

Sectoral Composition of Government Expenditure and Development Outcomes in Nigeria

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ABSTRACT

The budget is the primary function of the government. Due to inefficiency of sectoral allocations in Nigeria, the study therefore seeks to examine how sectoral composition of government expenditure influences development outcomes in Nigeria, employing data from the publications of central bank of Nigeria's statistical bulletin and World Development Indicators from 1986 to 2023. The study employed descriptive research design and expo facto research design. To achieve this objective, the study employs the Autoregressive Distributed Lag (ARDL) technique. Findings show that budgetary allocations of government expenditure to economic services and social/community services have a positive and insignificant relationship with economic development in Nigeria in the short-run, sectoral allocations of government expenditure to economic services has a positive and insignificant relationship with economic development in the longrun and sectoral allocations of government expenditure to social and community services has a positive and significant impact on economic development in Nigeria. Moreover, the diagnostic test result shows robustness of the model, satisfying the ordinary least squares assumptions of no autocorrelation, no multicollinearity, and no heteroskedasticity in the regression result. The study, therefore, recommends that the Federal Ministry of Finance, Budget and Planning should raise allocations for economic services such as agriculture, infrastructure, and electricity and social/community services such as education and health, to at least 20-25% of total expenditure to build skills and capacities for an increase in productivity and as well strengthen monitoring, transparency, and accountability mechanisms to ensure that allocated funds to sectors of the economy are utilize optimally.

Keywords: Budget, Sectoral Allocations, Economic Services, Social and Community Services, Development Outcome

INTRODUCTION

Budgetary allocations of government expenditure drive economic growth and development, as explained by Wagner's Law and Keynesian theory. Wagner's Law posits that economic growth induces rising public spending demands for infrastructure and services, with expenditure growing faster than GDP, particularly in economic sectors like transport (Wagner, 1883/1890). Conversely, Keynesian theory views expenditure as exogenous, stimulating aggregate demand via multipliers to spur growth, especially in infrastructure and social sectors during downturns (Keynes, 1936).

The budget is the principal function of the government. It is the official financial statement prepared by the government that outlines its expected revenues, such as taxes, oil revenue, grants, and borrowing, and planned expenditures such as salaries, infrastructure, education, health, and security for a fiscal year. The preparation and allocation of the government budget in Nigeria involves several key institutions and actors who contribute at different stages, from policy design to approval and implementation. Institutions such as the executive arm of government approved the budget proposal before been sent to the National assembly, and as well ensure that the planned budget aligns with the government development plan. The federal ministry of finance coordinates the overall budget preparation process, issues budget guidelines and monitors fiscal policy consistency and financial management. While the Ministry of Budget and Economic Planning provides economic projections and

development planning frameworks, aligns the budget with medium-term development plans and help in designing the Medium-Term Expenditure Framework.

Government budgetary allocations have remained one of the most important macroeconomic management tools for controlling the level of demand and supply in an economy. If budgetary allocations are managed properly, it can put an economy on the path of sustainable growth and development. The government has the responsibility to provide essential goods and services (protection and provision of basic infrastructure/amenities) to the citizens, which are normally implemented through budgetary allocation (Razzolini and Shughart, 2017).

Through the annual budget, the government allocates its expenditure to different sectors of the economy and sets policy priorities within an overall spending limit to influence the economy. However, government implementation through disbursing money to different sectors of the economy is of great concern, considering its importance to economic growth and development. Increased government budgetary allocation to economic services and social/community services promotes economic growth and development in Nigeria, which therefore creates a multiplier effect in the economy by creating employment, which improves the standard of living of the people and therefore minimizes the level of poverty in the country.

Nigeria's government budgetary allocation has remained a major policy tool for promoting economic development; however, persistent challenges such as inefficient resource distribution, recurrent-expenditure dominance, corruption, and weak implementation have limited its developmental impact. Despite increasing public spending over the years, key development indicators such as infrastructure quality, employment generation, poverty reduction, and human capital development have shown mixed or slow progress. This raises concerns about whether budgetary allocations are effectively aligned with the national development plan and capable of stimulating sustainable economic development. Furthermore, inconsistencies in fiscal policy and poor monitoring mechanisms create gaps between budget plans and actual outcomes. Therefore, there is a need to critically examine the pattern of government budgetary allocation in Nigeria and assess its implications for economic development.

Given the above scenario, the study aims to examine the budgetary allocation of planned government expenditure on economic development in Nigeria using the dataset from the publication of central bank of Nigeria's statistical bulletin and world development indication for the period of thirty-eight years. Specifically, the study intends to examine the short and long-term effects of sectoral allocations to economic services on economic development in Nigeria, and to determine the short-term and long-term effects of sectoral allocations to social and community services on economic development in Nigeria.

THEORETICAL REVIEW

Wagner's Theory of Government Expenditure

Wagner's law is a principle named after the German economist Adolph Wagner (1835-1977). He postulated the "law of increasing state activities, he stated that, as the economy develops over time, the activities of the government increase, and that the growth of a government is based on industrialization and economic development. As a nation has industrialized social commercial and legal relationships within it become more complex and the government will be expected to set up running institutions and control this complexity, which will lead to a government increase in expenditure budget, in defence, security, etc. by analyzing trends in the growth of public expenditure and in the size of the public sector. Wagner's law postulates that;

1. The extension of the functions of the states leads to an increase in public expenditure on the administration and regulation of the economy.
2. The rise in public expenditure will be more than proportionate to the increase in the national income.
3. The theory established the functional relationship between government activities and the growth of the Nigerian economy.
4. As the economy's per capita income grows, the public expenditure grows also in relative size, while the relative size of government will also grow along.

5. The growth of the economy is the fundamental factor that determines the growth of the public sector.

Moreso, Several alternative theories challenge Wagner's Law. For instance, Peacock and Wiseman's "displacement effect" argues that public expenditure increases during crises like wars, and these higher levels persist even after the crisis subsides (Peacock and Wiseman, 1961). This suggests that historical events, rather than economic development alone, can explain the growth of public expenditure.

Review of Empirical Literature

During this investigation, several empirical studies were reviewed in line with the study objective. Omari and Muturi (2016) investigated the effect of budgeted allocation of expenditure on poverty level in Kenya using time series data covering the period from 1964 to 2010. The findings from the regression results revealed that expenditure on health and agriculture exerted a significant positive impact on the poverty level. The effect of education expenditure was not significant, but expenditure on infrastructure had a significant negative influence on the poverty level. Sasmal and Sasmal (2016) investigated the impact of public expenditure on economic growth and poverty alleviation in India using both fixed and random effects models. The findings disclosed that public expenditure on infrastructures such as roads, power, irrigation, transport and communication was high as well as the per capita income and so the effect on poverty reduction was significant and positive.

Omodero and Okpara (2019) examined the impact of government sectoral expenditure on poverty alleviation in Nigeria, addressing a critical issue in developing countries, particularly in Africa, which accounts for two-thirds of the world's population living in extreme poverty. The study analyzed secondary data covering the period from 2000-2017 via the ordinary least squares (OLS) technique. The regression results revealed that government spending on sectors such as agriculture, building and construction, education, and health does not have a significant effect on poverty alleviation in Nigeria. They recommend that the government allocate more funds to these sectors to increase their capacity to eradicate poverty in the country.

Fosu (2017) provided comparative global evidence on the enhancement of economic growth through poverty reduction in developing countries with an emphasis on the role of income inequality. The study discovered that high initial levels of inequality impede the effectiveness of growth in reducing poverty, while growth inequality increases poverty directly at a given level of growth. Anderson et al. (2018) employed meta-regression to analyze the relationship between government spending and income poverty in low and middle-income countries. The study generally established that higher government spending did not play any significant role in income poverty reduction in the low and middle-income countries under review.

Oriakhi (2021) explored the relationships among poverty reduction, government expenditure, and economic growth in Nigeria via a vector error correction model (VECM). The study incorporated variables such as poverty reduction (POVRd), total government expenditure (TGEXP), real gross domestic product per capita (RGDPpc) as a proxy for economic growth, and natural resource rents (NRENT). Employing the block exogeneity Wald test to determine causality, the VECM to assess the speed of adjustment and short-run transmission mechanisms, forecast error variance decomposition to evaluate the impact of shocks, and the inverse roots of AR characteristics polynomial to ensure model stability, Oriakhi (2021) reported bidirectional causality between total government expenditure and poverty reduction in Nigeria. These findings suggest that government spending influences not only poverty reduction but also poverty levels.

Yusoff, et al. (2022) examined the effects of government expenditure on poverty levels in Malaysia via a nonlinear autoregressive distributed lag (NARDL) model with annual time series data from 1970--2019. The bounds test for the NARDL specification confirmed the presence of cointegration among key variables, including poverty level, development expenditure, GDP per capita, inflation rate, physical capital, and human capital. The empirical analysis demonstrated that while increases in development expenditure do not significantly reduce poverty, reductions in development expenditure are associated with significant long-term declines in poverty levels. To ensure the robustness of their findings, the researchers also assessed the share of development expenditure relative to GDP, concluding that overall development expenditure has minimal impact on poverty reduction in both the long and short term.

Almajdob and Shtewi (2023) conducted a comprehensive analysis of the impact of government expenditure on poverty alleviation in Arab Spring countries via time series data from 1980--2013. Using advanced econometric techniques such as unit root tests, bound testing for cointegration, and error correction methods within an autoregressive distributed lag (ARDL) framework, their study provided robust estimates. The findings revealed that government spending positively and significantly influences economic growth by enhancing real private investment and fixed capital accumulation. Also, the study revealed that government expenditure has a significant short-term impact on poverty reduction in its lagged form, highlighting the critical role of fiscal policy in addressing current-year poverty levels.

Research Gap

From the reviewed empirical literature, several gaps can be identified. First, most of the studies, such as Omari and Muturi (2016), Sasmal and Sasmal (2016), and Yusoff et al. (2022) focused on the relationship between government expenditure and poverty reduction in different countries like Kenya, India, and Malaysia, which limits the generalization of their findings to the Nigerian context. Second, existing studies on Nigeria, such as Omodero and Okpara (2019) and Oriakhi (2021), mainly examined total government expenditure or broad sectoral spending without adequately disaggregating expenditure into specific components that capture economic services and social/community services separately. Third, many of the previous studies concentrated on poverty as the only welfare indicator, with little attention given to broader measures of human welfare such as Human Development Index (HDI) or inclusive development indicators.

Furthermore, the empirical results remain inconclusive, as some studies found positive effects of government expenditure on poverty reduction, while others reported insignificant or even adverse effects. This inconsistency suggests the need for further investigation using alternative variables, updated data, and improved econometric techniques. Therefore, this study fills the gap by examining the effect of sectoral government expenditure on development outcomes using disaggregated sectoral expenditure components and a broader measure of development.

METHODOLOGY

Research Design

This study employed a descriptive research design and an ex-post facto research design. This design is appropriate for explaining the pattern of budgetary allocation of government planned expenditure, and as well provide and empirical evidence to know whether budgetary allocations of government planned expenditure influence economic development in Nigeria.

Model Specification

Wagner's Law, which is also known as the "Law of Increasing State Activity," postulates that as an economy develops and per capita income rises, the share of public expenditure in national income also increases (Wagner, 1883). Relating Wagner's Law to the relationship between budgetary allocations of planned expenditure on economic development in Nigeria, the notional functional form of the model is given as;

$$HDI = f(SGES, SGSC, PCI, EMPR, FDI, TP) \dots\dots\dots (1)$$

Rewriting equation (1) in the econometric form, we have;

$$HDI_t = \alpha_0 + \alpha_1SGES_t + \alpha_2SGSC_t + \alpha_3PCI_t + \alpha_4EMPR_t + \alpha_5FDI_t + \alpha_6TP_t + \varepsilon_t \dots\dots\dots (2)$$

$$(+)\quad (+)\quad (+)\quad (+)\quad (+)\quad (+)$$

Where HDI = Human Development Index, SGES is the sectoral planned allocations of government expenditure on economic services which covers agriculture, manufacturing, infrastructure, transport etc, SGSC represents the sectoral planned allocations of government expenditure on social and community development such as

education, health and other services, PCI is the per capita income, which is calculated as; $\frac{\text{aggregate income}}{\text{total population}}$, EMPR is the rate of employment which was calculated as $\frac{\text{number of employed persons}}{\text{total labour force}} \times \frac{100}{1}$, FDI is the foreign direct investment growth rate, TP is the trade policy which is proxy for trade openness, $\alpha_0 =$ intercept, $\alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5,$ and α_6 are the estimated parameters and ε_t represents stochastic terms.

Justification of the Variables and A Priori Expectations

Human Development Index (HDI) is a composite index developed by the United Nations Development Programme to measure economic development using life expectancy, education, and income indicators. It reflects the overall welfare and standard of living of a country.

SGES (Sectoral Allocation on Economic Services): SGES represents planned government sectoral allocation on economic services such as agriculture, manufacturing, infrastructure, transportation, and communication. These expenditures are expected to improve productivity and economic performance. Higher spending on economic services is expected to increase HDI through improved income, employment, and infrastructure. Thus, it is expected that $\alpha_1 > 0$.

SGSC (Sectoral Government Expenditure on Social and Community Services): SGSC refers to government expenditure on social and community services such as education, health, housing, and other welfare services that directly affect human well-being. It is expected that higher social spending improves health, education, and living standards, thereby increasing HDI. Hence, $\alpha_2 > 0$.

PCI (Per Capita Income): Per capita income is the average income per person. It measures individuals' standard of living in the economy. It is expected that an increase in per capita income will improve the standard of living and increase the human development index. Thus, $\alpha_3 > 0$.

EMPR (Employment Rate): Employment rate measures the proportion of employed persons in the labour force. However, it is expected that increase in employment rate will improve human development index in Nigeria. Thus, $\alpha_4 > 0$.

FDI (Foreign Direct Investment Growth Rate): FDI growth rate measures the increase in foreign investment inflows into the economy, which contributes to capital formation, technology transfer, and job creation. Higher FDI is expected to improve economic development and increase human development in Nigeria. Hence, $\alpha_5 > 0$.

TP (Trade Policy): Trade policy (proxy for trade openness) measures the degree to which an economy is open to international trade, often calculated as the ratio of total trade (exports + imports) to GDP. Greater trade openness promotes growth, technology transfer, and income, which improve human development in Nigeria. Hence, it is expected that $\alpha_6 > 0$.

Nature and Source of Data

This study aims to empirically examine the effects of sectoral allocation of government expenditures on economic growth and development in Nigeria. The data set for the study consists of annual time series from 1986 to 2023 and was obtained from the Central Bank of Nigeria Statistical Bulletin (2023) and the United Nations Human Development Report (various issues).

Pre-estimation Test

The starting point of any empirical analysis of this nature usually begins with the investigation of the properties of the time series. This was carried out by testing for a unit root to ascertain the stationarity property, which is suitable for the analysis.

Stationarity Test

In the stationarity test, variables were subjected to stationarity to determine whether the variables have a trend or not. However, any variable that has a trend needs to be stabilized to have the correct estimate of the variable. Thus, a stationary variable is integrated of order zero, $I(0)$ indicates stationarity, and needs no further differencing. Why variable, which is not stabilized at $I(0)$, need to be difference to ensure its stability. Going by this scenario, the study employs the Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) unit root tests to determine the order of integration of each series.

Estimation Technique

To empirically examine the implications of sectoral allocations of government expenditure on economic development in Nigeria, a proxy as the human development index (HDI) in Nigeria, the analytical time-series-based model was determined based on the outcome of the unit root test. However, the series in the model was integrated at level $I(0)$ and at first difference $I(1)$, in which an autoregressive distributive lag model was also employed for the analysis. Thus, the autoregressive model was specified in its specific form as:

$$\begin{aligned}
 HDI = & \delta_0 + \delta_1 HDI_{t-1} + \delta_2 SGES_{t-1} + \delta_3 SGSC_{t-1} + \delta_4 PCI_{t-1} + \delta_5 EMPR_{t-1} + \delta_6 FDI_{t-1} + \delta_7 TP_{t-1} \\
 & + \sum_{i=1}^n \gamma_1 \Delta HDI_{t-1} + \sum_{i=1}^n \gamma_2 \Delta SGES_{t-1} + \sum_{i=1}^n \gamma_3 \Delta SGSC_{t-1} + \sum_{i=1}^n \gamma_4 \Delta PCI_{t-1} \\
 & + \sum_{i=1}^n \gamma_5 \Delta EMPR_{t-1} + \sum_{i=1}^n \gamma_6 \Delta FDI_{t-1} + \sum_{i=1}^n \gamma_7 \Delta TP_{t-1} + \mu t
 \end{aligned}$$

However, the error correction model, which determines the speed of adjustment from short-run disequilibrium to equilibrium, was adopted and estimated as:

$$\begin{aligned}
 HDI = & \delta_0 + \delta_1 HDI_{t-1} + \delta_2 SGES_{t-1} + \delta_3 SGSC_{t-1} + \delta_4 PCI_{t-1} + \delta_5 EMPR_{t-1} + \delta_6 FDI_{t-1} + \delta_7 TP_{t-1} \\
 & + \sum_{i=1}^n \gamma_1 \Delta HDI_{t-1} + \sum_{i=1}^n \gamma_2 \Delta SGES_{t-1} + \sum_{i=1}^n \gamma_3 \Delta SGSC_{t-1} + \sum_{i=1}^n \gamma_4 \Delta PCI_{t-1} \\
 & + \sum_{i=1}^n \gamma_5 \Delta EMPR_{t-1} + \sum_{i=1}^n \gamma_6 \Delta FDI_{t-1} + \sum_{i=1}^n \gamma_7 \Delta TP_{t-1} + \sum_{t=1}^n \alpha ECM_{t-1} + \mu t
 \end{aligned}$$

Where $\gamma_1 - \gamma_7$ are short-run elasticities and $\delta_1 - \delta_7$ are long-run elasticities, ECM_{t-1} is one lag of error correction term, α is the speed of adjustment parameter with a negative sign, Δ is the first difference, μ_t is white noise and δ_0 is the constant term.

Post Estimation Tests

This test is based on econometric theory and is aimed at finding out whether the ordinary least squares assumptions are satisfied. The post-estimation analysis is required to establish the robustness of the model estimated and to confirm that the model estimated does not suffer from major econometric problems that could render the results largely unfounded. In tandem with the above, the autocorrelation test, multicollinearity test, heteroskedasticity test and normality test was carried out to check for the robustness of the model estimated.

Data Analysis and Discussion of Findings

Descriptive Analysis

Table 4.1 shows the sectoral allocations of expenditure on education, health, agriculture, road and construction, transportation and communication, other social/community services and other economic services from 2006 to 2023.

Table 4.1: Sectoral Allocation of Expenditure and Gross Domestic Product from 2006 to 2023.

Years	Govt. Exp. in Education ₦' (Billion)	Govt. Exp. in Health ₦' (Billion)	Govt. Exp. in Agriculture ₦' (Billion)	Govt. Exp. In Road and Construction ₦' (Billion)	Govt. Exp. in Trans. and Comm ₦' (Billion)	Govt. Exp. in Other Social and Community Services ₦' (Billion)	Govt. Exp. in other Economic Services ₦' (Billion)	Gross Domestic Product at Constant Market Price (₦' Billion)
2006	119.02	62.25	17.92	20.06	9.77	12.90	31.94	41126.679
2007	150.78	81.91	32.48	71.36	32.16	23.99	43.06	43837.392
2008	163.98	98.22	65.40	94.46	67.39	70.73	86.50	46802.76
2009	137.12	90.20	22.44	80.63	90.03	126.87	230.52	50564.263
2010	170.80	99.10	28.22	57.09	42.41	281.00	435.04	55469.35
2011	335.80	231.80	41.20	195.90	13.10	217.84	60.30	58180.352
2012	348.40	197.90	33.30	83.30	23.20	243.76	90.30	60670.05
2013	390.40	180.00	39.43	92.19	18.51	273.70	141.10	63942.846
2014	343.75	195.98	36.70	116.30	18.30	235.03	95.10	67977.459
2015	325.19	257.70	41.27	114.60	24.39	224.70	95.10	69780.693
2016	339.28	200.82	36.30	97.92	20.57	235.45	100.99	68652.43
2017	403.96	245.19	50.26	126.19	29.97	282.53	128.47	69205.691
2018	465.30	296.44	53.99	150.17	30.47	321.99	137.91	70536.349
2019	593.33	388.37	70.27	189.09	40.75	411.86	178.91	72094.094
2020	646.75	423.33	76.60	206.11	44.42	448.94	195.02	70800.543
2021	620.59	386.24	72.27	192.86	41.70	431.24	188.48	73382.771
2022	702.98	437.52	81.87	218.47	47.24	488.49	213.51	75768.945
2023	752.98	468.64	87.69	234.01	50.60	530.08	228.69	77936.1
Total	7010.40	4341.62	887.61	2340.72	644.97	4861.09	2680.94	1136728.77
Avg	389.47	241.20	49.31	130.04	35.83	270.06	148.94	63151.60
Share	61.67	38.19	7.81	20.59	5.67	42.76	23.58	-

Source: Computed by the Researcher Using CBN Statistical Bulletin, vol. 33. 2023.

The table shows sectoral government expenditure on education, health, agriculture, road and construction, transportation and communication, other social/community services, and other economic services in Nigeria from 2006–2023. Allocations generally increased over time with slight fluctuations. Average spending was highest in education (₦389.47bn), followed by other social/community services (₦270.06bn) and health (₦241.20bn), while transportation and communication had the lowest average (₦35.83bn). Gross Domestic Product at constant prices also increased during the period, rising from ₦41,126.67bn in 2006 to ₦77,936.10bn in 2023, with an average of ₦63,151.60bn, indicating overall economic growth alongside rising government expenditure.

The table shows government expenditure on major social and economic sectors in Nigeria from 2006–2023 and its relationship with GDP at constant market price. Total spending was highest in education (₦7010.40bn), followed by other social and community services (₦4861.09bn) and health (₦4341.62bn), indicating a strong priority for human capital development. Expenditure on transport and communication (₦644.97bn) and agriculture (₦887.61bn) was relatively low compared to other sectors. GDP increased steadily from ₦41,126.68bn in 2006 to ₦77,936.10bn in 2023, with a slight decline in 2016 and 2020. The trend suggests that

rising government spending, especially in education, health, and social services, is associated with overall economic growth during the period.

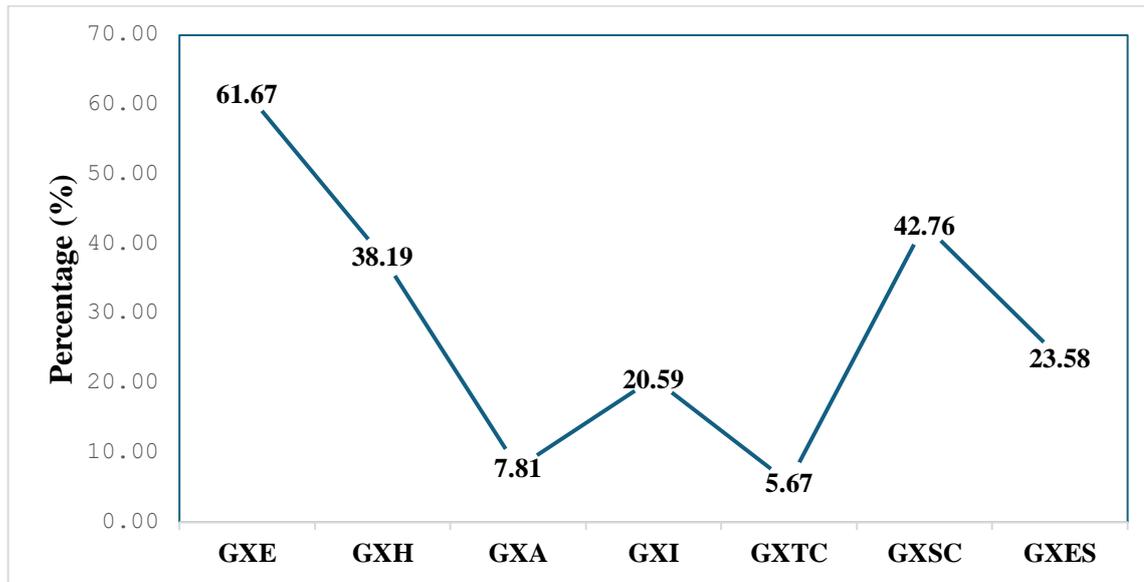


Figure 4.1: Percentage Contributions of Sectoral Planned Allocation of Expenditure to GDP from 2006 to 2023

Source: Computed by the Researcher Using an Excel Spreadsheet

Figure 4.1 shows the percentage contribution of sectoral allocation to real sectors such as agriculture, road/construction, transportation/communication and other economic services and sectoral allocation of expenditure on social services such as education, health and other social services to gross domestic product in Nigeria from 2006 to 2023. The graph shows the percentage share of government expenditure to GDP across different sectors. Education (GXE) has the highest share at 61.67%, indicating that the largest portion of government spending relative to GDP was allocated to education. This is followed by social and community services (GXSC) with 42.76% and health (GXH) with 38.19%, showing strong emphasis on social sector development. Economic services (GXES) account for 23.58%, while road and construction (GXI) has 20.59%. The lowest shares are in agriculture (GXA) with 7.81% and transportation and communication (GXTC) with 5.67%, suggesting relatively low government spending in these productive sectors compared to others.

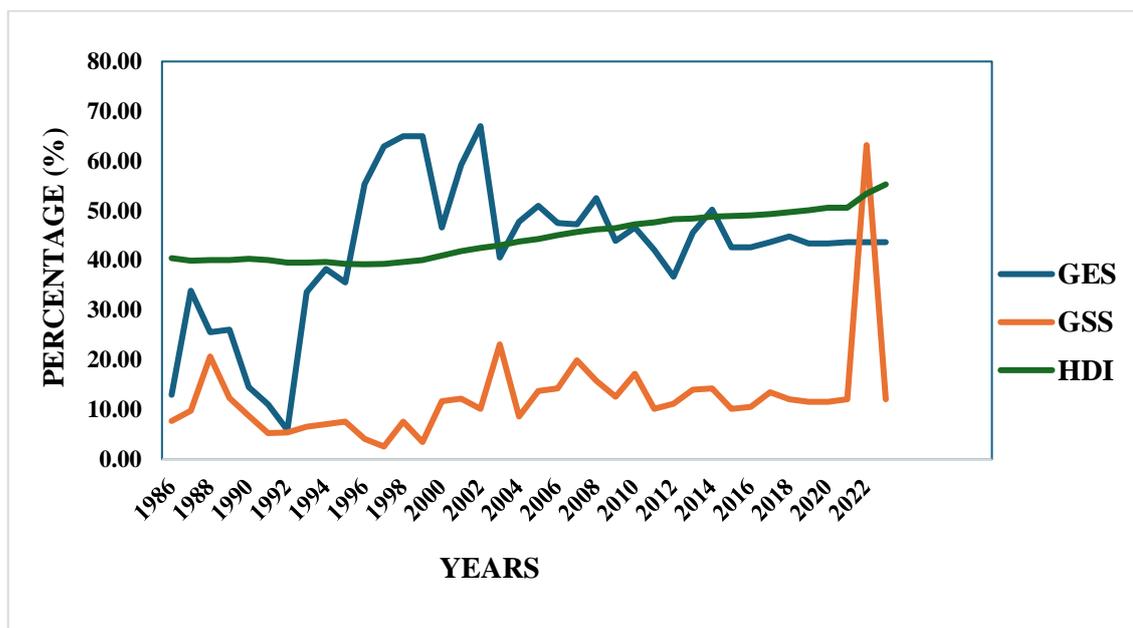


Figure 4.2: Trend Analysis of Sectoral Allocations in Economic Services, Social and Community Services and Human Development Index

Source: Computed by the Researcher Using an Excel Spreadsheet

Figure 4.2 depicts the relationship between Government Sectoral Expenditure in Economic Services (GES), Government Sectoral Expenditure in Social and Community Services (GSS), and Human Development Index (HDI) from 1986 to 2023. The graph shows the trend of sectoral allocation to economic services (GES), social and community services (GSS), and Human Development Index (HDI) in Nigeria from 1986–2023. GES fluctuates over time, rising sharply in the late 1990s and early 2000s, then stabilizing around 40–50%, indicating inconsistent allocation to economic services. GSS remains relatively low for most years, with minor fluctuations, except for a sharp increase around 2022, suggesting irregular spending on social and community services. HDI shows a steady upward trend throughout the period, increasing gradually from about 0.40 to above 0.55, indicating continuous improvement in human development. Overall, despite fluctuations in sectoral spending, HDI improved steadily, suggesting gradual progress in welfare outcomes in Nigeria.

Econometric Analysis

Correlation Analysis

A correlation matrix was used to determine the strength of the relationship between the dependent and the independent variable. The strength of the relationship ranges from 0 to 1, signifying that the correlation coefficient close to 1 has a positive or negative strength of relationship between the dependent and independent variable and vice-versa

Table 4.1: Correlation Matrix Result

	HDI	SGES	SGSC	PCI	EMPR	FDI	TP
HDI	1.000000	0.668359	0.932841	0.046473	0.940203	-0.251246	-0.317812
SGES	0.668359	1.000000	0.722382	0.148598	0.634832	-0.042837	-0.161372
SGSC	0.932841	0.722382	1.000000	-0.108627	0.621816	-0.359306	-0.505030
PCI	0.046473	0.148598	-0.108627	1.000000	-0.013974	0.395944	0.460871
EMPR	0.940203	0.634832	0.621816	-0.013974	1.000000	-0.246082	-0.434360
FDI	-0.251246	-0.042837	-0.359306	0.395944	-0.246082	1.000000	0.424176
TP	-0.317812	-0.161372	-0.505030	0.460871	-0.434360	0.424176	1.000000

Source: Author’s Computation using EViews 10

Table 4.1 depicts the correlation matrix for our variables in the model. However, no coefficient correlation exceeds or is even close to 0.80. For this reason, in our model, there is no problem of multicollinearity, which enhances the reliability of regression analysis. Also, the result indicates that government sectoral allocation to economic services, social/community services and employment rate have a strong positive correlation with human development in Nigeria, whereas per capita income has a weak positive correlation with human development. Foreign direct investment and trade policy have a negative correlation with human development in Nigeria.

Unit Root Test Results

In carrying out this test, the Phillips-Perron test was used. The test is carried out to test for the stationarity of each variable. The rule of thumb of the test is such that if the absolute value of the Phillip-Perron test statistic is greater than the critical value at 5%, then we reject the null hypothesis that the variable is non-stationary. This implies that the variable is stationary when the absolute value of the Phillips-Perron statistics test is greater than the critical value at 5%. The unit root test result is contained in Table 4.2.

Table 4.2: Phillip-Peron Unit Root Test Result

Variables	PP	Order of Integration
	t- Statistics	
HDI	-2.9940	I(1)
SGES	-4.0594	I(0)
SGSC	-6.1575	I(1)
PCI	-4.2333	I(0)
EMR	-3.7778	I(0)
FDI	-3.8712	I(0)
TP	-5.6679	I(1)

Source: Computed by the researcher using EViews 10

Table 4.2 shows the unit root test of the variables used in the study for the model. The unit roots test was carried out using the Phillips-Perron unit root test. The models make use of the Akaike selection criterion. The decision rule states that for the variable to be stationary at any level, the absolute value of the PP- t-statistic must be higher than the critical value at a 5% level of significance. From the result in Table 4.2, the unit root tests show that all the variables used for this study were stationary at the level and first difference.

Lag-Length Selection Criterion

In time series analysis, lag length selection is crucial to determine the optimal lag length that is suitable for the analysis. Table 4.3 displays the outcome of the lag order selection criteria for the model because, in econometrics, too many lags lead to a loss of degrees of freedom, the coefficient may be statistically insignificant, and multicollinearity can exist among the explanatory variables, while too few lag lead to specification errors. Hence, determining the optimal lag length is essential to avoid these problems. To determine the optimum lag length to be employed in the study, the Akaike Information Criterion was chosen, and the result is presented in Table 4.3 below

Table 4.3: Lag Length Selection Criterion

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-717.8295	NA	7.26e+08	40.26830	40.57621	40.37577
1	-572.3134	226.3583*	3591015.*	34.90630	37.36955*	35.76604*
2	-518.6620	62.59327	3838300.	34.64789*	39.26649	36.25990

Source: EViews 10 Output

Table 4.3 indicates the lag-length selection criterion of Akaike Information Criterion, Schwarz Information Criterion, and Hannan-Quinn Information Criterion for the study. The Akaike Information Criterion indicates an optimum lag length of two (2) and has the lowest value 34.64789, which implies that the optimum lag value is considerable in determining the relationship between sectoral allocations of government expenditure on economic development in Nigeria.

Co-integration Test Result

Co-integration among the time series variables suggests that the series may behave in different ways in the short run, but that they will converge towards common equilibrium behaviours in the long run. The ARDL Bounds

Test is used to test for co-integration in the models. The co-integration test result is presented in Table 4.4

Table 4.4: ARDL Bounds Test Result for Co-integration

Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	3.349323	10%	1.99	2.94
k	6	5%	2.27	3.28
		2.5%	2.55	3.61
		1%	2.88	3.99

Source: Author’s Computation (EViews 10)

The co-integration test resulted in ascertaining the long-run relationship among the variables after the data was ascertained to be free from the unit root. Table 4.4 shows that the calculated F-statistic value 3.349 exceeds the lower bound and upper bound at a 0.05% significance level. This means that the null hypothesis of no co-integration among the variables are rejected at the 0.05% level, affirming the presence of a co-integration (a long run relationship) between the dependent and the independent variables in both models. Thus, the result is a sufficient condition for fitting an error correction model to determine the speed of adjustment from short-run disequilibrium to long-run equilibrium.

RESULTS

To examine the effect of sectoral allocations of government spending on economic and social/community services, both the short-term and long-term, the regression results are presented below.

Table 4.5: Error Correction Model

Dependent Variables: Economic development (HDI)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDI(-1))	0.291913	0.127666	2.286530	0.0327
D(SGES)	0.007402	0.007453	0.993248	0.3319
D(SGES(-1))	0.011919	0.006918	1.722901	0.0996
D(SGSC)	0.017764	0.014480	1.226779	0.2335
D(SGSC(-1))	-0.062171	0.017160	-3.623104	0.0016
D(PCI)	-0.015030	0.032969	-0.455890	0.6531
D(EMPR)	0.028909	0.022900	1.262375	0.2207
D(EMPR(-1))	-0.051285	0.024597	-2.085061	0.0495
D(FDI)	0.051397	0.108013	0.475842	0.6391
D(TP)	0.038936	0.012564	3.098999	0.0054
CointEq(-1)*	-0.291838	0.049648	-5.878161	0.0000
R-squared	0.670648	Mean dependent var		0.425402
Adjusted R-squared	0.588310	S.D. dependent var		0.591236
Durbin-Watson stat	2.160313			

Source: Author’s Computation (EViews 10)

The current period and first lag of the government sectoral allocation on economic services, such as infrastructure development, agriculture, and manufacturing D(SGES) and D(SGES(-1)) estimated coefficients are 0.007 and 0.012, which are positive and statistically insignificant (t-statistic = 0.993 and 1.723, p-value = 0.3319 and 0.0996). This implies that a 1% increase in government sectoral allocation on economic services from both the current period and the immediate lag period has a positive and insignificant relationship with the human development index in Nigeria in the short run.

The positive and insignificant relationship with the human development index proxy for economic development

in Nigeria means that increased spending on economic services at all levels improves human capital by improving productivity, employment, and income for the people, which in turn raises their standard of living and reduces unemployment and poverty as a result of an increase in government allocations to economic services. The findings also conform to Wagner's theory of government expenditure, which states that an increase in public expenditure, especially to the real sector of the economy, will trigger a multiplier effect in the economy through an increase in per capita income, investment, and employment.

The current period of the government sectoral allocation on social and community services $D(SGSC)$ and $D(SGSC(-1))$ estimated values are 0.018 and -0.062 and have t-statistic values of 1.2267 and -3.6231, and the p-value of 0.2335 and 0.0061. This implies that in the current period, a percentage change in government sectoral allocation on social and community services in the short run will increase the human development index by 0.018% within the study period. Whereas the immediate lag of government allocation on social and community services decreases the human development index by 0.062% in the short term.

Per Capita Income, often expressed in purchasing power parity terms, is the most direct economic influence on the HDI's income component. An increase in per capita income generally translates to an increase in standard of living, access to goods and services, and improved potential for investment either in health or education. However, from the empirical finding, the current period of per capita income estimated coefficient is -0.015, t-statistic value of -0.4559 and p-value of 0.6531. This implies that an increase in per capita income does not translate to an increase in the human development index in the short-run due to income disparity, mismanagement of public funds and embezzlement, and overreliance on oil revenue. Using the Gini coefficient, for instance, high Gini coefficients mean income gains don't reach most people, diverting public funds for personal interest and overreliance on oil revenue, while boosting per capita income, which is capital-intensive and doesn't create jobs or improve social services quickly enough to impact the human development index positively in the short term. These factors negate or even reverse the expected positive impact of income on human development.

Employment Rates impact on the economic well-being of households. It is expected that higher employment rates and better-quality jobs contribute to increased household incomes and improved living standards. From the empirical findings, the current period of employment rate has a positive and insignificant relationship with the human development index in Nigeria, while the immediate period lag of employment rate has a negative and significant effect on the human development index in Nigeria in the short run. Employment rate positively impacted the human development index through Human Capital Theory, which postulated that employment builds workforce productivity via on-the-job training and earnings, boosting the human development index. An increase in the rate of employment enhances income, health access, and education, aligning with Human Capital Theory.

Also, foreign direct investment (FDI) and trade policy (TP), which are considered as control variables, are economic variables that can influence the human development index in Nigeria. From the empirical findings, the current period estimated value of FDI is 0.051, the t-statistic value of 0.4758, and the p-value of 0.6391. Thus, FDI has a positive and insignificant relationship with the human development index in Nigeria and a percentage change in FDI will increase the human development index by 0.051% in the short run within the period under study. Theoretically, an increase in FDI brings capital, technology, and expertise to a domestic economy, which contributes to boosting economic potential and thereby creates employment opportunities; as a result, the human development index increases.

Trade policy (TP), which is a proxy for the trade openness index, has an estimated coefficient of 0.038, a t-statistic value of 3.0989, and a p-value of 0.0054. This implies the trade policy in Nigeria has a positive and significant relationship with the human development index in Nigeria, and a percentage change in trade policy will increase the human development index by 0.038% over the study period. Trade between countries exposes economies to technology transfers, importation of health/education equipment, and export-led growth, raising incomes and human development. Moreover, the error correction term (CointEq(-1)) has a coefficient of -0.291, which is highly significant (t-statistic = -5.8781, p-value = 0.0000). This negative coefficient indicates a stable long-run relationship among the variables, with approximately 29% of the deviation from the long-run

equilibrium being corrected each period. The model's R-squared value of 0.6706 indicates that around 67.06% of the variation in human development is explained by the model, reflecting a strong fit. The adjusted R-squared value of 0.5883, which accounts for the number of predictors, still demonstrates robust explanatory power. Additionally, the Durbin-Watson statistic of 2.160 lies within the acceptable region of the rule of thumb between 1.45 to 2.44, indicating that there is no significant autocorrelation in the residuals, confirming that the model is well-specified.

In summary, the results show that government sectoral allocation to economic services and social/community services has a positive relationship with human development in Nigeria within the study period. The error correction term further validates a stable long-run relationship between the variables, and the model effectively captures a substantial portion of the variation in human development at three period lags, with no significant autocorrelation issues detected.

Table 4.6: ARDL Long-Run Result

Dependent Variable: Human Development Index (HDI)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
SGES	0.038999	0.053829	0.724491	0.4768
SGSC	0.129942	0.057703	2.251902	0.0352
PCI	-0.051501	0.109051	-0.472266	0.6416
EMPR	0.284534	0.094379	3.014808	0.0066
FDI	0.176116	0.365156	0.482302	0.6346
TP	0.133415	0.040473	3.296407	0.0034
C	32.52931	1.968749	16.52284	0.0000

Source: Author's Computation using EViews 10

The regression results offer a clear understanding of the relationship between government sectoral allocations and human development in Nigeria. The coefficient for government sectoral allocation on economic services (SGES) is 0.038, which is insignificant at the 0.05 level (p-value = 0.4768). This suggests that a percentage change in government sectoral allocations in economic services increases human development by 0.038% in the long run. The result is in line with the a priori expectation of this study, holding all other factors constant. This entails that improving the allocations to economic services or real sector of the economic such as manufacturing, agriculture, construction of factories or industry and infrastructural development will increase the human development by enhancing productivity and access to opportunities, thus, creating jobs, improve market access for goods and services, and boost overall economic efficiency, which indirectly raises incomes and standard of living. Also, through sectoral allocation on economic services, reduces cost of doing business and stimulates private sector growth, leading to an increase in per capita income which is a core component of the Human Development Index.

Moreover, the estimated coefficient for government sectoral to social and community services has an estimated coefficient of 0.129, which is significant at the 0.05 significance level (p-value = 0.0352). This suggests that a percentage change in government sectoral allocations on social and community services increases human development by 0.129% in the long run. The result is in line with the human capital theory of this study because government sectoral allocation to education and health are the key component of human development index. A higher development index indicates human capabilities in health, education, and income, fostering a more productive and innovative economy.

However, in the longrun per capita income has an estimated value of -0.051 and p-value of 0.6416. The longrun result still in conformity with the shortrun effect implying that an increase in per capita income has a negative and insignificant effect on human development index in Nigeria within the period under review. The findings is not inline with the a'proiri expectation of the study indicating a structural issue in the economy which can be attributed to income disparity, mismanagement of resources and overreliance on oil which is the major source of revenue to the government.

Employment rate and trade policy estimated coefficients are 0.284 and 0.133, both having a p-value of 0.0066 and 0.0034, respectively. This implies that changes in employment rate and trade policy, holding every other variable constant, employment rate and trade policy have a positive and significant effect on human development in Nigeria in the longrun. The finding is also in conformity with the a’prieor expectation, also in line with the shortrun relationship. This shows that an increase in employment triggers the multiplier effect through income generation, access to health/education which improved the standard of living. Whereas trade between countries enhance technological transfers, create room for importation of health/education equipment and raising incomes through investment which generally contribute to human development in Nigeria. Similarly, FDI has a positive and insignificant impact on human development in Nigeria implying that an increase in foreign direct investment through transfer of technology will increase human development by creating employment opportunities for the people.

In summary, the model identifies government sectoral allocation on economic services such as agriculture, manufacturing, infrastructure development etc. contributed positively to human development index in Nigeria, while government sectoral expenditure on social and community services conform to economic theory and statistically significant in explaining the change in the human development index. Findings show that sectoral allocation of government spending is crucial for the overall development of the economy.

Table 4.7: Robustness Check

	F-Statistic	P-Value
Serial Correlation	1.437735	0.2622
Heteroskedasticity Test	0.884340	0.5849

Source: Computed by the Researcher using EViews 10

The Breusch-Godfrey LM Test is used in this study to check for Serial Correlation. The null (H_0 : the absence of serial correlation) and alternative (H_1 : the presence of serial correlation) hypotheses. The decision rule is to accept the null hypothesis if the p-value is greater than 0.05% level of significance or reject it if the p-value is less than 0.05% critical value. Table 5.14 shows the results of the serial correlation LM test. The probability values of the F-statistics are greater than the 0.05% critical value. Thus, the null hypothesis is rejected and concluded that the error terms are not correlated. From the table above, the probability value of the F-statistic is greater than 0.05% given the level of significance. Hence, we reject the null hypothesis (H_0) and conclude that the residual is distributed with equal variance. This means that the variances of the standard errors are all equal to zero, implying that the model is homoscedastic.

CONCLUSION

The empirical findings show the short-run and long-run relationship between sectoral allocations of expenditure on economic development in Nigeria between 1986 and 2023. Findings indicate that 1% change in sectoral allocation to economic services and social/community services will increase the human development index by 0.038% and 0.129% respectively in the longrun. Hence, the study concluded that the executive arm of government, the Federal Ministry of Finance, Budget and Planning, should ensure that resources are allocated to sectors of the economy that can create a multiplier effect in the economy through employment generation, investment, and an increase in productivity, which can improve the standard of living in Nigeria.

RECOMMENDATIONS

Based on the study objective, the following recommendations were made;

- i. The federal ministry of finance, budget and planning should raise allocations for economic services such as agriculture, infrastructure and electricity and social/community services such as education and health, to at least 20-25% of total expenditure combined, exceeding current levels of 8.21% for education and 5.15% for health in 2024 to build skills, capacities for higher productivity in Nigeria. Prioritize capital over recurrent

expenditures in these sectors to build lasting human capital, as studies confirm capital outlays significantly drive HDI improvements.

- ii. The executive arm of government, federal Ministry of Budget and Planning should ensure that resources are allocated for economic services, which are the catalyst for economic growth and development in Nigeria and strengthen monitoring, transparency, and accountability mechanisms to ensure that resources reach intended projects.

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