EFFECT OF PUBLIC EXPENDITURE ON ECONOMIC DEVELOPMENT OF NIGERIA

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Abstract: This study ascertain the effect of Public Expenditure on Economic Development in Nigeria for a period of twenty two (22) years spanning from 1999-2020. Specifically, this study ascertained the effect of Education Expenditure, Healthcare Expenditure and Security Expenditure on per capita income. The time series data sets used in this study were obtained from Central Bank of Nigeria Statistical Bulletin, Securities and Exchange Commission Office publications, National Bureau of Statistics publications and World Bank Statistical Bulletin for the study period. Longitudinal research design was employed. Inferential statistics using Augmented Dickey-Fuller (ADF) test, Pearson correlation coefficient, Ordinary Least Square regression analysis, Granger Causality test, Johansen Co-integration test and Error Correction Model were applied to test the hypotheses of the study. The specific findings showed that Education Expenditure has a positive but non-significant effect on Per Capita Income; Healthcare Expenditure has significant effect on Per Capita Income; and Security Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance respectively. The study recommended inter alia that there should be fiscal framework that would support growth and help achieve sound and sustainable public finances, play a key role in macroeconomic stabilization with emphasis on the development of the economy.

Keywords: Education Expenditure, Healthcare Expenditure, Security Expenditure, Per Capita Income

Background to the Study

It has been the desire of nations from all over the world to improve the welfare of their people and give them the power not only to afford the basic necessities of life, but also to empower them to be economically useful to their nations. It is the quest to achieve these that nations are stimulated to increase their Gross Domestic Products (GDP), achieve balance of payment equilibrium, achieve price stability, and increase business activities. Thus, economies are working towards achieving economic growth. Beyond this, they are working towards achieving economic development which does not only involve economic growth, but also transformational changes that accelerate the pace of growth. Though, these are goals, not all nations have been able to achieve them. This is why nations are still classified into the categories of underdeveloped, developing, emerging and developed. Irrespective of each nation's category, each has to work towards survival and sustainability by pursuing the goal of economic growth and development (Eneh, Okegbe & Amahalu, 2019).

In Nigeria, poverty rate of Nigeria is 64% while the Life Expectancy at birth is 49years; Human Development Index is 152 while literacy rate for male between 15-24years is 70.9% and for female between 15-24years is 59.3%. Youth unemployment rate is 47% (UNDP, 2020). Public expenditure has remained a crucial issue in economic development, most especially in the less developing countries of Sub-Saharan Africa, where their economies are characterized by poor infrastructural service delivery, declining productivity, high level corruption and policy instability. Public expenditure occupies a strategic position in various economies of the world. It is an important instrument in public sector policy. No economy exists without incurring public spending for the benefit of its citizens and to stimulate economic activities. The difference is the focus and the efficiency of this spending in different countries. In an underdeveloped country, public expenditure has an active role to play in reducing regional disparities, developing social overheads, creation of infrastructure of economic growth in the form of transport and communication facilities, education and training, growth of capital goods industries, basic and key industries, research and development and so on. Despite the huge amount of expenditures, there is still insignificant level of development witnessed. Public expenditures on all sectors of the Nigerian economy is expected to lead to economic growth in the sense that capital and recurrent expenditure will boost the productive base of the economy which in turn will lead to growth.

Several studies have tried to establish the relationship between public expenditure and economic development, yet no consensus has been reached. For instance, Mbah, Agu and Aneke (2021), Onifade, Çevik, and Erdoğan (2020) found a positive relationship between public expenditure and economic development. On the other hand, Okeke, Mbonu and Amahalu (2018a) found a negative relationship between public expenditure and economic development while, Aamir (2021) found a non-significant relationship between public expenditure and economic development. The inconsistencies in the result of these studies led to a gap in literature which this study tends to fill.

Objectives of the Study

The main objective of this study is to ascertain the effect of public expenditure on economic development in Nigeria.

The specific objectives are to:

i. Determine the extent to which education expenditure affects per capita income in Nigeria.
ii. Ascertain the degree to which heath care expenditure affects per capita income in Nigeria
iii. Assess the magnitude to which security expenditure affects per capita income in Nigeria.

Research Hypotheses

The following null hypotheses were developed to guide this study:

Ho_1: Education expenditure has no significant effect on per capita income of Nigeria.
Ho_2: Health care expenditure has no significant effect on per capita income of Nigeria.
Ho_3: Security expenditure has no significant effect on per capita income of Nigeria.

Conceptual Review

Public Expenditure

Public expenditure is spending made by the government of a country on collective needs and wants such as pension, provisions (such as education, healthcare and housing), security, infrastructure. Public Expenditure is often used to denote government expenditure. According to Ndum, Okoye and Amahalu (2019), any expenditure incurred by such public authorities as local, state and central governments to meet the joint social wants of the general public is recognized as public expenditure. These collective social wants take different forms. The provision of these wants is regarded as part of the legitimate critical roles any responsible government is expected to play.

Education Expenditure

Public spending on education includes direct expenditure on educational institutions as well as educational-related public subsidies given to households and administered by educational institutions (Amahalu, Okoye & Obi, 2019). This indicator is shown as a percentage of GDP, divided by primary, primary to post-secondary non-tertiary and tertiary levels. Public spending includes expenditure on schools, universities and other public and private institutions delivering or supporting educational services. This indicator shows the priority given by governments to education relative to other areas of investment, such as health care, social security, defense and security. Education expenditure covers expenditure on schools, universities and other public and private institutions delivering or supporting educational services. Education spending covers expenditure on schools, universities and other public and private educational institutions. Spending includes instruction and ancillary services for students and families provided through educational institutions (OECD, 2021).

Health Care Expenditure

Total health expenditure is considered as a summation of both public and private spending on all health related goods and services.. Health expenditure includes all expenditures for the provision of health services, family

planning activities, nutrition activities and emergency aid designated for health, but it excludes the provision of drinking water and sanitation. Health financing is a critical component of health systems (Okeke, Mbonu & Amahalu, 2018b).. Adequate and efficient health related spending is widely considered as inevitable in the improvement of health status. At the macro level, investment in health workforce and infrastructure is expected to improve health conditions and hence human capital of the population (Tom-West, Okoye & Amahalu, 2021)

Security Expenditure

Security cuddles military and paramilitary activities and operations tied to the protection of life, properties, and the economy from thoughtful harm internally or externally. Section 14 sub (2b) of the Nigerian 1999 Constitution as amended: states "Security and welfare of the people (of Nigerians) shall be the primary objective of the government". In this regard, Security expenditure is measured by the percentage of government resource allocations to the protection of life and properties from internal and external aggression, along with the upkeep of armed forces. Security expenditure is consumption expenditure impacting directly on the economic and business climate and also influencing investment and human capital development,

Economic Development

Economic development is the process by which a nation improves the economic, political, and social well-being of its people. Economic development is usually the focus of federal, state, and local governments to improve standard of living through the creation of jobs, the support of innovation and new ideas, the creation of higher wealth, and the creation of an overall better quality of life. Economic development include building or improving infrastructure such as roads, bridges; improving our education system through new schools; enhancing our public safety through fire and police service; or incentivizing new businesses to open a location in a community (Okoye, Amahalu, Obi & Iliemna, 2019).

Per Capita Income

A country's per capita income is the best available measure of the value of the goods and services available, per person, to the society per year ((Abiahu & Amahalu, 2017). Per capita income is a measure of the amount of money earned per person in a nation or geographic region. Per capita income can be used to determine the average per-person income for an area and to evaluate the standard of living and quality of life of the population. Per capita income for a nation is calculated by dividing the country's national income by its population. The main purpose of per capita income is to present the average income of a nation; it is a great tool to manage wealth among nations. Using the ratio explicitly, an increase in per capita income allows national leaders to realize their prosperity and successful economic initiatives during the year. When per capita income decreases; it allows national leaders to prepare and analyze what happened and to plan measures to reverse the trend. When a nation experiences high per capita income, large organizations are more likely to pursue developmental opportunities within that nation (Kimberly & Thomas, 2021).

Public Expenditure and Economic Development

Apart from education's contribution to sustained economic growth, education, like health, is a consumption good whose acquisition directly contributes to people's well-being. For this reason, the United Nations Development Program (UNDP) uses education as one of the components of its Human Development Index (HDI). Motivated in part by this observation, findings from several studies focusing on education and national development suggest that education is a key to delivering the knowledge requirements for economic development (Aruna, Oshiole & Amahalu, 2020; Ma, Qiu & Wang, 2019; Cao, Guo & Luo, 2019).

Theoretical Review

Finance Led Growth Hypothesis

Schumpeter (1911) is viewed to have laid the foundation for the finance led growth hypothesis. Schumpeter (1911) contended that a well-functioning financial system will stimulate technological innovations through efficiency of resource allocation from unproductive sector to productive sector. This view focused on the role

played by finance in mobilizing domestic savings and investments through creation of efficient capital markets and more open and liberalized financial system. Goldsmith (1969) built on the finance led growth hypothesis. He concluded that the evolution of domestic financial markets may enhance and lead to high levels of capital accumulation. Okegbe, Eneh and Amahalu (2019) argued that finance led growth hypothesis assumes the "supply leading" relationship between financial and economic developments. They argued that the existence of financial sector, as well-functioning financial intermediations in channeling the limited resources from surplus units to deficit units, would provide efficient allocation of resources thereby leading the other economic sectors in their growth process.

Empirical Review

Sáez, Álvarez-García and Rodríguez (2017) studied the relationship between government spending and economic growth in European Union countries using data stretching from 1994 to 2012. Using panel data techniques, the results of the study revealed that, while the relationship between government spending and economic growth can be positive or negative, depending on the countries included in the sample, the period of estimation and the variables used to proxy the public sector size, government spending has a negative impact on economic growth in European Union countries.

Onuoha and Okoye (2020) explored the effects of aggregate public expenditure, recurrent government expenditure and capital government expenditure on economic growth, and the effect of economic growth on aggregate public expenditure. Using a time series data set from Nigerian context for the period between 1981 and 2018 and analysing same with OLS regression model after a pre-estimation unit root test, an impressive results emerged. First, the study found that whereas aggregate public expenditure positively affects economic growth, recurrent government expenditure and capital government expenditure have insignificant effects on economic growth. Second, the study found that economic growth positively affects government spending.

Mbah, Agu and Aneke (2021) aimed at determining the impacts of internal security expenditure on economic growth in Nigeria. Using an ARDL estimating technique on Nigeria quarterly time series data from 1999Q1 to 2019Q4, The estimated result found internal security to be positively and significantly related to economic growth in the short run but exhibits a negative and significant relationship with economic growth in the long-run.

Methodology

This study focused on ascertaining the effect of Public Expenditure on Economic Development in Nigeria. Data from secondary source were obtained for a twenty two (22) year period spanning from 1999-2020. The research design employed in this study is the Longitudinal Research Design, since the data are time series data. Time series data were extracted from the publications of Federal Ministry of Finance and Budget Office, Central Bank of Nigeria (CBN), Statistical Bulletin Office of the Securities and Exchange Commission (SEC), Annual Abstract of Statistics from the National Bureau of Statistics (NBS) and World Bank Statistical Bulletin for a twenty two (22) year period spanning from 1999-2020.

Model Specification

This study adapted and modified the model of Fournier and Johansson (2016):

$PROD = \beta o + \beta_1 HTCEXP + \beta_2 EDUEXP + \beta_3 LABEXP$
Where:
PROD = Productivity
HTCEXP = Health Care Expenditure
EDUEXP = Education Expenditure
LABEXP = Labour Expenditure
Thus;
Economic Development = f(Public Expenditure) + μ
Representing the equations with the variables of the construct, hence the equations below were formulated:

$PCI_t = \beta_0 + \beta_1 EDUEXP_t + \mu_t$ - - - - equ (1)

$PCI_t = \beta_0 + \beta_1 HTCEXP_t + \mu_t$ - - - - equ (2)

$PCI_t = \beta_0 + \beta_1 HSECEXP_t + \mu_t$ - - - equ (3)

Where:

PCI_t = Per Capita Income for period t
$EDUEXP_t$ = Education Expenditure for period t
$HTCEXP_t$ = Health Care Expenditure for period t
$SECEXP_t$ = Security Expenditure for period t
μ_t = Error term for period t
β_0= Constant term
β_1= Coefficient of Public Expenditure

Data Presentation and Analysis

Test of Reliability

The study applied econometric technique to analyze the effect of Public Expenditure on Economic Development in Nigeria. The data employed in the study were subjected to unit root test using the Augmented Dickey-Fuller Statistics (ADF) to determine the order of integration of the variables and also to prevent spurious regression results. Moreover, Johansen cointegration test and Error correction technique were employed to establish the long run relationship and short run dynamics of the model. Engle-Granger (1987) further established that when variables were found to be I(1), the stationarity of residual (obtained from static regression) implies co integration. Based on this position, a long run equilibrium condition exists between the dependent and independent variables. Long run regression results are obtained by ordinary least square (OLS) technique.

Table 1: Unit Root Test Result Using ADF

Variables	Test Statistic	Test Critical Values			Status	Prob.
	ADF	1% level	5% level	10% level	Stationary	
DEDUEXP	-4.835837	-3.959148	-3.081002	-2.681330	1(1)	0.0020
DHTCEXP	-7.333121	-3.831511	-3.029970	-2.655194	1(1)	0.0000
DPCI	-7.333121	-3.831511	-3.029970	-2.655194	1(1)	0.0000
DSECEXP	-4.275140	-3.959148	-3.081002	-2.681330	1(1)	0.0169

Source: E-views 10.0, Detrended Output, 2021

As reported in Table 1 all the variables were non-stationary at levels but became stationary at first difference. Since the variables were stationary at first difference, the Johansen cointegration method is applied to establish whether there is long run co-integrating relationship between the dependent and independent variables.

Table 2 Pearson Correlation Matrix

	PCI	EDUEXP	HTCEXP	SECEXP
PCI	1.0000			
EDUEXP	0.6704	1.0000		
HTCEXP	0.4559	0.6028	1.0000	
SECEXP	0.6229	0.6328	0.5426	1.0000

Source: E-Views 10.0, Correlation Output, 2021

The correlation analysis in table 2 indicates that there is a positive correlation between EDUEXP, HTCEXP, SECEXP and PCI by correlation factors of 0.6704, 0.4559 and 0.6229 respectively.

Test of Hypothesis I

Ho_1: Education Expenditure has no significant effect on Per Capita Income of Nigeria

H_1: Education Expenditure has significant effect on Per Capita Income of Nigeria

Table 2: Ordinary Least Square Regression Analysis showing the effect of Education Expenditure on Per Capita Income

Dependent Variable: DPCI
Method: Least Squares
Date: 10/18/21 Time: 16:27
Sample (adjusted): 2000 2020
Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.011127	0.005413	2.055585	0.0538
DEDUEXP	0.118544	0.060540	1.958120	0.0651

R-squared	0.267916	Mean dependent var	0.017619
Adjusted R-squared	0.224122	S.D. dependent var	0.020953
S.E. of regression	0.019610	Akaike info criterion	-4.935161
Sum squared resid	0.007306	Schwarz criterion	-4.835683
Log likelihood	53.81920	Hannan-Quinn criter.	-4.913572
F-statistic	3.834233	Durbin-Watson stat	1.520628
Prob(F-statistic)	0.065064		

Source: E-views Regression Output, 2021

Interpretation of Estimated Regression Coefficients

The effect of Education Expenditure on Per Capita Income of Nigeria was evaluated based on the result of table 2:

PCI = 0.011127 + 0.118544EDUEXP

The implication of this model is that an increase in education expenditure will exert 11.85% increase in PCI, holding other factors constant. More so, from table 2, EDUEXP with a positive co-efficient of; $\beta_1 = 0.118544$ has a non-significant effect on PCI as indicated by the t-statistic of 1.958120 and its associated probability value of 0.0651. The R squared which examines the extent to which the predictor (EDUEXP) explain the variations in the dependent variable (PCI) shows that the R Squared figure of 0.267916 indicates that, reliance on this model will account for 26.79% of the variations in the dependent variable (PCI), while the remaining 73.21% is accounted for by other factors outside the model.. The Durbin-Watson value of 1.520628 buttressed the fact that the model does not contain auto-correlation, thereby, making the regression fit for prediction purpose. The analysis resulted in F-value of 3.834233 with corresponding p-value of 0.065064. This confirms that, the model is significantly reliable. That means one can rely on the model to predict PCI with high accuracy.

Decision

Since the p-value of the test = 0.0651 is greater than the critical significant value of 5%, thus Ho is accepted and H_1 rejected. This implies that Education Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance.

Table 3: Granger Causality Test showing the Causality between EDUEXP and PCI

Pairwise Granger Causality Tests
Date: 10/18/21 Time: 16:30
Sample: 1999 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DEDUEXP does not Granger Cause DPCI	19	0.74710	0.4917
DPCI does not Granger Cause DEDUEXP		0.09132	0.9133

Source: E-Views 10.0 Causality Output, 2021

Interpretation of Diagnostic Test

Table 3 indicates that there is no causality between EDUEXP and PCI. Table 3 reveals that Government expenditure on education does not granger cause Per capita income with a F-Statistic = 0.74710 and associated P-value = 0.4917, thereby establishing the fact that, there is no statistically significant relationship between Government expenditure on education and Per capita income in Nigeria at 5% level of significance.

Table 4.: Johansen Co-integration Test

Date: 10/18/21 Time: 16:29
Sample (adjusted): 2002 2020
Included observations: 19 after adjustments
Trend assumption: Linear deterministic trend
Series: DPCI DEDUEXP
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	0.485088	14.92929	15.49471	0.0607
At most 1	0.114846	2.317884	3.841466	0.1279

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**

None	0.485088	12.61141	14.26460	0.0897
At most 1	0.114846	2.317884	3.841466	0.1279

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-Views 10.0 Co-integration Output, 2021

Interpretation of Cointegration Test Result

From the cointegration test result presented in table 4.the decision rule is to reject the null hypothesis of no cointegration if the computed trace statistic is greater than the 5% critical value. The test result indicates the acceptance of no cointegration under none. Thus, indicating that there is no long run relationship between Government expenditure on education and Per capita income in Nigeria at 5% level of significance.

Table 5: Vector Error Correction Model

Vector Error Correction Estimates
Date: 10/18/21 Time: 16:33
Sample (adjusted): 2001 2020
Included observations: 20 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	
DPCI(-1)	1.000000	
DEDUEXP(-1)	0.331125 (0.29056) [4.58123]	
C	0.060202	
Error Correction:	**D(DPCI)**	**D(DEDUEXP)**
CointEq1	0.032914 (0.06247) [0.52683]	0.807982 (0.20041) [4.03165]
C	2.29E-17 (0.00544) [4.2e-15]	-0.004000 (0.01744) [-0.22941]
R-squared	0.015185	0.474517
Adj. R-squared	-0.039527	0.445324
Sum sq. resids	0.010636	0.109448
S.E. equation	0.024308	0.077977
F-statistic	0.277549	16.25422
Log likelihood	47.01366	23.70165
Akaike AIC	-4.501366	-2.170165
Schwarz SC	-4.401793	-2.070592
Mean dependent	2.22E-17	-0.004000
S.D. dependent	0.023842	0.104700

Determinant resid covariance (dof adj.)	2.78E-06
Determinant resid covariance	2.25E-06
Log likelihood	73.29670
Akaike information criterion	-6.729670
Schwarz criterion	-6.430951
Number of coefficients	6

Source: E-Views 10.0. VECM, 2021

Interpretation of Vector Error Corrector Model Analysis

The result of the VECM analysis in table 5 reveals that the value of the error correction coefficient is 3.29%. This indicates that 3.29 of the short run errors of PCI is corrected each year. In other words, PCI adjusts to its long run equilibrium at a speed of 3.29. The VECM analysis indicates that EDUEXP has a positive relationship with PCI as demonstrated by the cointegration coefficient of 0.331125. Thus, 1% increase in EDUEXP leads to an increase of 33.11% in PCI.

Test of Hypothesis II

Ho_2: Healthcare Expenditure has no significant effect on Per Capita Income of Nigeria

H_2: Healthcare Expenditure has significant effect on Per Capita Income of Nigeria

Table 6: Ordinary Least Square Regression Analysis showing the effect of Healthcare Expenditure on Per Capita Income

Dependent Variable: DPCI
Method: Least Squares
Date: 10/18/21 Time: 16:37
Sample (adjusted): 2000 2020
Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.017518	0.004801	3.648454	0.0017
DHTCEXP	0.092446	0.016018	5.771516	0.0007

R-squared	0.280509	Mean dependent var	0.017619
Adjusted R-squared	0.252096	S.D. dependent var	0.020953
S.E. of regression	0.021492	Akaike info criterion	-4.751848
Sum squared resid	0.008776	Schwarz criterion	-4.652370
Log likelihood	51.89441	Hannan-Quinn criter.	-4.730259
F-statistic	9.009671	Durbin-Watson stat	1.514889
Prob(F-statistic)	0.000722		

Source: E-Views 10.0 Regression Output, 2021

Interpretation of Estimated Regression Coefficients

The effect of Healthcare Expenditure on Per Capita Income of Nigeria was evaluated based on the result of table 6.

PCI = 0.017518 + 0.092446HTCEXP

The delineation of this model is that for there to be one naira increase in PCI, HTCEXP has to be increased by 9.24%. From table 4.8, HTCEXP with a positive co-efficient of; β_1 = 0.092446 has a significant effect on PCI as indicated by the t-statistic of 5.771516 and its associated probability value of 0.0007. The R squared which examines the extent to which the predictor (HTCEXP) explain the variations in the dependent variable (PCI) shows that the R Squared figure of 0.2805 indicates that, reliance on this model will account for 28.05% of the variations in the dependent variable (PCI), while the remaining 71.95% was accounted for by other factors outside the scope of this model. The Durbin-Watson value of 1.514889 buttressed the fact that the model does not contain auto-correlation, thereby, making the regression fit for prediction purpose. The analysis resulted in F-value of 9.009671 with corresponding p-value of 0.000722. This confirms that, the model is significantly reliable. That means one can rely on the model to predict PCI with high accuracy.

Decision

Since the p-value of the test = 0.0007 is less than the critical significant value of 5%, thus H_1 is accepted and Ho rejected. This implies that Healthcare Expenditure has significant effect on Per Capita Income of Nigeria at 5% level of significance.

Table 7: Granger Causality Test showing the Causality between HTCEXP and PCI

Pairwise Granger Causality Tests
Date: 10/18/21 Time: 16:39
Sample: 1999 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DHTCEXP does not Granger Cause DPCI	19	12.2793	0.0044
DPCI does not Granger Cause DHTCEXP		2.12280	0.1566

Source: E-Views 9.0 Causality Output, 2021

Interpretation of Diagnostic Test

Table 7 indicates that there is a unilateral causality between HTCEXP and PCI, since the causality only runs from HTCEXP to PCI with a F-Statistic = 12.2793 and associated P-value = 0.0044, thereby establishing the fact that, there is a statistically significant relationship between Healthcare Expenditure and Per Capita Income of Nigeria at 5% level of significance.

Table 8: Johansen Co-integration Test

Date: 10/18/21 Time: 16:39
Sample (adjusted): 2002 2020
Included observations: 19 after adjustments
Trend assumption: Linear deterministic trend
Series: DPCI DHTCEXP
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 *	0.949591	23.29007	15.49471	0.0027
At most 1	0.287917	2.376927	3.841466	0.1231

Trace test indicates 1 cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.949591	20.91314	14.26460	0.0039
At most 1	0.287917	2.376927	3.841466	0.1231

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-Views 10.0 Co-integration Output, 2021

Interpretation of Cointegration Test Result

From the cointegration test result presented in table 8, the decision rule is to reject the null hypothesis of no cointegration if the computed trace statistic is greater than the 5% critical value. The test result indicates the rejection of no cointegration under none. Thus, there exists the presence of one cointegrating equation among the variables, hence, indicating the presence of long run relationship among the variables.

Table 9: Vector Error Correction Model

Vector Error Correction Estimates

Date: 10/18/21 Time: 16:41

Sample (adjusted): 2001 2020

Included observations: 20 after adjustments

Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DPCI(-1)	1.000000

DHTCEXP(-1)	0.112523	
	(0.02505)	
	[4.49141]	
C	-0.026877	
Error Correction:	D(DPCI)	D(DHTCEXP)
CointEq1	-0.272612	-7.200744
	(0.11525)	(1.71679)
	[-2.36544]	[-4.19431]
C	2.31E-17	0.025000
	(0.00478)	(0.07126)
	[4.8e-15]	[0.35081]
R-squared	0.237136	0.494272
Adj. R-squared	0.194755	0.466176
Sum sq. resids	0.008239	1.828257
S.E. equation	0.021394	0.318700
F-statistic	5.595291	17.59225
Log likelihood	49.56740	-4.455081
Akaike AIC	-4.756740	0.645508
Schwarz SC	-4.657167	0.745081

Mean dependent	2.22E-17	0.025000
S.D. dependent	0.023842	0.436198

Determinant resid covariance (dof adj.)	4.55E-05
Determinant resid covariance	3.68E-05
Log likelihood	45.33834
Akaike information criterion	-3.933834
Schwarz criterion	-3.635115
Number of coefficients	6

Source: E-Views 10.0. VECM, 2021

Interpretation of Vector Error Corrector Model Analysis

The result of the VECM analysis in table 9 reveals that the value of the error correction coefficient is 0.2726. This indicates that 27.26% of the short run error of PCI is corrected each year. In other words, PCI adjusts to its long run equilibrium at a speed of 27.26%. The VECM analysis indicates that HTCEXP is significant in determining economic development in the long run. More so, 1% increase in HTCEXP leads to an increase of 11.25% in PCI.

Test of Hypothesis III

H_{O3}: Security Expenditure has no significant effect on Per Capita Income of Nigeria

H_3: Security Expenditure has significant effect on Per Capita Income of Nigeria

Table 10: Ordinary Least Square Regression Analysis showing the effect of Security Expenditure on Per Capita Income

Dependent Variable: DPCI
Method: Least Squares
Date: 10/18/21 Time: 16:48
Sample (adjusted): 2000 2020
Included observations: 21 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.016042	0.004779	3.356964	0.0033
DSECEXP	0.024352	0.022444	1.084997	0.2915

R-squared	0.248344	Mean dependent var	0.017619
Adjusted R-squared	0.208783	S.D. dependent var	0.020953
S.E. of regression	0.020861	Akaike info criterion	-4.811455
Sum squared resid	0.008269	Schwarz criterion	-4.711976

Log likelihood	52.52028	Hannan-Quinn criter.	-4.789865
F-statistic	1.177218	Durbin-Watson stat	1.542437
Prob(F-statistic)	0.291499		

Source: E-views Regression Output, 2021

Interpretation of Estimated Regression Coefficients

The effect of Security Expenditure on Per Capita Income of Nigeria was evaluated based on the result of table 10:

PCI = 0.016042 + 0.024352SECEXP

The implication of this model is that an increase in security expenditure will exert 2.44% increase in PCI, holding other factors constant. More so, from table 10, SECEXP with a positive co-efficient of; β_1 = 0.024352 has a non-significant effect on PCI as indicated by the t-statistic of 1.084997 and its associated probability value of 0.2915. The R squared which examines the extent to which the predictor (SECEXP) explain the variations in the dependent variable (PCI) shows that the R Squared figure of 0.248344 indicates that, reliance on this model will account for 24.83% of the variations in the dependent variable (PCI), while the remaining 75.17% is accounted for by other factors outside the scope of the model.. The Durbin-Watson value of 1.542437 buttressed the fact that the model does not contain auto-correlation, thereby, making the regression fit for prediction purpose. The analysis resulted in F-value of 1.177218 with corresponding p-value of 0.291499. This confirms that, the model is significantly reliable. That means one can rely on the model to predict PCI with high accuracy.

Decision

Since the p-value of the test = 0.2915 is greater than the critical significant value of 5%, thus Ho is accepted and H_1 rejected. This implies that Security Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance.

Table 11: Granger Causality Test showing the Causality between SECEXP and PCI

Pairwise Granger Causality Tests
Date: 10/18/21 Time: 16:49
Sample: 1999 2020
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
DSECEXP does not Granger Cause DPCI	19	0.79561	0.4707
DPCI does not Granger Cause DSECEXP		0.92712	0.4187

Source: E-Views 10.0 Causality Output, 2021

Interpretation of Diagnostic Test

Table 11 indicates that there is no causality between SECEXP and PCI. Table 11 reveals that Government expenditure on security does not granger cause Per capita income with a F-Statistic = 0.79561 and associated P-value = 0.4707, thereby establishing the fact that, there is no statistically significant relationship between Government expenditure on security and Per capita income in Nigeria at 5% level of significance.

Table 12: Johansen Co-integration Test

Date: 10/18/21 Time: 16:50
Sample (adjusted): 2002 2020
Included observations: 19 after adjustments
Trend assumption: Linear deterministic trend
Series: DPCI DSECEXP
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	0.497006	15.23035	15.49471	0.0548
At most 1	0.108117	2.173996	3.841466	0.1404

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.497006	13.05636	14.26460	0.0769
At most 1	0.108117	2.173996	3.841466	0.1404

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: E-Views 10.0 Co-integration Output, 2021

Interpretation of Cointegration Test Result

From the cointegration test result presented in table 12, the decision rule is to reject the null hypothesis of no cointegration if the computed trace statistic is greater than the 5% critical value. The test result indicates the acceptance of no cointegration under none. Thus, indicating that there is no long run relationship between Government expenditure on security and Per capita income in Nigeria at 5% level of significance.

Table 13: Vector Error Correction Model

Vector Error Correction Estimates
Date: 10/18/21 Time: 16:51

Sample (adjusted): 2001 2020
Included observations: 20 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
DPCI(-1)	1.000000
DSECEXP(-1)	0.593179 (0.12340) [4.80700]
C	-0.053701

Error Correction:	D(DPCI)	D(DSECEXP)
CointEq1	-0.039795 (0.04124) [-0.96496]	-1.825787 (0.36032) [-5.06707]
C	2.29E-17 (0.00534) [4.3e-15]	0.014000 (0.04666) [0.30002]
R-squared	0.049186	0.587867
Adj. R-squared	-0.003637	0.564970
Sum sq. resids	0.010269	0.783911
S.E. equation	0.023885	0.208688
F-statistic	0.931145	25.67519
Log likelihood	47.36501	4.013156
Akaike AIC	-4.536501	-0.201316
Schwarz SC	-4.436928	-0.101742
Mean dependent	2.22E-17	0.014000
S.D. dependent	0.023842	0.316401

Determinant resid covariance (dof adj.)	2.27E-05
Determinant resid covariance	1.84E-05
Log likelihood	52.30025
Akaike information criterion	-4.630025
Schwarz criterion	-4.331305
Number of coefficients	6

Source: E-Views 10.0. VECM, 2021

Interpretation of Vector Error Corrector Model Analysis

The result of the VECM analysis in table 13 reveals that the value of the error correction coefficient is -0.039795. This indicates that 3.98% of the short run errors of PCI is corrected each year. In other words, PCI adjusts to its long run equilibrium at a speed of 3.98%. The VECM analysis indicates that SECEXP has a positive relationship with economic development as demonstrated by the cointegration coefficient of 0.593179. Thus, 1% increase in SECEXP leads to an increase of 59.32% in PCI.

Findings, Conclusion and Recommendations

Summary of Findings

Based on the analysis of this study, the following findings were deduced:

i. Education Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance.
ii. Healthcare Expenditure has significant and positive effect on Per Capita Income of Nigeria at 5% level of significance.
iii. Security Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance.

Conclusion

This study explored the effect of Public Expenditure on Economic Development in Nigeria. The data set used for this analysis is the annual series of the selected relevant macroeconomic variables from 1999 to 2020. Data for Education Expenditure, Healthcare Expenditure and Security Expenditure were used as Public Expenditure variables. Per Capita Income was used to measure Economic Development. The data were obtained from Central Bank of Nigeria Statistical Bulletin, Securities and Exchange Commission Office publications, National Bureau of Statistics publications and World Bank Statistical Bulletin for the study period. As a preliminary step in testing, the study employed the Augmented Dickey Fully Unit root test to confirm the order of integration of the time series variables. The findings indicated clearly that Education Expenditure has a positive but non-significant effect on Per Capita Income; Healthcare Expenditure has significant effect on Per Capita Income; and Security Expenditure has a positive but non-significant effect on Per Capita Income of Nigeria at 5% level of significance respectively.

Recommendations

From the results obtained, the following recommendations were made:

i. There should be an increase in the reallocation of public spending towards education in order to raise income in the long run which would cause an improvement in the well being of the citizenry. Also, Government spending should be oriented towards increasing investment in physical and human capital.

ii. There should be fiscal framework that would support growth and help achieve sound and sustainable public finances, play a key role in macroeconomic stabilization with emphasis on the healthcare funding.

iii. There is need for transparency and accountability in the budget process which can also build citizens' trust in the government and increase the efficiency and effectiveness of government policies with emphasis of expenditure on security.

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