 55.220$, $p = 0.000$).

These results should be interpreted with caution. As revealed in Section 4.5.2, none of the individual long-run coefficients of capital or of recurrent expenditure is statistically significant, respectively, in both ARDL models. An FMOLS robustness check in Section 4.6 confirms that the relative importance of recurrent expenditure and capital expenditure is also sensitive to the inclusion of these two types of expenditure separately or together. While the differential error correction velocities mentioned above are well characterised and consistent across specifications, the exact size of the long-run welfare impact of a naira of capital and/or recurrent expenditure is not. The results presented can thus be interpreted as illustrative of the directional and dynamic effect that capital expenditures have on the anchoring of welfare towards its long-run equilibrium point, but they are not a clear-cut estimate of the structural elasticity that might serve by itself to size a given policy intervention.

CONCLUSION

This study examined the differential effects of capital and recurrent government expenditure on household welfare in Nigeria over the period 1986 to 2025, using the ARDL bounds testing approach. The results show that the short-run impact of capital expenditure on household welfare is negative and statistically significant, and that capital expenditure corrects deviations from its long-run equilibrium with household welfare faster than recurrent expenditure does. Recurrent expenditure, by contrast, exhibits no statistically significant short-run welfare effect. The individual long-run coefficients for both expenditure categories are statistically insignificant; the study's key finding is therefore not that capital expenditure has a larger long-run coefficient than recurrent expenditure, but that it has a faster speed of adjustment and, on the balance of evidence, a stronger welfare-anchoring dynamic. This differential effect is formally corroborated by the Wald coefficient equality test conducted on the joint FMOLS specification, which rejects the null hypothesis that the capital and recurrent expenditure coefficients are equal ($F(1, 34) = 55.220$, $p = 0.000$).

RECOMMENDATIONS

These recommendations follow from the differential error-correction dynamics identified above, which are the study's most robust result; they should be read as directional guidance rather than as calibrated to the (statistically insignificant) long-run expenditure coefficients.

The government should increase the proportion of capital expenditure in the fiscal budget, particularly in infrastructure, education, healthcare, and other productive sectors that directly improve household welfare.

- Public expenditure management and project implementation mechanisms should be strengthened to reduce inefficiencies, delays, and leakages associated with capital projects.
- Recurrent expenditure should be rationalised toward productive and welfare-enhancing services rather than excessive administrative spending.

- Government should strengthen fiscal transparency and accountability to ensure that public funds translate into meaningful welfare outcomes.

- Macroeconomic stability policies aimed at controlling inflation and promoting sustainable economic growth should be sustained to protect household welfare.

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