

Government Capital Expenditure and Nigeria's Economic Development

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Abstract: Nigeria's capital expenditure has been on the increase over the years. However, the pursuit for its desired level of economic development appears to be somewhat elusive. This study investigates the impact of government capital expenditure on economic development in Nigeria. Government capital expenditures on administration, economic services, social community services, and transfers were employed as proxy for the independent variable -government capital expenditure-, while Human Development Index (HDI) was utilized as proxy for the dependent variable-economic development. Data on the selected variables for the period 1986 to 2023 were sourced from the Central Bank of Nigeria Statistical Bulletin (2023), and the World Development Indicators. These data were analysed using the Augmented Dickey-Fuller unit root test, and the Autoregressive Distributed Lagged (ARDL) Bound test technique. The ADF test indicates that the variables were integrated of order one and order zero, while the F-statistic of the bound test confirmed the existence of long-run relationship among the variables. Findings show that government capital expenditure on administration has a positive and significant influence on Nigeria's economic development in the long-run, while capital expenditure on social community services has significant adverse effect on Nigeria's economic development. Capital expenditures on economic services, and transfers have positive impacts which are however insignificant. Based on these findings, the study suggests among others, that the Nigeria government should increase its capital expenditure on administration, and reduce its capital expenditure on social and community services given that such spending reduces the pace of economic development in the country.

Keywords: Government capital expenditure, economic development, human development index.

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1.0 INTRODUCTION

Achieving economic development is one of the core mandates of nations around the world, less developed nations in particular. According to Dudley Seers, economic development entails the reduction of poverty, income inequality, unemployment, and other factors that may limit the overall wellbeing of the general public. Sen (2023) considers economic development as the expansion of human freedoms and capabilities, rather than merely increasing gross domestic product or income. In this context, freedom refers to the ability of an individual or group of individuals to choose without limitations, while capabilities refer to the set of functioning alternatives from which an individual or group of individuals can choose. Economic development process comprises expansion of the supply of food, clothing, housing, medical services, educational facilities, etc. and also includes transforming the productive structure of the economy. Put differently,

economic development involves changes in the structural compositions of an economy that transforms its status from non-industrial to industrial, increases peoples' capabilities and freedom, and causes improvements in both quantitative and qualitative aspects of the economy.

The importance of economic development cannot be overemphasized. Economic development has greatly improved living conditions and incomes across the world. It has increased industrial diversification, caused improvement in the quality of lives, generated more taxes for governments, increased job opportunities, infrastructure improvement, enhanced social services, attract investments, and fortify local economies (Haines City Staff, 2023; Roche, 2022; Panth, 2021). Economic development is crucial for elevating a nation's standard of living, reducing poverty, and enhancing human capabilities through structural transformation and technological advancements. Given its enormous

benefits, governments around the world, as a matter of priority have invested so much in ensuring that their countries continue to develop.

Economic development became feasible only after the second World War, when developing countries acquired an unprecedented degree of autonomy in managing their economic destinies, thanks to political independence (Adelman, 2001). In less developed countries, the onus of economic development fell on the shoulders of its governments, requiring them to invest massively on capital projects aimed at transforming the economy in order to achieve the desired level of economic growth and development. Hence, government capital expenditure became paramount in the drive for economic development. Government capital expenditure are investments in physical capital, equipment, and other fixed assets that are part of the long-term productive capacity of an economy (Yusuf & Mohd, 2024; Fasoye & Olayiwola, 2024). In Nigeria, government capital expenditure comprises purchases/acquisition or provision of durable items or structures that can be used in the provision of goods or services. Examples include: the building of new hospitals, the purchase of new computer equipment or networks, building new roads and so on (Okoro, 2023).

Theoretically, it is believed that government capital expenditure can engender economic development by enhancing productivity, and fostering private sector growth. Hence, by boosting long-term growth, capital expenditure becomes significant in expanding a economy's capacity, increasing jobs, and generating future revenues. Devarajan, Swaroop and Heng-fu-Zou (1996) argued that changes in the composition of government expenditure which enhances higher steady economic growth, would eventually translate to economic development. Corroborating this, Muritala and Taiwo (2011) observed that in the Rostow-Musgrave model, government expenditure is a necessary condition for economic development. The model suggests that as economic growth takes place, given government's initial provision of economic infrastructures such as roads, railways, water supply and sanitation, the balance of public investment shifts towards human capital development through increased spendings in education, health and welfare services. In other words, the investment in education, health, roads, electricity, and water supply are necessities that can launch the economy from the practitioner stage to the take off stage of economic development (Guandong & Muturi, 2016). Nevertheless, government capital expenditure could also be unproductive, and may not support economic development if the amount allocated is too small or too much (Devarajan, Swaroop & Heng-fu-Zou, 1996). Insufficient budgetary allocation to capital expenditure may result in the provision of inadequate infrastructure that may not effectively support economic growth and development, while excess budgetary allocation could result to inflation which in turn, would erode the

purchasing power of the currency, and further exacerbate the living conditions of the people.

Over the years, the Nigeria economy has witnessed fluctuations in government capital expenditure, which is characterized by decreasing trend, as a percentage of gross domestic product (GDP). Despite the increase in nominal terms over the years, its value as a percentage of gross domestic product (GDP), suggests that on the average, government capital expenditure has been declining. For instance, Nigeria's capital expenditure exhibited increasing trends, rising from ₦8.53 billion in 1986 to ₦498.03 billion in 1999, before declining to ₦239.45 billion in the year 2000. During the same period, capital expenditure as a percentage of GDP rose from 4.30% to 9.08% before declining to 3.39%. By the year 2001, government capital expenditure increased to ₦438.70 billion, but however, experienced two periods of concurrent decline, in the year 2002 and 2003, with its values recorded as ₦321.38 billion and ₦241.69 billion respectively. Capital expenditure experienced six (6) consecutive positive periods, rising from ₦351.25 billion in 2004 to ₦1,152.80 billion in 2009 before declining to ₦883.87 billion in 2010. There were four episodes of decline in government capital expenditure within the period 2011 to 2020, implying six episodes of increase within the same period. However, from the year 2021 to 2023, government capital expenditure witnessed steady positive trends, increasing from ₦2,522.47 billion to ₦4,486.21 billion respectively. Despite these rising trends, government capital expenditure as percentage of GDP remained relatively low, declining from its peak of 9.08% in 1999, to its lowest of 0.64% in 2016 (CBN, 2023). As a percentage of GDP, its average value for the period 2017 to 2023 stood at 1.41% confirming that despite its rising monetary values, its total share of the country's GDP remains relatively low.

Despite the rising nominal increase in government's capital expenditure over the decades, Nigeria's progress in its pursuit for economic development appears to be insignificant, characterized by high unemployment rate, severe deprivations and poverty, wide income inequality gaps, and low standard of living. In 2018 the Brooklyn Institute, announced Nigeria as the world capital of poverty, with nearly 70 percent of its population living in poverty (Damilola, 2019). Nigeria held this position until 2022, when India overtook her (Dauda, 2021). In the last quarter of 2022, Nigeria's misery index increased from about 61.2 to about 73.1 in the half of 2023. Moreso, the recent report of Steve Hanke's Annual Misery Index (HAMI) indicates that Nigeria moved up from 15th position to 11th position in 2021, making Nigeria the 11th most miserable country in world, and the 4th in Africa (Uzoehina *et al.*, 2026). Furthermore, while recording a 17% reduction in maternal deaths and 84% implementation of key reform initiatives under the Health Sector Renewal Investment Initiative (Federal Ministry of Health and Social

Welfare, 2026), Nigeria's health care system remains constrained by roughly 45% operational capacity, 20% functionality of primary healthcare centers, and high out-of-pocket expenses. Average life expectancy for the years 2023 and 2024 stood at 54.46 years and 54.64 years respectively, which is lower than the global average of 71.4 years (World Development Indicators, 2026; World Health Organization, 2024). In the country, income inequality is quite extreme such that only a small percentage of the population benefits from the nation's increasing wealth, with the majority continuing to live in poverty and hardship (Oxfam International, 2026; Musa, Enaberue & Magaji, 2024). As at the year 2022, Nigeria experienced high income inequality, with a Gini coefficient of 33.9.

Given these realities, it becomes imperative to raise questions about the effectiveness of rising government capital expenditure, in addressing the economic development problem of the country. To this end, many studies have tried to answer the question. For instance, studies like Igwe and Promise (2025), Isibor *et al.*, (2025), Nzechukwu and Onodi (2024), Chukwuma *et al.* (2023), Wofuru (2023), Odetola *et al.*, (2025), among others have made attempts in examining how government expenditure impacts on economic development in Nigeria. However, these studies focused on how government expenditures on education, health, agriculture, information and communication, defense, manufacturing etc., impact on Nigeria's economic development. These studies failed to disaggregate government capital expenditure as contained in the Central Bank of Nigeria Statistical Bulletin (2023) which divides government capital expenditure into four categories: government capital expenditure on administration, government capital expenditure on economic services, government capital expenditure on Social and community services, and government capital expenditure on transfers. This study is different in that it considers how these sub-components of government capital expenditure impact on Nigeria's economic development, using Human Development Index (HDI) as proxy for economic development.

2.0 LITERATURE REVIEW

Conceptual Literature

In this section of the study, conceptual clarifications are made in regards to how the different variables apply to the study. Hence, this section explains the meaning of government expenditure, government capital expenditure and its various components, and economic development.

Government Expenditure

Saleh *et al.* (2024) considers government expenditure as those spendings carried out by the government of a nation in order to provide for its citizens collective needs and wants such as infrastructures, provisions, and pensions. Nzechukwu and Onodi (2024) view government expenditure as the acquisition of goods

and services ranging from public consumption and investments to transfer payments such as income transfers-pensions and social benefits such as unemployment benefits-, and capital transfers. In others words, capital expenditure are expenses incurred by the government of a nation for the provision of capital and non-capital goods and services needed for the economic transformation and development of a country.

Government Capital Expenditure

This refers to government expenditure on non-financial assets. It represents investment outlays that increase the state's assets, covering spending on long-lasting projects such as infrastructure, machinery, and equipment. It involves long-term investments in physical and institutional assets (Igwe *et al.* (2025). Put differently, government capital expenditure involves investments in infrastructures (roads, bridges, seaports, airports, hospitals, etc.) and other expenditures that influence economic development. It refers to funds used to purchase, maintain, or upgrade assets, such as buildings, equipment, infrastructure, computer hardware, and other physical properties (Russo, 2025).

Components of Government Capital Expenditure

According to the Central Bank of Nigeria (CBN) Statistical Bulletin, government capital expenditure is broken down into four (4) sub components: government capital expenditure on administration, government capital expenditure on economic services, government capital expenditure on social community services, and government capital expenditure on transfers (CBN, 2023).

Government Capital Expenditure on Administration

This involves government investments in the infrastructure and systems that support public institutions, such as constructing government offices, training civil servants, and implementing administrative technologies. These investments are crucial for efficient service delivery, enabling government agencies to effectively plan, implement, and monitor public programs, including those related to health (Igwe *et al.*, 2025).

It comprises funds a government spends to acquire, upgrade, or maintain long-term physical or intangible assets that support administrative functions. In other words, it represents money spent by a government on acquiring, improving, or maintaining long-term administrative assets that will provide benefits for more than one fiscal period. Examples include: purchase of office buildings, construction of administrative headquarters, buying office equipment and furniture, purchase of computers, servers, and IT infrastructure, installation of security cameras and others.

Government Capital Expenditure on Economic Services

This consists of long-term government investments aimed at boosting productive capacity, typically focusing on infrastructure projects like roads, power, agriculture, and telecommunications. These expenditures are crucial for stimulating economic growth and creating future economic benefits, distinct from day-to-day administrative or recurrent costs.

Government Capital Expenditure on Social Community Services

Refers to government spending on fixed assets like schools, hospitals, and community infrastructure that are geared towards long-term improvement on human capital development. According to the Central Bank of Nigeria (2023) government investments in social and community services include investments in education, health, and other social and community services. Agu and Modozie (2024) added that government expenditure on social and community services are expenses on education, health, electricity and other social and community services that contribute positively to the overall wellbeing of the masses.

Babarinde *et al.* (2025) noted that investments in social and community services are unique in that they are directed towards the improvement of health, human capacity, education and other social and community infrastructures, that support overall improvement in the economic wellbeing of the people. Studies indicate that these investments in education, health, and social services are crucial for economic growth and development, but have historically been low, sometimes ranging from only 2% to 9% of total capital budgets.

Government Capital Expenditure on Transfers

This refers to cash or in-kind assets transferred to another entity specifically to acquire fixed assets, rather than for consumption. Capital transfers in government expenditure include investment grants and other capital transfers. According to the Australian Bureau of Statistics (2021), capital transfer is one in which: ownership of an asset (other than cash or inventories) is transferred from one institutional unit to another (i.e. a capital transfer in kind); cash is transferred to enable the recipient to acquire another asset; or the funds realised by the disposal of an asset are transferred.

In Nigeria, government capital expenditure on transfers are budgetary allocations for long-term investments via specialized funds, subsidies, or debt service, as opposed to recurrent transfers like salaries.

Economic Development

This is a complex process that deals with both quantitative and qualitative aspects of advancement (Barska & Jä, 2019). It refers to sustained improvements in the living standards of a population, encompassing higher income levels, improved health care, quality

education, and infrastructural development (Hariram *et al.*, 2023). It entails structural changes in the society including technological advancement, industrialisation, as well as industrial diversification, and improvement in living standards.

Economic development is an increase in economic growth that triggers structural changes which curbs unemployment, poverty, income inequality, therefore, causing improvement in the overall economic wellbeing of the people.

Human Development Index (HDI)

This is a summary measure which considers average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions (UNDP, 2026). As an index, it ranks countries on their level of human development using a variety of indicators, such as life expectancy at birth, expected years of schooling, mean years of schooling, and GNI per capita (UNESCO, 2021).

Basically, the Human Development Index was created to emphasize that people and their capabilities should be the ultimate criteria for assessing the development of a country, not economic growth alone. Nevertheless, the United Nations Development Programme (2026) posits that the HDI has some shortcomings, given that it does not reflect on inequalities, poverty, human security, empowerment, and others. It simplifies and captures only part of what human development entails.

Empirical Literature

Some scholars have attempted to examine the relationship between government expenditure and economic development in Nigeria. However, mixed findings have been reported, suggesting lack of consensus in conclusions. Some of the studies are reported as follows:

Using data sourced from the Central Bank of Nigeria Statistical Bulletin, and the United Nations Development Programme, Barilee and LeyiraChristain (2021) investigated the impact of government expenditure on economic development in Nigeria. The study employed per capita income as proxy for economic development, while the components of government recurrent expenditure was utilized as proxy for government expenditure. Results generated from the Engle-Granger residual-based technique revealed the absence of long run relationship between the dependent and independent variables. Nevertheless, regression estimates from the Ordinary Least Square methodology showed that in the short run, government recurrent expenditure in education has an insignificant negative relationship with per capita income, while government recurrent expenditure in health has strong positive

relationship with per capita income. Given these findings, the study reached the conclusion that beyond the short run, government recurrent expenditure has no meaningful impact on economic development. The study therefore advocated that more resources be allocated to the education sector in order to achieve its needed impact on the economy.

In another Study, Chukwuma *et al.* (2023) used data from 1990 to 2022 to analyze how government expenditure impacts on economic development. The independent variables employed in the study comprised government expenditures on education, health, defense, infrastructure, as well as government recurrent and capital expenditures. The dependent variable was proxied by economic development indices such as Per capita Income, Per capita consumption, and Industrial progress. Data on the selected variables were obtained from the Central Bank of Nigeria Statistical Bulletin and estimated with the aid of the Autoregressive Distributed Lagged (ARDL) model. Outcome from the estimates indicated that at the individual level, all the independent variables exhibited insignificant relationships with the economic development indices (per capita income, per capita consumption and industrial output) in Nigeria. However, the combined result showed that all the independent variables had strong relationship with the selected economic development indices. The study therefore, reached the conclusion that a strong significant correlation exists between government expenditure and economic development in Nigeria, and recommended among others that governments expenditure in various sectors of the economy be employed in a productive manner that would improve the country's per capita income.

Employing the Wagner's theory of increasing state activity and Keynesian theory, Wofuru (2023) considered how government's capital expenditure relates with economic development variables such as gross domestic product (GDP), Human Development Index, and inflation, proxied by Consumer Price Index. Secondary data from 2001 to 2020, sourced from the Central Bank of Nigeria and other publication were analyzed using the least square panel data regression technique. The study discovered that government capital expenditure improved economic growth, supported human development outcomes, but failed to maintain stable price level in Nigeria. Given these findings, the study suggested that in order to achieve sustainable economic development, government capital expenditure should be channeled to productive sectors of the Nigerian economy.

In another study, Ikubor *et al.* (2022) examined how Nigeria's economic growth is impacted by government capital investment in the nation's service sector. Times series data which were sourced from the Central bank of Nigeria, and the National Bureau of Statistics were estimated using the Autoregressive

Distributed Lagged (ARDL) technique. The results revealed that government capital expenditure in the agricultural sector and the manufacturing, mining and quarrying sector both had significant positive contributions to economic growth in Nigeria. The authors therefore, advocated that the Nigeria government should continue to provide more infrastructures in the agricultural and manufacturing sectors, as this would continue to boost output growth in the country.

Using data from 1990 to 2023, and the Autoregressive Distributed Lagged (ARDL) technique, Odetola *et al.* (2025) investigated how government expenditure impacts on economic development in Nigeria. The study found that government's investment in education had a substantial positive influence on GDP per capita which served as proxy for economic development, while government's investment in health though positive, did not have any substantial influence on the nation's economic development. On the other hand, government's expenditure on agriculture had an insignificant adverse impact on the nation's economic development. Drawing from the findings, the study recommended among others that in order to achieve sustained economic development, the Nigeria government should prioritize expenditures in the education and health sectors, while improving agricultural sector policies for enhanced efficiencies.

Likewise, Iwo and Adagi (2025) carried out a study on government expenditure and economic development in Nigeria. Gross domestic product was employed as proxy for economic development, while government spendings on education, public administration and information and communication were used as proxy for economic development. Secondary data sourced from the Central Bank of Nigeria Statistical Bulletin, spanning the period 2000-2023, were analysed using multiple regression analysis. Findings indicated that governments spending on education and public administration though negative, did not have meaningful impact on the country's economic development. Conversely, government expenditure on information and communication improved Nigeria's economic development significantly. Noticeable among the recommendations by the study is that the Nigeria government should uphold the recommendation of UNESCO by increasing the country's education sector funding to 26%, as well as curbing embezzlement of public funds meant for developmental purposes.

Adopting an ex-post-facto research design, Igwe and Promise (2025) conducted a study which evaluated how government expenditure impacted economic development in Nigeria from 1981 to 2023, employing descriptive statistics and inferential statistics such as multiple regression and moderated multiple regression analysis. Their findings revealed that government expenditure in the transport sector yielded a significant positive improvement in Nigeria's economic

growth (GDP) and economic development (HDI). Conversely, government expenditure on public administration was reported to have inconsequential impact on economic growth and economic development in Nigeria. It was also discovered that the effectiveness of government expenditures was influenced by the degree of corruption in the country. Hence, the study recommended among others that in order to maximise the impact of government spending on economic growth and development, the Nigeria government must improve investment on transport infrastructure, enhance public expenditure on public administration, and heighten the fight against corruption.

Using Autoregressive Distributed Lagged (ARDL) model, and data from 1990 to 2023, Isibor *et al.* (2025) modeled government expenditures on education, health, and agriculture, against gross domestic product per capita which is used as proxy for economic development. Findings indicated that government expenditure on education and health both impacted positively on Nigeria's economic development. However, the impact of expenditure on education was found to be significant, while that of health was negligible. On the other hand, government expenditure on agriculture exhibited an insignificant negative impact on Nigeria's economic development. Based on these findings, the study advocated that preference be given to expenditures on infrastructures in the education and health sectors, while enhancing policies that would maximise the potentials in the agricultural sector.

Similarly, Nzechukwu and Onodi (2024) considered the effect government expenditure has on Nigeria's economic development. Secondary data sourced from the Central Bank of Nigeria Statistical Bulletin for the period 1991 to 2021, were analysed using the Error Correction Regression Model. The outcome of the regression analysis showed that both government capital and recurrent expenditures had no significant impact on economic growth proxied by gross domestic product. On the other hand, it was observed that while government capital expenditure did not impact economic development (measured by per capita income) significantly, government's recurrent expenditure had significant impact. The F-statistic which has a probability value of 0.001849 confirms that the overall model is significant, and that government expenditure has a substantial effect on Nigeria's economic development. It was based on this information that the study advocated for the effective utilization of budgetary allocations meant for capital and recurrent expenditures, as this will enhance the nation's per capita income.

Adopting the Ordinary Least Square multiple regression technique, Ariwa and Okoroafor (2024) found that government recurrent expenditure on general and administration contributed positively and significantly to the economic development of Nigeria, while government's recurrent expenditure on the National

Assembly had an inconsequential negative impact on the nation's economic development, within the period under study (1999-2022). The study therefore, recommended that to achieve more improvement in Nigeria's economic development, government should reduce its recurrent expenditure on the National Assembly.

3.0 METHODOLOGY

Research Design

The research design employed in this study is the ex-post facto research design. It allows for estimation of the dependent and independent variables without altering the data collected.

Model Specification

The mathematical and econometric forms of the model are specified equation 1 and 2 respectively as follows:

$$HDI = f(ADM, ES, SCS, TRFS) \quad (1)$$

$$HDI_t = \alpha_0 + \alpha_1 ADM_t + \alpha_2 ES_t + \alpha_3 SCS_t + \alpha_4 TRFS_t + \mu_t \quad (2)$$

Where:

HDI = Human Development Index (Proxy for Economic Development)

ADM = Government Capital Expenditure on Administration

ES = Government Capital Expenditure on Economic Services

SCS = Government Capital Expenditure on Social Community Services

TRFS = Government Capital Expenditure on Transfers

α_0 = Intercept

$\alpha_1 - \alpha_4$ = Coefficients or regression estimates

t = Period of time

μ = Error Term

Sources of Data

Secondary data for the period 1986 to 2023 were obtained from the Central Bank of Nigeria Statistical Bulletin, 2023 edition, and the World Development Indicators of the World Bank.

Method of Analyses

The study adopted both descriptive and regression analyses. Test of stationarity was conducted with the aid of the Augmented Dickey-Fuller unit root test, while test for long run relationship was estimated using the Autoregressive Distributed Lagged (ARDL) bound test. Diagnostics for serial correlation was conducted using the Breusch-Godfrey LM Test, while test for Heteroskedasticity was conducted using the Breusch-Pagan-Godfrey test. Test for stability of the model was conducted using the CUSUM test, while the econometric evaluation of the model was done using the coefficient of determination, and the Durbin-Watson test.

4.0 RESULTS AND DISCUSSION

4.1 Descriptive statistics

Table 4.1: Descriptive statistics for the variables

	HDI	ADM	ES	SCS	TRFS
Mean	7.147520	22.04553	42.15079	12.46395	24.68447
Std. Dev.	2.789184	8.663414	14.36179	9.586195	20.59523
Skewness	-0.255599	-0.301327	-0.701362	4.006144	1.177100
Kurtosis	1.125808	2.332271	3.512619	21.91545	3.728571
Jarque-Bera	5.975372	1.281000	3.531491	668.1526	9.615696
Probability	0.050404	0.527029	0.171059	0.000000	0.008165
Observations	38	38	38	38	38

Source: Author's own computations using E-View 12

The descriptive statistics show that the average value of HDI is 7.15, indicating a moderate level of human development over the period under study. Government capital expenditure on administration (ADM) has a mean value of 22.05, while capital expenditure on Economic Services (ES) records the highest average at 42.15, suggesting that a larger proportion of resources or activity is concentrated in the economic sector. Capital expenditure on Social Community Services (SCS) has a lower mean of 12.46, implying relatively less allocation compared to ADM and ES. Capital expenditure on Transfers (TRFS) has a mean of 24.68, which is fairly substantial but, as seen later, not consistently distributed.

In terms of dispersion, the standard deviation reveals how much each variable deviates from its mean. HDI has a standard deviation of 2.79, indicating that human development is relatively stable with only small fluctuations over time. Administration (ADM) shows moderate variability with a standard deviation of 8.66, while Economic Services (ES) is more volatile at 14.36. Social Community Services (SCS) has a standard deviation of 9.59, suggesting moderate fluctuations. Transfers (TRFS) exhibit the highest variability with a standard deviation of 20.60, indicating that transfers are highly inconsistent and subject to large changes across

the observed period. This high volatility may affect the reliability of TRFS as an explanatory variable in the model.

The Jarque-Bera statistics and their associated probabilities provide insight into the normality of the data distribution. For HDI, the Jarque-Bera value of 5.98 with a probability of approximately 0.050 suggests that the variable is borderline normally distributed, meaning it is close to satisfying the normality assumption. Administration (ADM) has a Jarque-Bera value of 1.28 with a probability of 0.527, indicating that it is normally distributed. Economic Services (ES) also appears normally distributed, with a Jarque-Bera value of 3.53 and a probability of 0.171. In contrast, Social Community Services (SCS) has an extremely high Jarque-Bera value of 668.15 with a probability of 0.000, clearly indicating a violation of normality due to the presence of extreme values or outliers. Transfers (TRFS) also deviates from normality, with a Jarque-Bera value of 9.62 and a probability of 0.008, suggesting that the distribution is significantly skewed.

4.2 Test of Stationarity using ADF unit root test

Table 4.2 presents a summary of the Augmented Dickey-Fuller (ADF) unit root test results for all the variables used in the study.

Table 4.2: Unit Root Test using Augmented Dickey-Fuller (ADF) Test

Variables	ADF @ Level	ADF @ 1st Diff	Lag	I (I)	Remark
Log (HDI)	-1.700833	-6.791366	Maxlag=9	I (1)	Stationary
Log (ADM)	-5.691377	-	Maxlag=9	I (0)	Stationary
Log (ES)	-3.328364	-4.207179	Maxlag=9	I (1)	Stationary
Log (SCS)	-4.512812	-	Maxlag=9	I (0)	Stationary
Log (TRFS)	-2.639903	-7.632265	Maxlag=9	I (1)	Stationary

Test of Critical Values

Significance Level	Critical Value
1% level	-4.226815
5% level	-3.536601
10% level	-3.200320

Source: Author's computation using EViews 12

The unit root results indicate that human development index is not stationary at level because its

ADF statistic of -1.700833 is greater than the critical values in absolute terms. However, after first

differencing, the ADF statistic stood at -6.791366, which is more negative than the critical values, indicating that the series became stationary at first difference. This implies that HDI is integrated of order one, I(1). Capital expenditure on Administration is stationary at level as its ADF statistic of -5.691377 is more negative than the critical values at 1%, 5%, and 10% levels. This shows that the null hypothesis of unit root is rejected at level, and the variable is integrated of order zero, I (0).

Capital expenditure on economic service is not stationary at level since its ADF statistic of -3.328364 does not exceed the 5% critical value in absolute terms. However, at first difference, the ADF statistic of -

4.207179 becomes significant, indicating stationarity. Therefore, ES is integrated of order one, I(1). Capital expenditure on social community services is stationary at level with an ADF statistic of -4.512812, which is more negative than the critical values. This means that the series does not contain a unit root and is integrated of order zero, I(0). Capital expenditure on transfers is non-stationary at level because its ADF statistic of -2.639903 is less negative than the critical values. After first differencing, the ADF statistic improves significantly to -7.632265, confirming stationarity at first difference. Thus, TRFS is integrated of order one, I (1).

4.3: ARDL Bounds Test for long run Relationship

Table 4.3: ARDL Bounds Test Result for Cointegration

F-Bounds Test	Null Hypothesis: No levels relationship			
Test Statistic	Value	Signif.	I (0)	I (1)
F-statistic	10.23191	10%	2.20	3.09
k = 4		5%	2.56	3.49
		2.5%	2.88	3.87
		1%	3.29	4.37

Source: Author's computation using EViews 12

The ARDL bounds test result shows that the F-statistic value of 10.23191 is greater than the upper bound critical values at all significance levels (10%, 5%, 2.5%, and 1%). In particular, it exceeds the 5% upper bound value of 4.37. This leads to the rejection of the null hypothesis of no levels relationship. Therefore, there is strong evidence of a long-run relationship between human development index and its explanatory variables; government capital expenditures on administration, economic services, social community services, and transfers. This confirms the existence of cointegration

among the variables and justifies the use of the ARDL model to estimate both long-run and short-run dynamics.

4.4 Long run ARDL Results

The ARDL long run model is used to examine the long-term relationship between human development index and its key determinants, namely government capital expenditure on administration, economic services, social community services, and transfers in Nigeria. The result of the long run ARDL estimation is presented below.

Table 4.4: Long Run ARDL Results for the Model

ARDL Long Run Form and Bounds Test				
Dependent Variable: DLOG(HDI)				
Selected Model: ARDL (4, 2, 4, 3, 4)				
Case 2: Restricted Constant and No Trend				
Levels Equation				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(ADM)	1.377515	0.179956	7.654743	0.0000
LOG(ES)	0.093995	0.099861	0.941260	0.3651
LOG(SCS)	-0.292502	0.142576	-2.051550	0.0227
LOG(TRFS)	0.041726	0.043077	0.968627	0.3518
C	-1.967401	0.463208	-4.247337	0.0011
EC = LOG(HDI) - (1.3775LOG(ADM) + 0.0940LOG(ES) - 0.2925				
*LOG(SCS) + 0.0417*LOG(TRFS) -1.9674)				

Source: Author's computation using EViews 12

The ARDL long-run regression results show the extent to which each explanatory variable influences human development index in the long run. The coefficient of administration is 1.377515 with a probability value of 0.0000, indicating that it is statistically significant at the 5 percent level. This implies that government capital expenditure on

administration has a positive and significant impact on human development. A one percent increase in government capital expenditure on administration is associated with approximately 1.38 percent increase in human development index, suggesting that government expenditure on administrative infrastructures such as

office buildings, computers, software, security cameras and others enhance development outcomes.

Government capital expenditure on economic services has a coefficient of 0.093995 with a probability value of 0.3651, which is not statistically significant. Although the coefficient is positive, indicating that higher spending on economic services may improve human development, the lack of statistical significance suggests that its effect is weak and not reliable in explaining long-run variations in human development.

Government capital expenditure on social community services has a coefficient of -0.292502 with a probability value of 0.0227, making it statistically significant at the 5 percent level. The negative sign implies that increases in government capital expenditure on social community services are associated with a decline in human development index in the long run. This unexpected result may reflect inefficiencies,

misallocation of resources, or poor implementation of social programs.

Government capital expenditure on Transfers has a coefficient of 0.041726 with a probability value of 0.3518, indicating that it is not statistically significant. Although the positive sign suggests a potential improvement in human development, the effect is weak and insignificant, implying that transfers do not play a major role in influencing long-run human development outcomes.

4.5 ARDL-ECM Test for Short Run

Since the ARDL bounds test confirmed the existence of a long-run relationship among human development index and its explanatory variables, the error correction model is estimated to capture the short-run dynamics and the speed of adjustment toward equilibrium. The result is presented below.

Table 4.5: ARDL Error Correction Regression for the Model

ARDL Error Correction Regression Dependent Variable: DLOG(HDI) Selected Model: ARDL (4, 2, 4, 3, 4) Case 2: Restricted Constant and No Trend ECM Regression				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLOG (HDI (-1))	-0.400192	0.108551	-3.686685	0.0031
DLOG (HDI (-2))	-0.096171	0.115629	-0.831717	0.4218
DLOG (HDI (-3))	-0.696624	0.116993	-5.954384	0.0001
DLOG (ADM)	0.614858	0.073963	8.313089	0.0000
DLOG (ADM (-1))	-0.454676	0.074492	-6.103669	0.0001
DLOG (ES)	-0.066580	0.035936	-1.852770	0.0887
DLOG (ES (-1))	-0.069174	0.038269	-1.807559	0.0958
DLOG (ES (-2))	0.017555	0.037020	0.474191	0.6439
DLOG (ES (-3))	0.178186	0.042737	4.169355	0.0013
DLOG (SCS)	0.021034	0.027004	0.778909	0.4511
DLOG (SCS (-1))	0.273602	0.036285	7.540400	0.0000
DLOG (SCS (-2))	-0.071272	0.033032	-2.157692	0.0519
DLOG (TRFS)	0.036006	0.023932	1.504510	0.1583
DLOG (TRFS (-1))	-0.019267	0.026020	-0.740483	0.4732
DLOG (TRFS (-2))	-0.010635	0.023937	-0.444300	0.6647
DLOG (TRFS (-3))	0.077193	0.022031	3.503811	0.0044
CointEq (-1)*	-0.880111	0.094373	-9.325839	0.0000
R-squared = 0.881556 Adjusted R-squared = 0.770080 Durbin-Watson stat = 2.277944				

Source: Author's computation using EViews 12

The ARDL error correction results show both the short-run effects of the explanatory variables on human development index and the speed at which deviations from the long-run equilibrium are corrected. The coefficient of the error correction term is -0.880111 and is highly significant with a probability value of 0.0000. The negative and significant sign confirms the existence of a stable long-run relationship. The magnitude indicates that about 88 percent of any short-

run disequilibrium is corrected within one period, implying a relatively fast speed of adjustment toward long-run equilibrium.

The R-squared value of 0.881556 implies that about 88 percent of the variations in human development index are explained by the model, indicating a good fit. The adjusted R-squared of 0.770080 further confirms the model's explanatory power after adjusting for degrees of

freedom. The Durbin-Watson statistic of 2.277944 suggests the absence of serious autocorrelation in the model.

4.6 Diagnostic Test

Table 4.6: Heteroskedasticity Test (Breusch-Pagan-Godfrey)

Test Statistic	Value	Probability
F-statistic	1.712132	0.1691
Obs*R-squared	25.49198	0.2265
Scaled explained SS	5.339668	0.9998

Source: Author's computation using EViews 12

The heteroskedasticity test results show that the probability values for the F-statistic (0.1691) and Obs*R-squared (0.2265) are greater than 0.05. This implies that the null hypothesis of homoskedasticity cannot be

rejected. Therefore, the model does not suffer from heteroskedasticity, indicating that the variance of the error term is constant and the estimates are reliable.

Table 4.7: Serial Correlation Test (Breusch-Godfrey LM Test)

Test Statistic	Value	Probability
F-statistic	6.983021	0.4126
Obs*R-squared	19.81326	0.1460

Source: Author's computation using EViews 12

The serial correlation test results indicate that the probability values of the F-statistic (0.4126) and Obs*R-squared (0.1460) are greater than 0.05. This suggests that the null hypothesis of no serial correlation cannot be rejected. Hence, there is no evidence of

autocorrelation in the model residuals, confirming that the model is well specified and the estimates are efficient.

CUSUM test for Stability:

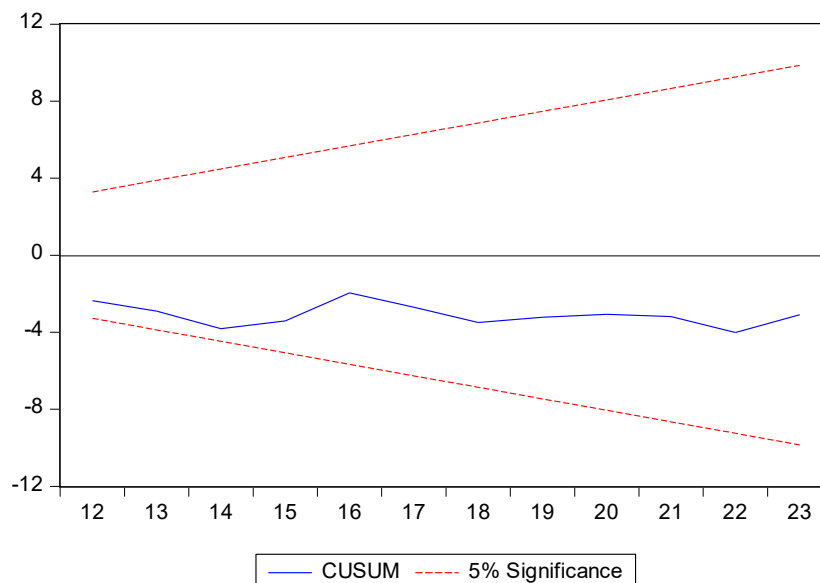


Figure 4.1: CUSUM test

Source: Author's Computation

The CUSUM test result indicates that the model is stable over the study period. The blue CUSUM line remains within the two red dashed lines representing the 5 percent significance bounds throughout the sample period. Since the cumulative sum does not cross or exceed these critical boundaries at any point, there is no evidence of structural instability in the model. This implies that the estimated coefficients are stable and consistent over time, and there are no significant structural breaks affecting the relationship between

human development index and its explanatory variables. Therefore, the model is reliable for policy analysis and inference.

5.0 CONCLUSION AND RECOMMENDATIONS

The study examined the impact of government capital expenditure on economic development in Nigeria, proxied by the Human Development Index (HDI). Government capital expenditure as an independent variable is disaggregated into four sub

components and estimated with the aid of the Augmented Dickey-Fuller unit root test, and the Autoregressive Distributed Lagged (ARDL) bound test technique. From the findings, the following observations were made:

1. Government capital expenditure on administration contributed positively and significantly to the economic development of Nigeria.
2. Government capital expenditure on economic services had a weak positive effect on Nigeria's economic development.
3. Government capital expenditure on social community services worsened Nigeria's economic development within the period under review.
4. Government capital expenditure on transfers exhibited negligible positive effect on the economic development of Nigeria.

Following these findings, the study concludes that government capital expenditure has mixed impact on the economic development of Nigeria, and recommends that the Nigeria government should increase its budgetary allocation to capital expenditure on administration, given its proven ability to positively influence economic development in the country. On the other hand, capital expenditure on social community services should be reduced given its negative impact on the country's economic development. Moreso, budgetary allocations to this component of capital expenditure should be strictly monitored in order to ensure that it is invested on social community infrastructures such as boreholes, markets, electricity, health care centers and others that could contribute positively to economic development in the country. Finally, there should be increased budgetary allocations to government capital expenditures on economic services and transfers, given their potentials to influence economic development outcomes positively.

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