PUBLIC EXPENDITURE ALLOCATION AND ECONOMIC DEVELOPMENT IN NIGERIA.

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Abstract

The study examines the relationship between government spending and economic growth in Nigeria from 1981 to 2020. The study specifically examined the relationship between government spending on construction, electricity, and water projects and Nigeria's human development index. From 1981 to 2020, unbiased secondary series were obtained from the Central Bank of Nigeria's statistical database. Stationarity, co-integration, VEC Granger Causality, and VAR tests were used with a confidence level of 95%. The stationarity test indicates that all variables were stationary at the first difference, necessitating the application of Johansen co-integration to demonstrate the presence of long-run form. The findings of the VEC indicate that public spending on electricity and construction projects significantly promotes human development, while public spending on water projects significantly retards human development index. The VEC Granger Causality demonstrates that each variable individually and collectively supports the human development index. According to the study, public expenditure allocation fosters economic growth in Nigeria. In light of this, the study recommends that the federal government of Nigeria continue allocating funds to construction and electricity projects, as it significantly improves the standard of living of the country's citizens. The federal government of Nigeria should strengthen its oversight, supervisory, and regulatory bodies responsible for project approval and disbursement in order to effectively reduce the prevalence of fraud and fraudulent practises in the country's public expenditure allocation to water projects.

Keywords: Spending, Influence, Growth, VEC, Government, Nigeria

Introduction

After the Great Depression of the 1930s, which ultimately led to the birth of the Keynesian Economics School of thought, many countries realised the importance of government involvement in stabilising and regulating aggregates of the general economy. In contrast to the widely held classical theory, which posits that adjustments in output and employment are brought about through exchanges between buyers and sellers, this new phenomenon runs counter to those ideas (Shaikh 2009; Backhouse 2015).

There are two main categories of economic policies that have been widely applied over a long period of time, with the former aiming at general economic stabilisation and the latter achieving some crucial macroeconomic goals and objectives. There is interaction between monetary policy and fiscal policy. Both policies seek to maintain economic stability in most countries, and while they use different structures and approaches to their fundamental tools, they ultimately aim for the same outcomes (Beetsma & Jensen 2005; Claeys 2006). Taxes and government spending are both components of fiscal policies, which aim to regulate and stabilise the economy. Economic policies that combine government strategies for raising money, primarily through taxation, with those for deciding how to distribute the funds obtained are known as "tax and spend policies."

There has been a dramatic expansion of the Nigerian government's role in the economy, and the challenges faced by public policymakers are only growing more formidable by the day. Public spending has risen steadily over time, especially over the past two decades. Spending on both capital projects and ongoing operations saw irregular increases between 1990 and 2010 (from $7.49 billion to $39.07 billion) (CBN, 2020).

While government spending has increased, it is not clear if this has led to the desired level of economic growth and general prosperity for the population. Instances of corruption and poor management of public funds have made it difficult to allocate sufficient resources for capital projects and see them through to completion, resulting in significant infrastructure gaps that are hampering the country's economic growth. The dynamics of the demand for public services have shifted in response to the population boom, which has placed a greater strain on the inadequate social amenities that are currently available. Shelton (2007) observed that population growth and urbanization-related

problems often lead to a ratcheting up of pressure on the government to raise taxes. While bringing in money is obviously important, we think an even bigger problem is figuring out how to direct that money so that it has a positive effect on the economy and helps achieve our desired macroeconomic goals and objectives.

Scholars have looked at the relationship between government spending and economic growth in Nigeria; however, these studies have only disaggregated spending into capital and recurrent categories. Examples of such studies include Umeh, Ezudike, and Anyaegbunam (2022), Chandana, Adamu, and Musa (2021), Shakirat (2018), Abutu and Agbede (2015), and Okoye, Omankhanlen, Okoh, Urhie, and Ahmed (2019). That means they didn't look at how the Nigerian government spends its money on things like water infrastructure, new buildings, or electricity generation. Therefore, this research adds to the existing literature by concentrating on the effects of these publicly funded investments on Nigeria's economic growth. In addition, the current study is on economic development rather than economic growth, and instead of real GDP as a proxy for economic development, the human development index is used. The human development index is used to assess the effectiveness of government spending policies over time on the lives of the masses to whom these expenditures are primarily directed.

Wagner's law of growing government spending serves as the foundation for this analysis. Adolf Wagner (1890) posits a connection between a flourishing economy and a correspondingly flourishing public sector. His theory states that as per capita income and output increases in industrialised countries, so does the size of the public sector, as measured by the proportion of GDP spent on the government. What this means is that the percentage of GDP contributed by manufacturing is directly proportional to the amount of money the government spends, especially on capital expenditures. Boosting investment spending is a sure-fire way to propel GDP upwards.

Umeh, Ezudike, and Anyaegbunam (2022) used data from 1981 to 2019 to investigate the impact of government spending on economic growth in Nigeria. Using the Granger Causality Test and the ECM, the research concludes that government spending affects economic growth in Nigeria in a small but positive way. In order to assess the effects of government spending on the Nigerian economy from 1970 to 2019, Chandana, Adamu, and Musa (2021) broke down all spending into recurrent and capital categories. According to the research, capital expenditure has a positive and substantial effect on the Nigerian economy, while recurrent expenditure has no effect at all. Shakirat (2018) investigated how government spending in Nigeria influenced GDP growth from 1980 to 2016. Both the VECM and Weighted Least Squares were used in the analysis. Nigeria's GDP growth is significantly influenced by government spending. In a similar vein, Abutu and Agbede's (2015) analysis of the correlation between government spending and economic growth in Nigeria from 1970 to 2010 confirmed the importance of government spending in determining economic growth. Using data from 1976–2015, Leshoro (2017) examines whether or not government spending correlates with economic expansion in South Africa. The results of the study showed that government spending boosts economic expansion. Data from 1995-2015 was used by Lupu et al. (2018) for 10 selected countries in Eastern and Central Europe. Using the ARDL framework, the study found that government investment in healthcare and education positively affects GDP growth. Between 1980 and 2012, Eldemerdash and Ahmed (2019) compared Wagner's and Keynesian hypotheses in Egypt. The research confirms that lowering government spending can help stabilise Egypt's economy without slowing growth. Babatunde (2018) surveyed 237 Lagos locals to get a feel for the public's perspective on how they feel about the government's spending and how that relates to their own expectations. Based on the data, the author concludes that healthcare and education spending fell short of public expectations, while spending on transportation, communications, and agriculture exceeded those projections. With data spanning from 1980 to 2013, Al-Fawwaz (2016) dissected the relationship between government spending and GDP growth in Jordan. Using the multiple linear regression model and the OLS model, the researchers found evidence of a connection between government spending and economic growth in the country under study.

Methodology

The data used in the study is secondary in nature and collected after the fact, so the researchers had to use an ex-post facto design to avoid any possibility of bias. A spot on CBN's annual series was guaranteed from 1981 through 2020. The study uses co-integration, VEC, and VEC-Granger causation, as well as descriptive statistics, unit roots, and VEC-Granger causality, to estimate specifics. The study believe that public spending has an effect on economic

growth because governments can raise living standards by investing in people-oriented projects. To stimulate a high standard of living for its people, a government must allocate its resources wisely. The resulting model for the investigation is;

$HDI = f(LnCOP, LnELP, LnWAP)$ 3.1

$HDI_t = \beta_o + \beta_1 LnCOP_t + \beta_2 LnELP_t + \beta_3 LnWAP_t$ 3.2

$HDI_t = \beta_o + \beta_1 LnCOP_t + \beta_2 LnELP_t + \beta_3 LnWAP_t + \varepsilon_t$ 3.3

β_1, β_2, and $\beta_3 > 0$

Where, HDI = Human development index, COP = Public expenditure allocation to construction projects, ELP = Public expenditure allocation to electricity projects, WAP = Public expenditure allocation to water projects, Ln = Natural Logarithm, β_o = Intercept; β_1, β_2, and β_3 = Constant parameters, ε_t = Stochastic term
The Johansen co-integration model is given as;

$$\Delta Y_t = \curlywedge\, Y_{t-k} + T_1 \Delta Y_{t-1} + T_2 \Delta Y_{t-1} + - - - + T_k - I \Delta Y_t - (k-1) + \epsilon_t \quad 3.4$$

Where,

$$\curlywedge = \left(\sum_{i=1}^{k} \beta_i\right) - I_g \text{ and } T_i = \left(\sum_{i=1}^{i} \beta_i\right) - I_g \quad 3.5$$

The VEC model is given as;

$$\Delta LnHDI_t = \beta_1 + \sum_{i=1}^{p} \beta_2 HDI_{t-i} + \sum_{i=1}^{q} \beta_3 \Delta LnCOP_{t-i} + \sum_{i=1}^{q} \beta_4 \Delta LnELP_{t-i} + \sum_{i=1}^{q} \beta_4 \Delta LnWAP_{t-i} + e_t \quad 3.6$$

Results and Discussion

Results

Descriptive Statistics

Table 3.1 shows the summary descriptive features of the study variables.

Table 3.1.1 Descriptive Statistic Result

	HDI	LNCOP	LNELP	LNWAP
Mean	0.444667	0.486202	3.845648	0.069832
Median	0.460000	0.328226	4.113922	0.605283
Maximum	0.534000	3.126769	8.378020	6.781897
Minimum	0.322000	2.656463	1.112306	4.211778
Std. Dev.	0.066925	2.630158	3.134172	2.330756
Skewness	-0.317601	-0.155379	-0.246767	0.259714
Kurtosis	1.809194	1.595617	1.600939	1.846518
Jarque-Bera	2.959939	3.361903	3.576538	2.600528
Probability	0.227645	0.186197	0.167249	0.272460
Sum	17.34200	-18.96189	149.9803	-2.723449
Sum Sq. Dev.	0.170203	262.8737	373.2754	206.4321

Source: E-view Output

The average annual HDI, LNCOP, LNELP, and LNWAP are 0.444667, 0.486202, 3.845648, and 0.069832 respectively. Their lowest and largest values are 0.3220 and 0.5340, 2.656463 and 3.126769, 1.112306 and 8.378020, and 4.211778 and 6.781897, respectively, as evidence in table 4.1. The level of variability for HDI, LNCOP, LNELP, and LNWAP are 0.066925%, 2.630158%, 3.134172%, and 2.330756%, respectively. Table 4.1 further shows that HDI, LNCOP, and LNELP are skewed to the left with values of -0.317601, -0.155379, and -0.246767 respectively; while LNWAP is skewed to the right (0.259714). The Kurtosis result demonstrates that HDI, LNCOP, LNELP, and LNWAP are platykurtic (1.809194, 1.595617, 1.600939, and 1.846518, respectively) as their values are below 3. The Jarque-Bera p-values (0.227645, 0.186197, 0.167249, and 0.272460) of below 5% shows that HDI, LNCOP, LNELP, and LNWAP are normally distributed.

Unit Root Test

Table 3.1.2: Augmented Dickey Fuller (ADF) Stationarity Test Variables

Variables	Level Data			First differenced data			Conclusion
	ADF Test Statistics	T-Critical at 5%	P-value	ADF Test Statistics	T-Critical at 5%	P-value	
HDI	-0.963222	-2.941145	0.7564	-8.655783	-2.941145	0.0000	I(1)
LNCOP	-0.942020	-2.938987	0.7639	-5.931035	-2.945842	0.0001	I(1)
LNELP	-1.064884	-2.943427	0.7192	-5.995020	-2.954021	0.0000	I(1)
LNWAP	-1.447668	-2.938987	0.5491	-8.891291	-2.941145	0.0000	I(1)

Source: E-view 10.0 Output

Table 3.1.2 confirms that all the variables are stationary at first difference, i.e. I(1). This is as a result of their p-values being below the 95% confidence interval adopted in this study. Thus, the study proceeds with the test of the optimum lag; then the existence of long-run form using the Johansen co-integration method.

Table 3.1.3: VAR Lag Selection Result

VAR Lag Order Selection Criteria
Endogenous variables: HDI LNCOP LNELP LNWAP

Lag	LogL	LR	FPE	AIC	SC	HQ
1	-22.59046	NA	0.000143*	2.489707	3.229830*	2.730969*
2	-9.649083	19.20334	0.000181	2.687038	4.167282	3.169560
3	7.172256	20.61970	0.000194	2.634048	4.854415	3.357832
4	26.13519	18.35123	0.000210	2.442891*	5.403381	3.407937

Source: E-view 10.0

The result of Table 3.1.3 signifies that the optimum lag to use in this study as regards any analysis is one. Thus, this study adopts lag 1 throughout the study.

Table 3.1.4: Co-integration Result

Series: HDI LNCOP LNELP LNWAP
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.682480	55.65596	47.85613	0.0078
At most 1	0.249226	15.50341	29.79707	0.7466
At most 2	0.128620	5.470622	15.49471	0.7570
At most 3	0.018454	0.651907	3.841466	0.4194

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.682480	40.15255	27.58434	0.0007
At most 1	0.249226	10.03278	21.13162	0.7416
At most 2	0.128620	4.818715	14.26460	0.7645
At most 3	0.018454	0.651907	3.841466	0.4194

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-view 10.0

The result of table 3.1.4 indicates that the presence of the variables moving together in the long-run. This is because both the Trace and Max-Eigen statistic value show evidence of one co-integrating equation each at the 95% confidence interval. Thus, the study proceeds to test for the speed of adjustment and long-run nexus between the variables.

Table 3.1.5: VECM Result

Vector Error Correction Estimates
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
HDI(-1)	1.000000
LNCOP(-1)	0.126139 (0.01694) [7.44640]
LNELP(-1)	0.075172 (0.01259) [5.96992]
LNWAP(-1)	-0.019055 (0.00469) [-4.06542]
C	-0.794468

Error Correction:	D(HDI)	D(LNCOP)	D(LNELP)	D(LNWAP)
CointEq1	-0.283286	5.414452	-14.38164	-11.50365
	(0.10137)	(4.49639)	(5.15783)	(10.5032)
	[-2.79457]	[1.20418]	[-2.78831]	[-1.09525]
R-squared	0.675142	0.438344	0.287882	0.318668
Adj. R-squared	0.648024	0.218565	0.009227	0.052060
F-statistic	7.311140	1.994479	1.033112	1.195269

Source: E-view 10.0

LNCOP is positive (0.126139) and substantial (7.44640) to HDI in Nigeria. This implies that a unit increase in LNCOP will cause HDI to increase by 0.126139 unit. LNELP is positive (0.075172) and significant (5.96992) to HDI. This connotes rise in LNELP will cause HDI to rise by 0.075172 unit. However, LNWAP is negative (-0.019055) but significant (-4.06542) to HDI. This means that increase in LNWAP by one unit will reduce HDI by 0.019055 unit.

The CointEq1 of -0.283286 and t-statistic value of -2.79457 shows that disequilibrium in the short-run are corrected in the long-run at a speed of 28.35. The adjusted R-square indicates that the predictor variables were able to explain changes in the dependent variable by 64.8%. However, the remaining 35.2% are explained by other predictors not included in this study. Similarly, the model is of good fit given the F-statistic of 7.311140.

Table 3.1.6: VECM Block Exogenity Wald Result

VEC Granger Causality/Block Exogeneity Wald Tests
Dependent variable: HDI

Excluded	Chi-sq	df	Prob.
D(LNELP)	4.196263	2	0.0405
D(LNCOP)	7.678135	2	0.0215
D(LNWAP)	8.073789	2	0.0177
All	19.60596	6	0.0033

Source: E-view 10.0

The Block Exogenity Wald test demonstrates the presence of strong support from LNELP, LNCOP, and LNWAP to HDI. This connotes that the allocation of government spending to LNELP, LNCOP, and LNWAP can stimulate significant improvement in the standard of living of the populace in Nigeria.

Table 3.1.7: VEC Autocorrelation Result

VEC Residual Serial Correlation LM Tests

Null hypothesis: No serial correlation at lag h

Lag	LRE* stat	df	Prob.	Rao F-stat	df	Prob.
1	14.65201	16	0.5503	0.915933	(16, 49.5)	0.5567
2	12.58764	16	0.7026	0.772077	(16, 49.5)	0.7077

Source: E-view 10.0

The values of lag 1 (0.5503 and 0.5567) and 2 (0.7026 and 0.7077) for both the LRE and Rao respectively denotes that the model is free from any form of serial correlation.

Table 3.1.8: VEC Heteroskedasticity Result

VEC Residual Heteroskedasticity Tests
(Levels and Squares)

Joint test:		
Chi-sq	df	Prob.
187.7926	180	0.3300

Source: E-view 10.0

Table 3.1.8 shows that the p-value corresponding to Heteroskedasticity test is 0.3300. This implies the absence of heteroskedasticity.

Table 3.1.9: VEC Normality Test

VEC Residual Normality Tests

Component	Jarque-Bera	df	Prob.
1	1.621428	2	0.2029
2	1.094012	2	0.2956
3	3.284640	2	0.0585
4	0.939508	2	0.3324
Joint	7.939588	8	0.0938

Source: E-view 10.0

The result approves that the distribution is normal. This is acceptable for the both the individual and collective bases since they are above 5% level.

Discussion of Findings

Public investment in building infrastructure has a notable and beneficial effect on human development index rankings. Theoretically, a rise in the share of the budget dedicated to public services should lead to a corresponding rise in economic development, so these results make sense. This is because a greater allocation of resources towards building means faster infrastructural development, which in turn tends to spur more economic activity and, ultimately, economic growth. Government spending significantly affects economic performance, as shown by studies such as those by Chandana, et al. (2021), Shakirat (2018), Al-Fawwaz (2016), Abutu and Agbede (2015), Leshoro (2017), and Okoye, et al. (2019). Public spending does not significantly affect economic growth over time, as suggested by Umeh et al. (2022).

The government of Nigeria has made a sizeable and encouraging investment in power generation and distribution. Therefore, increasing public funding for electricity projects will have a significant impact on human development index. Based on the positive correlation between government spending and economic growth, this is in line with expectations. This is because a greater allocation of resources to building projects speeds up the development of essential infrastructure, which in turn tends to spur additional business activity and the expansion of the economy.

Government spending significantly affects economic performance, as shown by studies such as those by Chandana, et al. (2021), Shakirat (2018), Al-Fawwaz (2016), Abutu and Agbede (2015), Sunday et al. (2019), Leshoro (2017), and Okoye, et al. (2019). Nonetheless, it does not back up the claims made by Umeh et al. (2022) that government spending has no discernible effect on economic growth.

Nigeria's Human Development Index (HDI) is negatively impacted by public spending on water projects. When compared to the conventional wisdom that a higher government budget means slower economic growth, this is counter to what one might have anticipated. This is because government-funded water projects are never meant to last permanently, so they have no real effect on people's ability to provide for themselves. Umeh et al. (2022) found that government spending did not significantly spur long-term economic growth, and this finding is consistent with their findings. Public expenditure does not appear to have a major impact on economic performance, contrary to the findings of Chandana, Adamu, and Musa (2021), Shakirat (2018), Al-Fawwaz (2016), Sunday et al. (2019), Leshoro (2017), Lupu et al. (2018), and Okoye et al. (2019).

Conclusion

The purpose of this research is to examine the connection between government spending and economic growth in Nigeria from 1981 to 2020. In this analysis, the study uses the human development index and the proportion of public funding dedicated to infrastructure projects in the areas of construction, water, and electricity as independent variables. At the 95% level of confidence, the study used descriptive, VECM framework, and co-integration techniques. The study found that investing in infrastructure like roads and bridges, as well as power infrastructure, is crucial to raising the standard of living in Nigeria. This lines up with the work of Okoye et al. (2019), Chandana, Adamu, and Musa (2021), Sunday et al. (2019), Leshoro (2017), Shakirat (2018),), Al-Fawwaz (2016), and Lupu et al (2018).

Recommendations

According to the study's recommendations, the federal government of Nigeria should continue allocating funds to construction and electricity because doing so significantly improves the citizens' standard of living. The federal government of Nigeria should strengthen its oversight, supervisory, and regulatory bodies in charge of project approval and disbursement to effectively reduce the prevalence of fraud and fraudulent practices in the country's public expenditure allocation for water projects and other areas of constructions to improves the citizens' standard of living.

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