EXPENDITURE ON EDUCATION AND SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

This study examined Education expenditure and sustainable development in Nigeria. This study adopted secondary data obtained from the Statistical Bulletin of the Central Bank of Nigeria (CBN) and the national Bureau of Statistics covering the period from 1980 to 2020. Unit Root, Bound test and the Autoregressive Distributed Lag model was employed for data analysis. The results from the analysis revealed that; literacy rate, recurrent expenditure and capital expenditure on Education showed positive and significant relationship with Sustainable Development. Unemployment and inflation however showed negative but significant relationship with the dependent variable.Hence, it was recommended that Government should increase the budgetary allocation to Education up to 26 percent recommended by UNESCO.

Key Words: Sustainable development, recurrent expenditure, capital expenditure.

INTRODUCTION

Background to the Study

Education has been found to be sine qua non to solving all global problems. Education is not only an end in itself. It is essential in updating knowledge, value, behaviors and lifestyles required to attain sustainability in and among countries (Bajaj and Chiv, 2009). Investment in Education is reportedly central to the development of a country's economic, political and social system, and the surest way of developing its human resources. Education equips individuals with the knowledge, skills, attitude, proficiencies and capabilities necessary for the individual to take a productive role in the society and to build a nation. Hence the Nigerian government, in favour of this, inaugurated a national policy on education directed towards attaining sustainable national development. Sustainable development is defined as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Sterling (2010) also described sustainable development as a new direction of growth charted through the reconciliation of the economy and the environment conducive to humanity's development on a long-term basis. Sustainable development also entails a limitless interaction between society, ecosystems, and other living systems without impoverishing key resources (Marin et al., 2012) as well as protects the environment Duran et al. (2015).

The importance of education to human beings has been enunciated in many academic fora. Globally, education is considered a right that should be accorded to all human beings. This explains why numerous international human right organizations consider education as a fundamental human right. In addition to being a tool for achieving an individual's well-being, in the workplace and community, education is useful in spurring enlightenment in the society, so the citizens can undergird government's efforts in ameliorating the effects of poverty and hunger, improve access to clean water and affordable houses, while also providing qualitative education.

The vital role of education in economic development and in generating widespread increase in national productivity cannot be overemphasized. Worldwide, the developed as well as developing economies are agreed on the imperative of education as the basis of national development. Education is viewed as foundational for development, the fulcrum on which economic and social wellbeing is built. Ebong (1996) describes education as a potent instrument for the development of man and the society. It promotes economic efficiency and social consistency by increasing the productivity, efficiency and intellectual flexibility of the labor force. It is capable of translating the poor from poverty to riches. It ensures the competitiveness of a country in the world market, characterized by innovation and diversification of production methods also avowed as bye products of

education. Consequently, no country can achieve sustainable economic development without substantial investment in human capital. It promotes entrepreneurship and technological advancements and is crucial in improving income distribution and in securing economic and social progress. Ayara (2017) enunciated that education produces improved citizens, thus upgrading the general standard of living in a society. Hence, the more the number of individuals who are educated, the higher the wealth of nations would rise, since more education attracts higher wages and aggregately higher national income. In addition as a result of the positive externalities of education, national income should increase by even more than the sum of the individual benefits.

The greatest challenge militating against attainment of quality education in Nigeria is inadequate funding at the federal, state and local levels. Funding has essentially responded to conditionality imposed by international financial institutions (IFTs). In 1975 government expenditure as percent of GDP was 3.06 WDI (2021). Between 1997 and 2000 statistics show that federal government expenditure on education was below 10% of overall expenditure WDI (2021). In 1998, expenditures on education were equivalent to 2.3 percent of GDP Statista (2022). In more recent times, the situation has not improved. Between 2015 and 2019, the share of federal budget invested in education fluctuated. Overall the highest was recorded in 2015 when over ten percent of the national budget was allocated to the education sector Statista (2022). In 2019, the expenditure on education in Nigeria amounted to 7.12 percent Statista (2022). Another hindrance stems from the fact that national expenditure on education meets with computational challenges due to the fact that various states expenditure on education cannot be determined, in relation to the UNESCO recommendation of 26% of national budgets. Given the desirable impact of education on the development of economies, it would seem Nigeria is still paying lip service to its supposed dedication to accomplishing the recommendation of UNESCO. Hence this research effort seeks to investigate the impact of Government expenditure on Education as a means to achieving sustainable development in Nigeria.

Objective of the Study

This study seeks to examine the impact of Government expenditure on Education as a means to achieving sustainable development in Nigeria.

Research Question

What is the impact of Government Expenditure on Education on Sustainable Development in Nigeria?

Research Hypothesis

H_o: There is no significant impact of Government Expenditure on Education on Sustainable Development in Nigeria.

Methodology

The descriptive research design was employed for this study. The population covers the Nigerian education sector and the impact of expenditure on this sector in attaining the United Nation sustainable development goals in the Nigerian economy. Time series data spanning a period of 1980-2019 on variables such as Gross Domestic Product growth rate, literacy rate, inflation rate, unemployment rate and contribution of educational sector to GDP were adopted. Data used was obtained from CBN Statistical bulletins for various years, World Development Index, Federal Bureau of Statistics (NBS) and Federal Ministry of Education.

The Autoregressive Distributed Lag (ARDL) method of estimation was used to analyze the impact of education expenditure on sustainable development in Nigeria. To test the research hypothesis the modelregresses the dependent variable (Gross Domestic Product growth rate) on the independent variables (literacy rate, inflation rate, unemployment rate and contribution of educational sector to GDP).This research work relies on previous studies such as Mankiw (1992), Pritchett (2001) and Ayara (2003).

The following model was considered for general estimation for this study.

$GDPgrt = \beta_0 + \beta_1 Lr_t + \beta_2 REE + \beta_3 CEE + \beta_4 UMPr_t + \beta_5 CPI_t + \mu_t$

Where GDPgr: Gross Domestic Product growth rate is proxy for sustainable development, Lr for Literacy Rate, REE is Recurrent Expenditure on Education, CEE is Capital Expenditure on Education, UR is Unemployment Rate and CPI is Consumer Price Index. β0 is the level of sustainable development obtainable when the respective explanatory variables assumed zero. β_1, β_2, β_3, β_4 and β_5 are slope coefficients representing the impact of the explanatory variables, on the response variable. μt is the stochastic or random error term which accommodates the influence of other determinants of sustainable development that are not included in the model. On apriori, it is expected that β_1, β_2 and β_3 will be greater than zero (positive) while β_4 and β_5 are expected to be less than zero (negative).

Results and Discussion

This section presents data and the empirical analysis from the estimations of the model. The study employed unit-root test using the ADF criteria, and then proceeds to examine the Bound test, between each of the regressors and the dependable variable. Having obtained the result of the unit root test and long run tests, the coefficients of the variables were estimated using the ARDL method of estimation.

Unit Root Test Results

The unit root test method utilized for evaluating the stationarity property of the series employed for this study is the Augmented Dickey Fuller (ADF) test. It is a basic criteria adopted because of its widespread application in previous empirical studies.

The result of the unit root test based on the ADF method is presented in table 1 below.

Table 1: Unit Root Test Results

Variables	ADF Statistics with Intercept	Probability	Order of Integration
RGDP	-11.63398	0.0000	I(1)
LR	-3.376251	0.0182	I(0)
LNREE	-5.989082	0.0000	I(1)
LNCEE	-9.677952	0.0000	I(1)
UNR	-5.022784	0.0000	I(1)
CPI	-3.458219	0.0149	1(0)

Source: Author's Computation, (2021).

The unit root test was carried out with constant and trend specifications for the respective series. The lag-selection was based on the default selection of the Akaike-Information Criterion (AIC). The table contains the ADF test statistic at levels and first difference of the time series. The result shows the order of integration was mixed. Literacy rate and consumer price index were stationary at levels. All other variables were stationary after differencing once. All were significant at 5 percent level, thus the null hypothesis of unit root in the data cannot be upheld.

ARDL Bound Test

In view of the unit root test result, some empirical investigation on the long-run relationship in the model was examined using Bound Test, to establish if any of the set of variables was cointegrated. The ARDL technique used was that developed by Pesaran (2011).

Table 2: ARDL Bound Test Result

ARDL Bounds Test
Date: 11/28/21 Time: 20:54
Sample: 1981 2019
Included observations: 39

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	2.930558	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Source: Author's Computation, (2021).

From the result, the F statistic value of 2.930558 falls within the bound values at different significance levels. Hence, we failed to reject the null hypothesis of no cointegration among variables in the long run. With this result, ARDL Model will be employed for general estimation of this model.

3 Serial Correlation Test

Table 3: Breusch-Godfrey Serial Correlation LM Test

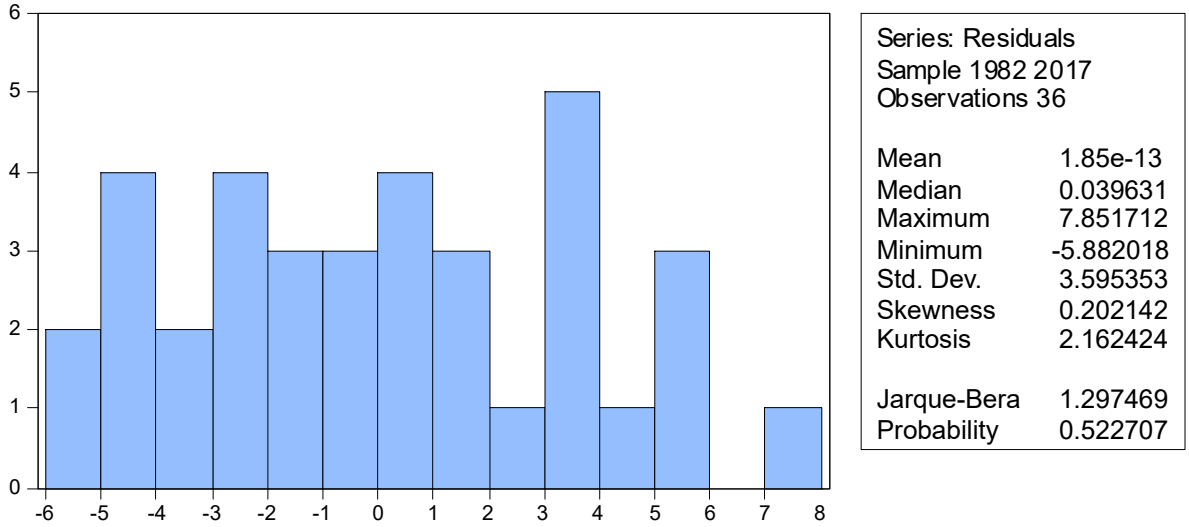
Breusch-Godfrey Serial Correlation LM Test:

F-statistic	2.689177	Prob. F(2,24)	0.0883
Obs*R-squared	6.773664	Prob. Chi-Square(2)	0.0338

Source: Author's Computation, (2021).

The result revealed that the model is free from the problem of serial correlation since the F statistic value of 2.689177 with probability value of 0.0883 is greater than that of 5% level of significance.

Normality Test Figure 1: Normality Test of the Model



Source: Author's Computation, (2021)

Figure 1 above depicts the normality of the model over the period of investigation. From the result, the mean value was 1.85, Jarque Bera value was 1.297 with probability value of 0.522707. The null hypothesis states that the model is normally distributed. From the result, the probability value is greater than that of the 5% level of significance; hence the null hypothesis cannot be rejected. Therefore, it is concluded that the model is normally distributed over the period of investigation.

Heteroskedasticity Test

One of the unlined assumptions of linear regression is constant variance of the model (Homoskedasticity), violation of this assumption can lead to bias estimation of the model parameters. To validate this assumption, this study checked the heteroskedasticity of the model using the Breusch-Pagan-Godfrey approach and the result is presented below:

Table 4

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.944270	Prob. F(16,19)	0.0838
Obs*R-squared	22.34957	Prob. Chi-Square(16)	0.1323
Scaled explained SS	3.618313	Prob. Chi-Square(16)	0.9994

Source: Author's Computation, (2021)

From the result, the F statistic value of 1.944270 and probability value of 0.0838 shows that the null hypothesis of no heteroskedasticity cannot be rejected since the F statistic value of 1.944270 with a probability value of 0.0838 is greater than that of 5% level of significance. Hence, the assumption of constant variance is valid for the model.

ARDL Estimates

Having established that some of the explanatory variables in the model do have long-run relationship with the dependent variable, it became pertinent to also examine the direction and magnitude of the relationship amongst expenditure on education, sustainable development and other set of explanatory variables captured in the model. In this sense the aim was to obtain empirical estimates measuring the impact of the regressors on the dependent variable. For this purpose the Autoregressive Distributed Lag (ARDL) was employed for the estimation. The ARDL is a long-run parameter estimation method in which the steady state converging relationship can be evaluated and examined based on the parameter estimates obtained from the estimation exercise.

The result for the regression analysis is shown in table 5 below. The significance of the estimated coefficients is tested from the probability value of the estimated coefficients. If the probability value of the estimated coefficient is less than 5 percent then the explanatory variable has a significant impact on the dependent variable. Hence the null hypothesis of the research cannot be upheld.

Table 5: ARDL Estimates

Dependent Variable: GDPGR				
Method: ARDL				
Date: 11/28/21 Time: 20:40				
Sample (adjusted): 1981 2019				
Included observations: 39 after adjustments				
Maximum dependent lags: 1 (Automatic selection)				
Model selection method: Akaike info criterion (AIC)				
Dynamic regressors (0 lag, automatic): LR LOG(REE) LOG(CEE) UMP CPI				
Fixed regressors: C				
White heteroskedasticity-consistent standard errors & covariance				
Variable	Coefficient	Std. Error	t-Statistic	Prob.*
GDPGR(-1)	0.269865	0.121001	2.230271	0.0329
LR	0.295432	0.135541	2.179650	0.0257
LOG(REE)	1.343421	0.575452	2.334550	0.0231
LOG(CEE)	0.440564	0.146855	3.000000	0.0138
UMP	-1.015643	0.319898	-3.174892	0.0003
CPI	-0.652034	0.159033	-4.100000	0.0378
C	8.272690	4.136345	2.014612	0.0224
R-squared	0.900092	Mean dependent var		3.149929

Adjusted R-squared	0.890915	S.D. dependent var	4.674355
S.E. of regression	43.14232	Akaike info criterion	5.071499
Sum squared resid	571.0544	Schwarz criterion	5.378067
Log likelihood	-110.1331	Hannan-Quinn criter.	5.165402
F-statistic	32.54639	Durbin-Watson stat	2.174175
Prob(F-statistic)	0.008209		
*Note: p-values and any subsequent tests do not account for model selection			

Source: Author's Computation, (2021).

The result above describes the long run equations of the model. The result for the previous GDPgr (Proxy for Sustainable Development) shows a significant positive impact on the current GDPgr. From the outcome, 1% increase in previous GDPgr will bring about 0.27% increase in current GDPgr. In the long run, Literacy Rate (LR) shows a positive and significant impact on sustainable development. 1% point increase in literacy Rate (LR) leads to 0.30% increase in Sustainable Development in Nigeria. This result also conforms to apriori expectation, proving the importance of education to attainment of Sustainable Development Goals (SDGs). It is quite clear that Literacy rate is important to policy formulation and will hasten the achievement of SDGs in Nigeria in the long run.

Recurrent Expenditure on Education (REE) has a significant and positive relation with Sustainable Development in the long run. The result also conforms to apriori expectation as, 1% point increase in Recurrent Expenditure on Education leads to 1.34% increase in Sustainable Development. Hence, Recurrent Expenditure on Education is pivotal to achieving Sustainable Development in the long run.

Capital Expenditure on Education (CEE) also shows a significant and positive relationship with Sustainable Development in Nigeria. The result is in line with apriori expectation. From the result, 1% point increase in Capital Expenditure on Education will lead to about 0.44% increase in Sustainable Development.

Unemployment is another cogent determinant of Sustainable Development in Nigeria. From the result, 1% increase in Unemployment (UMP) will lead to about 1.02% decrease in Sustainable Development and the relationship is significant in the long run.

Inflation (CPI) shows an inverse relationship with Sustainable Development in the long run. From the result, 1% increase in Inflation Rate will lead to about 0.65 % decrease in Sustainable Development.

R2 statistics shows the set of explanatory variables accounted for 90% of the variation in Sustainable Development in the long run. This is supported by an adjusted R2 value of 89%. In addition, the Durbin Watson Statistics value of 2.17 falls within the rejection region of absence of serial correlation among the regressors.

The Akaike info criterion, Schwarz criterion and Hannan-Quinn criterion values of 5.071499 5.378067 and 5.165402 respectively indicates that the model selection is good.

Discussion of Findings

As evident from the results of the estimation, appropriate expenditure on the educational system is an important policy tool that policy makers can tinker with to achieve the Sustainable Development Goals by year 2030 as stipulated by United Nation. It is high time that the government jettisoned the habit of underfunding education as usually reflected in the percentage of funds allocated to education on a yearly basis. Literacy Rate depicts a positive and significance relation with development during the period of investigation thus, placing Literacy rate as an important policy tool which could be manipulated to achieve Sustainable Development in Nigeria. None the least, the result shows that it is essential to keep inflation and unemployment as low as possible since a rise in these indicators lowers the country's ability to attain sustainable development.

Conclusion

Based on the results presented above, the following findings emerged. The result revealed that there is a significant and positive relationship between Literacy Rate, Recurrent expenditure and capital expenditure on education and sustainable development in Nigeria. However, an inverse but significant relationship was found between unemployment, inflation and Sustainable Development. The result indicated that all variables employed are relevant and should be targeted by different policies to aid the country in achieving its goal of sustainable development.

Recommendations

- Increase in Government budgetary allocation to Education to appropriate the UNESCO recommendation of 26% of national budgets.
- Funds allocated to the education sector should be closely monitored to ensure compliance with set goals.
- Inflation and unemployment should be kept as low as possible to ensure achievement of sustainable development goals.

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