



Public Sector Expenditure and Economic Development in Nigeria

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Abstract

Motivated by the need to predict economic development through the various expenditure types of the government, the study covers government recurrent and capital expenditure over the period of 1981 - 2023. The study employed time series secondary data obtained from the Central Bank of Nigeria's Statistical Bulletin. Stationarity/unit root, cointegration, lag-length selection criteria, and error correction tests were employed. The findings revealed that Nigeria's human development index (proxy for economic development) is most sensitive to variations in recurrent expenditure among all the explanatory variables in the study. Both expenditure patterns are valuable in explaining variations in Nigeria's economic development. The study recommended that there should be proper monitoring of the projects by the supervising agencies to safeguard these expenditures against abandonment and the Nigerian government should increase expenditures in education for the enhancement of human capital development for overall economic development in Nigeria. Proper project monitoring should be embarked upon by the executive to safeguard these huge expenditures and avoid project abandonment. The government should set a national plan for agricultural development as it has great potentials to generate massive employment through the value chain for the improvement of the country's economic development.

Keywords:

Public Expenditure, Economic Development, Capital Expenditure, Recurrent Expenditure, Nigeria..

Introduction

The efficiency of government spending is a key issue in political and academic debates, regardless of the development level of a nation (Moh'd Al-Tamimi, 2020). Budget allocations for public services and programs are of public concern because they influence the quality of services introduced to people (Kusumajaya, 2022). Many hypothetical and theoretical standpoints have discussed the importance of public spending to the status of a country's economic development,

including classical economic theory, Wagner's law, and Keynesian theory and its derivatives (Sethi et al., 2020; Nyarko-Asomani, Bhasin, & Aglobitse, 2019). Nigeria as a developing economy has adopted various fiscal strategic plans to meet people's demands and support the quality of public services (Aluthge, Jibir, & Abdu, 2021). These plans concentrate on increasing public spending on public programs and projects to reach the strategic goals of the nation (e.g. diversify the economy, diversify sources of income, and enhance the well-being of people). It is believed that public sector financial allocations contribute immensely in setting the foundation for economic growth of nations (Nwankwo, Nwakoby, Anyanwu, & Ananwude, 2022). The quantum of government spending on material and human capital resources is key in the determination of the extent of economic development (Ogar, Eyo, & Arikpo, 2019; Wahyudi, 2020).

Cardinally, the expectations and assumptions remain that the steady improvement of these publicly funded human and material capital allocations through their multiplier effects, have viable economic potentials to create capacity for further capital formations (Owolabi-Meritus, 2015; Nnamdi, Akinpelumi & Onugha, 2018; Coman, Lupu, & Nuță, 2022). Kunwar (2019) found a positive link between national economic growth and government's expenditures in education. This position confirms the extent to which education relates with and contributes to the quality of labour force. The expansion in income leads to increased saving which is resultantly channeled to further productive activities in the nation. This submission is in agreement with earlier scholars/proponents of growth theories like Nurske (1953), Romer (1986), Meier (1976), and Lucas (1988). Economic growth is theoretically expected to have a positive relationship with aggregate government expenditures in education. To further buttress this expectation, Landau (1986) expanded the study variables to incorporate expenditures in intellectual and material capital. The study took cognizance of political activities at the time, as well as the global economic realities over a lagged duration of three periods. The contributions of government expenditures to gross domestic product were tested in the study. To achieve the desired objective of the investigation, public expenditures were segmented to reflect expenditure spending, transfers, as well as spendings on human capital infrastructure. Government expenditures in the armed forces/defense institutions, including total administrative spending and consumption were considered as vital elements/extension of public sector financial allocation expenditures. On the whole, spending on human capital improvement (education) revealed a positive but insignificant relationship with economic growth potentials of the country over the study period.

Other scholars as detailed below have provided empirical support to the study of capital allocation expenditures by employing models which offer more decomposition of capital infrastructure spending. Bowman (1961), Kuznets (1961,1971) and Schultz (1962) offered a comprehensively articulated insight into capital allocations. The studies incorporated the duo of physical/material and individual (human) capacity development as genuine sectors. Further, they incorporated the intangible essential products like standardized formal educational expenditures, medical and healthcare institutions, research and development spendings as well as recreational improvement expenditures of the state. The results of these studies provided reliable evidences in strong terms, that expenditures in human and material capitals do provide basis for enhanced economic growth and development.

Finally, a critical issue found in literature is the measurement of economic development. Wasylenko (1999) argued that the most common measures of economic development are income, employment, expenditure, plant expansions, relocations, and births. In a later development, Mahmud (2002) aggregated many of the aforementioned variables into an index (Human Development Index), in accordance with specified weight of measures or composition as categorized into life expectancy measures, education (literacy rate, gross enrollment ratio and net attendance ration), and per capita income indicators. Consequently, Human development index with other indices like income per capita and poverty index have been accepted as objective indicators of the level of economic development in sovereign nations (Hickel, 2020).

Based on the aforementioned contentions, there are identified theories linking government expenditure to economic growth and development. But many of these studies do not consider the various allocative components of government expenditure, especially when considering comparatively how the sectoral mobilization of government revenue affect economic development in developing economies like Nigeria, which represents an obvious gap in the literature. Hence, the study would evaluate on a comparative basis the effect of fiscal allocations by the government on economic development in Nigeria. The covered sector are education, health, other social and community services, agriculture, construction, transport/communication and other economic services sectors. This study is split into five sections. The second section covers the literature review, while the third section covers the methodology. Section four presents the data analysis and section five concludes the study.

Literature Review

Theoretical Framework

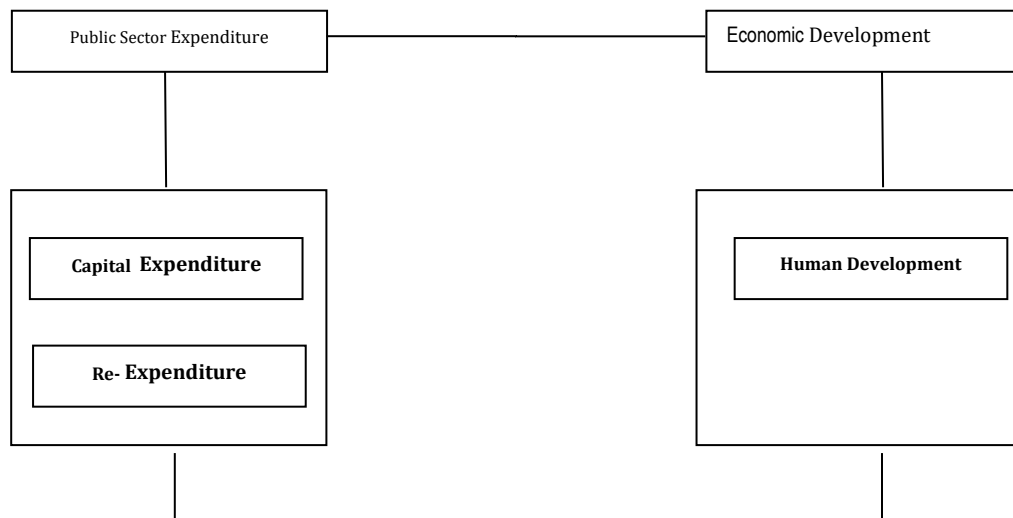
The baseline theories of the study are presented as follows;

Musgrave Theory of Public Expenditure Growth: Musgrave (1959) proposed the theory of public expenditure growth which assumes that increases in government expenditure tend to emerge from the expansion of the economy overtime. According to the theory, at low level of per capita income, the demand for public services becomes low. As such, public expenditure remains low. However, rising levels of per capita income causes public expenditure on public services to increase following the increasing demand for public goods (Jin et al., 2022).

Keynes Theory of Public Financial Allocations: The theories forming the basis of Keynesian economics were first presented by the British economist John Maynard Keynes (1936). Keynes argued that through tax government revenue is increased as well as increase in government spending which led to promotion of infrastructure (Matahir et al., 2022). The study states that the Keynesian mindset is still alive among politicians and journalists, who often advocate the need to raise spending to enhance growth. Keynes (1936) assumed that changes in public expenditures will promote to a large extent, short-term economic stability and engender higher long-run national growth. Keynes posited that public expenditures contribute positively to economic growth. Increasing government consumption will lead to increased employment, profitability and expenditure through multiplier effects on aggregate demand. These multiplier effects demonstrate the causality between public expenditure and national growth in income (Tran et al., 2022). Public expenditures resultantly contribute positively and in no small measure to all sectoral

economic growths such as agriculture, manufacturing, construction, services etc. Accordingly, the Keynesian theory further stated that increased public spending spines an economy out of depression. Short run government intervention is consequently, the cure for a recessed economy. When government spends, individuals are given purchasing power and producers will invariably increase production thus, creating more employment. Keynes's General theory of employment, interest and money provides theoretical bases for some empirical studies in Nigeria including Ighodaro and Oriakhi (2010), Njoku et al., (2014) and Adigun (2017). Keynesian economists advocated the use of government spending to promote growth and development by encouraging aggregate demand, particularly during recessions. This is the most obvious reason for the government's involvement in modern economic operations. This is because the government is required to remove short-term economic inefficiencies and to direct a country's growth and development in a socially optimum path. (Chandana Aluthge, 2021).

Conceptual Clarification



Source: Capital Expenditure and Recurrent Expenditure (Ray, 2013), Human Development Report (2020).

Figure 1: Conceptual Framework of Public Sector Expenditure and Economic Development in Nigeria.

Empirical Review

A review of some of these studies are presented here, in order to provide the relevant empirical review for this study.

Shkodra, et al. (2022) investigated the impact of government expenditure on economic development, the study have analyzed government expenditure for the period 2002-2019 in the countries of southeastern Europe (Bosnia, Kosovo, Northern Macedonia, Montenegro, Serbia and Albania). As a dependent variable the study have used economic growth while as independent variables the wages and salaries, goods and services, subsidies, social transfers and capital expenditures has been used. The purpose of this research is to examine the effect of government

spending on economic growth in the context of Southeast European (SEE) countries. The analysis method used is the regression model between the variables, DW Test and VIF test for multicollinearity between the variables. The result shows that the beta coefficient of wages and salaries, social transfer, subsidies and capital interventions are positive, which means that the higher the expenditure in wages and salaries and social transfer, the higher would be the economic growth. As a result, the study supports the positive effect of government spending on economic development.

Chen, et al. (2022) examined the impact of government expenditure on economic growth in Vanuatu for the period 1981 to 2016. The study first examined the effects of government expenditure on economic growth when government expenditure is financed by tax revenues, non-tax revenues, and budget deficit/surplus. Secondly, the study examined the effects of government expenditure compositions on economic growth. Thirdly, the study tested for weak exogeneity of fiscal factors on expenditure. The study observed that fiscal factors and expenditure have causal effects on economic growth in Vanuatu. More specifically, government expenditure negatively influences long-run economic growth when financed by tax revenues, but positively influences long-run economic growth when financed by other sources such as non-tax revenues and budget surplus/deficit. The study further noted that amongst expenditure compositions, expenditure on education, health, wages & salaries, agriculture, and interest payments individually has larger effects on the long-run economic growth than the remaining expenditure composition as a whole.

Nguyen and Bui (2022) focused on analyzing the role of corruption control in the impact of government expenditure on economic growth. The data were collected from 16 Emerging Markets and Developing Economies (EMDEs) in Asia over the period 2002–2019. Generalized method of moments (GMM) and threshold model were used to estimate research models. The estimation results show that government expenditure and corruption control have a negative impact on economic growth. Specifically, the interaction between government expenditure and corruption control can reduce the level of the negative impact of these two factors on economic growth, which is an interesting finding of this study. Moreover, unlike previous studies, the threshold model estimation results reveal that corruption control has two threshold values of -0.61 and 0.01, respectively. Accordingly, EMDEs in Asia can make the positive impact of government expenditure on economic growth if corruption control is above the threshold value of 0.01.

Methodology

The *Ex-post facto hypothethico deductive* design was employed in the study. This study employed published annual data on human development index (HDI), government human capital allocation expenditures which comprised all capital expenditures on education, health, social and other community services as they relate to government's outlays. On the other hand, government's material capital allocations include capital allocations in agriculture, construction, transport/communications, economic services and others. The data were gotten from Nigeria's Central Bank Statistical Bulletin and the world bank spanning the period 1981-2021. All allocated funds will be taken as a ratio of population to ensure uniformity in measurement of data with the dependent variable (i.e. HDI).

Presentation of Data

The employed time series data are presented in table 3.1 below. They reflect the numerical trend of employed variables over the study period 1981-2021.

Table 1: Annual Data on Human development index (HDI), Recurrent Expenditure (RCG), and Capital Expenditure (CE), in Nigeria over the period of 1981 to 2023.

Year	HDI	RCG	CE
1981	0.397	4.8467	6.567
1982	0.356	5.506	6.4172
1983	0.325	4.7508	4.8857
1984	0.363	5.8275	4.1001
1985	0.423	7.5764	5.4647
1986	0.393	7.6969	8.5268
1987	0.38	15.6462	6.3725
1988	0.371	19.4094	8.3401
1989	0.378	25.9942	15.0341
1990	0.322	36.2196	24.0486
1991	0.328	38.2435	28.3409
1992	0.348	53.0341	39.7633
1993	0.389	136.7271	54.5018
1994	0.384	89.9749	70.9183
1995	0.453	127.6298	121.1383
1996	0.393	124.2913	212.9263
1997	0.456	158.5635	269.6517
1998	0.439	178.0978	309.0156
1999	0.455	449.6624	498.0276
2000	0.462	461.6	239.4509
2001	0.46	579.3	438.6965
2002	0.466	696.8	321.3781
2003	0.445	984.3	241.6883
2004	0.463	1110.8	351.3
2005	0.477	1321.3	519.5
2006	0.477	1390.2	552.4
2007	0.481	1589.27	759.323
2008	0.492	2117.362	960.8901
2009	0.492	2127.972	1152.797
2010	0.5	3109.379	883.8745
2011	0.507	3314.513	918.5489
2012	0.514	3325.157	874.7
2013	0.521	3689.061	1108.386
2014	0.525	3426.898	783.1224

2015	0.527	3831.947	818.365
2016	0.53	4160.11	653.609
2017	0.526	4779.989	1242.296
2018	0.534	9277.196	3215.51
2019	0.532	10512.73	3781.247
2020	0.534	12819.14	3265.378
2021	0.5354	13563.77	4712.806
2023	0.5368	15553.55	6335.585

Source: Central Bank of Nigeria Statistical Bulletin (2022).

Time series data on Nigeria's human development index, and allocations to education, health, other social and community services, agriculture, construction, transport/communications, economic services were collected from Central Bank of Nigeria's Statistical Bulletin covering the period 1981 – 2023.

Model Specification

Building on Sáez et al., (2017) model, the study model is specified as follows;

$$HDI_t = f(RCG_t, CE_t) \quad (i)$$

For estimation purposes, equation (1) is re-written as follows;

$$GDP_t = \beta_0 + \beta_1 RCG_t + \beta_2 CE_t + \mu_t \quad (ii)$$

Where

HDI = Human development index,

RCG = Recurrent Expenditure,

CE = Capital Expenditure.

β_0 = Constant/intercept, β_1 to β_2 are coefficients of the independent variables respectively while μ_t is the stochastic term.

Apriori Expectations

In accordance with multiplier theory, government's expenditures in terms of recurrent and capital are expected to enhance national economic progress. In summary, it is expected that;

$$\beta_1 > 0; \beta_2 > 0.$$

Methods of Data Analysis

This study is fundamentally driven by the need to ascertain empirically, the relative influences of government's human and material capital allocations to economic development in Nigeria. Further the study is also intended to ascertain the extent to which government's capital allocations promote as well as support economic development and vice-versa in Nigeria. To further provide detailed clarification of the needful analytical experimental instruments, this sub-section is further

detailed as highlighted hereunder. Given the specific objectives of this study, unit root tests were conducted on all the study time-series variables in order to ascertain the extent or not, the data could be relied upon for further estimates in order to avoid spurious estimates. This test will be employed to evaluate the extent of the prevailing long-run relationship between each set of the study variables employed. The decision rule is that the trace statistics value should be higher than the critical value at the 0.05 level. The study observed stationarity at only first difference and hence employed the use of the Johansen Cointegration. evaluate the nature of long-run/short-run relationships that may prevail between the dependent variable in each set of equation and each of the explanatory variable as well as the rate at which the relationship is corrected to equilibrium in the long-run, the Error Correction estimation technique is employed. If all study variables converge to a given set of long-term values, they by implication, will not change. Hence, everything in the expression would cancel out.

Results and Discussion

The data analysis of the study is presented under the following subheads;

Presentation of Results of Stationarity Test

This study proceeds to evaluate the stationarity of employed variables over the study period, which results are presented in table 4.1 below:

Table 2: Presentation of Results of Unit Root Test: (Augmented Dickey Fuller) at First Difference.

Variable	ADF T-statistics	Mackinnon's test critical values @			Probability Level	Order of Integration	Decision
	1st difference	1%	5%	10%			
D(HDI)	-5.468656***	-3.621023	-2.943427	-2.610263	0.0001	I(1)	Stationary
D(RCG)	-4.704018***	-3.689194	-2.971853	-2.625121	0.0004	I(1)	Stationary
D(CE)	-5.696654***	-4.262735	-3.552973	-3.209642	0.0017	I(1)	Stationary

From the unit root results of the first difference presented in table 2, all the study variables are observed to be stationary at first difference. In essence, the Augmented Dickey-Fuller (ADF) statistics for the study variables are all greater than their respective MacKinnon's critical values at 1%, 5% and 10% levels. Their accompanying level of significance are all higher than 0.05, the preferred level of significance. In all, the first difference unit root estimations reveal stationarity at first difference. Consequently, all the study data are acceptable for further estimations procedure in the study.

Presentation of Results of Johansen Co-integration Test

The results of the Johansen's Cointegration test for the employed variables are tabularly summarized in table 2 below:

Table 3: Results of Johansen's Co-integration Test

Trend assumption: Linear deterministic trend						
Series: D(HDI) D(RCG) D(CE)						
Lags interval (in first differences): 1 to 1						
Unrestricted Cointegration Rank Test (Trace)						

Hypothesized	No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**			
None *	0.991336	453.6689	159.5297	0.0000				
At most 1 *	0.963091	277.9734	125.6154	0.0000				
At most 2	0.023597	0.883574	3.841466	0.3472				
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level								
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)								

From the results of Johansen's cointegration tests in table 2 above, the Trace statistics evidence the prevalence of two (2) cointegrating equations. The results affirm the existence of long run relationships among the variables under study. Thus, it is concluded that there exists a long term relationship between the dependent variable and the explanatory variables.

Determination of Lag Lengths Selection Criteria for Employment of Error Correction Model:

The results in table 3 below reveal the lag order selection criteria of the study.

Table 4: Results of Lag Length Selection for D(HDI) D(RCG) D(CE)

VAR Lag Order Selection Criteria

Included observations: 39

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1531.759	NA	1.95e+27	85.54218	85.89408	85.66500
1	-1262.022	404.6066	2.31e+22	74.11231	77.27935	75.21769
2	-1060.862	212.3351*	2.00e+19*	66.49234*	72.47452*	68.58028*
3	-589.4776	288.0683	2.06e+10	43.85986	52.65719	46.93037

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

The results shown in table 4 above revealed the prevalence of lag length 2 as the most effective lag length to be adopted in the study. Consequently, the lag periods of two (2) years was

considered as most appropriate. Having confirmed the lag length, the study proceeds to conduct the error correction model estimations.

Presentation of Error Correction Model Estimations

To ascertain the nature of long run dynamics in the study model, the error correction analysis estimation was implemented. The results are presented in table 4 below:

Table 5: Results of Error Correction Estimation

Error Correction Model

Maximum dependent lags: 1 (Automatic selection)

Model selection method: Akaike info criterion (AIC)

Dynamic regressors (2 lags, automatic): D(HDI) D(RCG) D(CE)

Fixed regressors: C

Selected Model: ARDL(1, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RCG	53.04008	10.78148	4.919555	0.0001
RCG(-1)	13.17443	8.453123	1.558528	0.1341
RCG(-2)	20.51426	8.355535	2.455170	0.0229
CE	-27.79543	10.61100	-2.619492	0.0160
CE(-1)	-63.76028	10.37539	-6.145336	0.0000
CE(-2)	-22.44206	10.92945	-2.053357	0.0527
C	539.4781	728.0262	0.741015	0.4669
R-squared	0.899487	Mean dependent var		35748.73
Adjusted R-squared	0.899120	S.D. dependent var		20246.34
S.E. of regression	600.6305	Akaike info criterion		15.93231
F-statistic	2725.628	Durbin-Watson stat		1.528899
Prob(F-statistic)	0.000000			

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

From the results in table 5 above, recurrent expenditure (RCG) is statistically significant in relation to economic development (HDI) of Nigeria over the study period. This is reflected in the co-efficient of 53.04008 and t-statistic value of 4.919555 at 0.0001 level of significance. Further, recurrent expenditure at lagged one period shows a positively insignificant influence on economic development (HDI) as indicated by the co-efficient 13.17443 and t-statistic value of 1.558528 which level is 0.1341 thereby, failing at specified 0.05 level. Also, government's financial allocations in education in lag 2 period evident a positively significant relationship with economic development at 0.0229 level. The co-efficient of determination (R^2) of 0.899487 indicates that about 89.95% of the variations in Nigeria's human development index in the long term, is accounted for by variations in the study's explanatory variables after adjustments for shocks in

the system. This is a reflection of the resultant changes in the Nigeria's economy to changes in the financial allocation outlays in the studied explanatory variables for overall economic development. Further, the results reveal in strong terms, that both human and material financial allocations activities embarked upon by the government significantly promote economic development in Nigeria. On the whole, the probability value of 0.000000 for the F-statistic indicates a good line of fit in the long run, while the Durbin-Watson value of 1.528899 remains within the acceptable range even in the long run.

Conclusion and Recommendations

From the findings of this study, the following conclusions are reached in line with the model specified. The model expressed Nigeria's human development index as a function of recurrent expenditure (RCG) and capital expenditure (CE) respectively. These conclusions include: Nigeria's human development index (proxy for economic development) is most sensitive to variations in recurrent expenditure among all the explanatory variables in the study. Both expenditure patterns are valuable in explaining variations in Nigeria's economic development.

In the light of the above conclusions, the study recommends as follows:

- i. Increased government allocations in education for enhanced human capital development for overall economic development in Nigeria.
- ii. There should be strict budgetary control and financial discipline to ensure that the funds provided are properly channelled to projects and implemented wholly.
- iii. Proper project monitoring should be embarked upon by the executive to safeguard this huge expenditures and avoid project abandonment.
- iv. The government should set a national plan for agricultural development as it has great potentials to generate massive employment through the value chain for the improvement of the country's economic development.
- v. Budget timing should be strictly adhered to in Nigeria by the government to ensure the productive efficiency and promote value from proper timing and execution of budgeted human and material expenditures for overall economic performance.
- vi. Consistency in policy by successive regimes and avoidance of policy somersaults should be endorsed by political office holders on assumption of office at all levels of government in Nigeria.

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