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ANALYSES OF NIGERIA'S KNOWLEDGE ECONOMY: DOES PUBLIC EXPENSES ON EDUCATION MATTER IN EDUCATION OUTCOME?

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Abstract
Following the critical role of education in the development of human capital base of a nation, the quest to building a knowledge economy is largely hinged on the efforts of the government in guaranteeing the provision of educational opportunities. Initially, education in Africa was of high quality and standard during the time of our colonial masters and their early successors, then following the corruption in the 20th century and this millennium period, African leaders twisted education system into an unimaginable condition in their quest to achieve their selfish political interest which made education to dwindle in both political transition and economic development of Africa. Therefore, it is expected that finance to the education sector would translate to improvement in educational outcome in the country. Motivated by this, the study re-examined the public sector financing on education and educational outcome in Nigeria from 1981 to 2022. The study was hinged on human capital theory. The study adopted the Autoregressive Distributed lag (ARDL) bounds testing approach in estimating the relevant relationship while the ECM captured the speed of adjustment to long run. The result of the study showed a positive, but insignificant relationship between public education expenditure and educational outcome in Nigeria. Arising from the findings, the study recommends for an adequate and prudent financial policy for the educational sector as it will guarantee increased educational outcome in the country.

Key Words: Educational Outcome, Government Education Expenditure, Knowledge Economy.

Introduction
Education is the means by which knowledge, skills, values, beliefs, and habits can be learned or acquired. Factually, the quality of education in Nigeria particularly and Africa in general is lagging very much behind when compared to other countries of the world nowadays due to bad leadership. It ensures that particular societies will advance through the right cultivation, dissemination, and application of intellectual knowledge (Akinola & Ogunode, 2022). Moreso, Agarwal (2023) sees formal education as the structural and organized system of learning that takes place in schools, colleges and universities. It is a critical part of an individual's growth and development as it provides

them with the relevant knowledge and skills to succeed in their chosen career paths. Formal education typically include a defined curriculum, standardized testing and professional educators who guide and support students through their learning journey. This type of education is usually valued in society and it is often seen as the key to achieving personal and professional success.

For a developing economy, education is crucial to absorb current technologies and build the capability for self-sustaining growth and development. This is true because a nation's development is aided by the wealth and prosperity that educated citizens bring to the nation's economy. To this purpose, efficient capacity development spending is essential for an economy's long-term growth and increased productivity. Jhingan (2013) explained that expenditure on education is regarded as investment in human capital because it helps in skill formation and thus raises the ability to work and produce more through high literacy and numeracy level. Considering the critical role and externalities prevailing in education, it is generally accepted that government has a major role to play in guaranteeing that educational opportunities are equitably distributed. Furthermore, existing theories of Wagner, Musgrave and Keynesian hypothesis all underscored the need for government spending in order to enhance economic welfare through its spending in the provision of public goods. Therefore, it is anticipated that funding for the education sector will lead to an improvement in the nation's educational outcomes.

For Africa's largest economy - Nigeria, despite government's continued effort to finance the education sector through budgetary allocations, educational outcome is yet to record any significant improvement. This has been largely attributed to challenges of poor or inadequate funding by the government. Statistics from Nigeria's Ministry of Education (2022) revealed that Nigeria's illiteracy rate is 31% of the total population which means that only 69% of the population is literate, lower than the expected SDGs benchmark of 90%. An Illiteracy rate of 31% is equivalent to 62 million out of Nigeria's estimated population of 200 million are illiterate.
Central Bank of Nigeria (2022), revealed that the budgetary allocation to the education sector over the years has averaged less than 8% with a paltry 5.4% allocation for year 2022 which is considered low considering the importance of the sector to the economy. More so, education expenditure as a ratio of government expenditure averaged 6.97% between 1975 and 2022 (World Bank, 2022).

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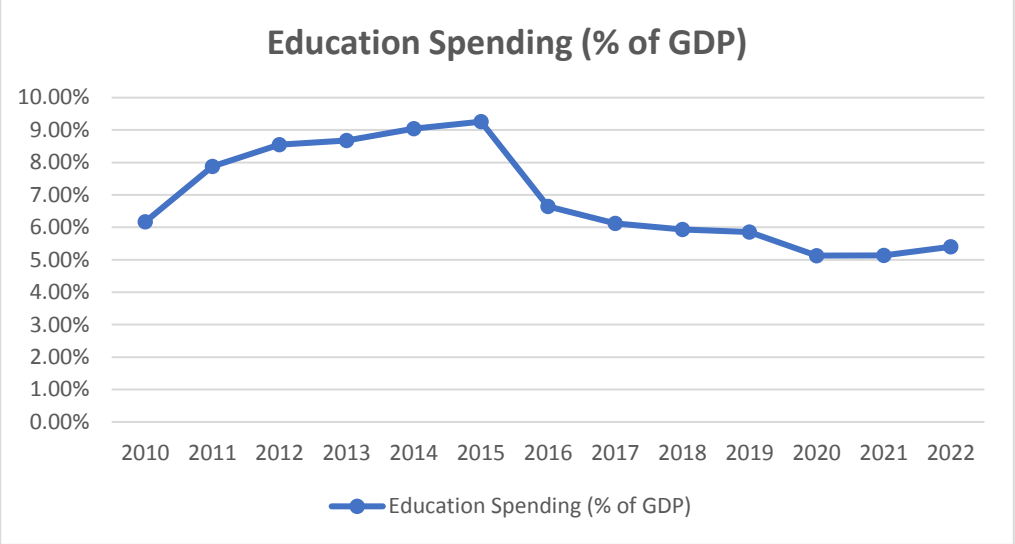
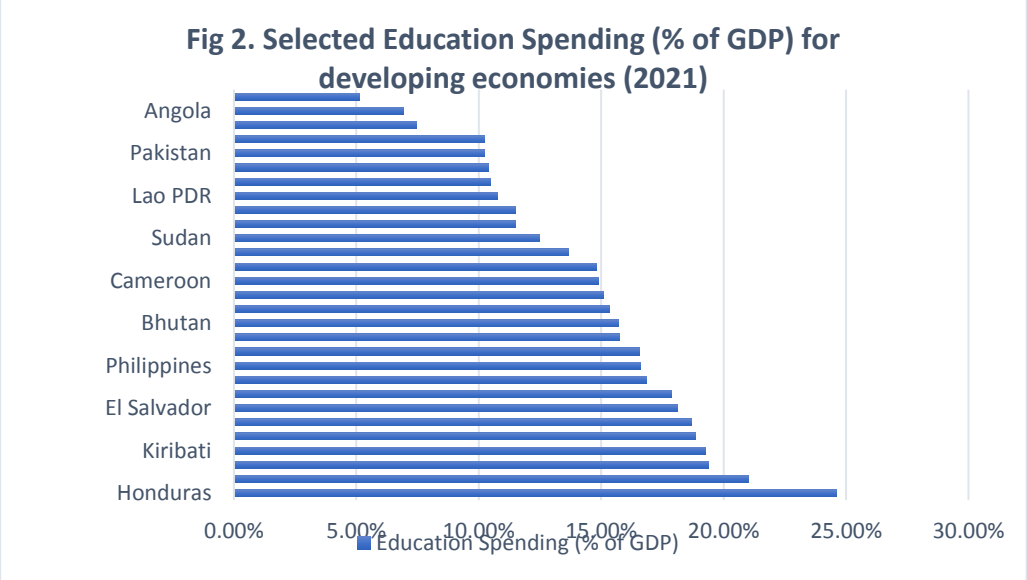


Figure 1: Education spending.
Source: Central Bank of Nigeria (2022)

This is against the minimum standard of 26% of annual budget proposed by UNESCO. This trend is believed to have worsened the educational outcome of the country as Nigeria has about 10.5million out-of-school children. A closer look at country statistics shows that education spending in Nigeria has been inadequate, as it has underperformed compared to other developing countries like



Source: World Bank Data (2022)

While the ability to provide quality education for all and to respond to new priorities depends on the availability of adequate funding for education, the mechanisms through which funding is governed, distributed and monitored play a key role in ensuring that resources are directed to where they can make the most difference.

It is on this premise that the study sets to reexamine the importance of public sector expenditures on education outcome in Nigeria.objectives are to:

Literature Review

Conceptual Model

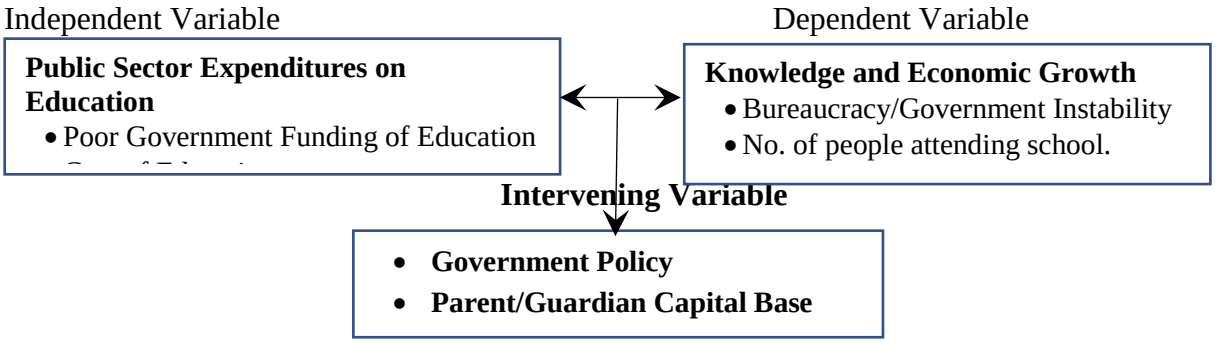


Figure 3: Relationship between the contingent variables
Source: Authors' Conceptualization

Educational Outcome

Abiodun (2002) defined education as the proper nurturing, transmission and application of such knowledge that guarantees the development and sustenance of individual societies. Education is also seen as the process of imparting knowledge and acquiring knowledge and skills about ideas, values and concepts borne out of learning, practice and experience. By educating individuals, the aim is to give them some desirable knowledge, understanding, skills, interests, attitudes and critical thinking.

Educational outcomes are among the most important factors in advanced economies, both for individuals and nations. This is so as better-educated populations result in greater economic growth (Hanushek & Woessmann, 2012). Educational outcome is seen as general education abilities, general education goals, general competencies, core abilities, core competencies, essential learning outcomes, learning goals, learning objectives, college wide outcomes, principles of undergraduate learning, and transferable skills of liberal learning (Obi, Ekesiobi, Dimnwobi & Mgbemena, 2016). This is to say that educational outcome is demonstrated in the ability of individuals to read and write, which is also seen as a practical evidence of educational output. Adult literacy which measures the proportion of the population aged 15 and above, who are able to read and write conveys meaningful information about a country's general educational status.

Government Education Expenditure

Government *expenditure* refers to the total amount spent by the public sector on the acquisition of goods and provision of services such as *education*, healthcare, and social services. Government expenditure on education involves the current and capital expenditure on education together with government spending on educational institutions (both public and private), education administration as well as subsidies for

private entities. The level of the public *expenditure* in *education* provides a measure of the government's commitment to *education.* How government invests in education provides important context for examining the level of educational participation and outcomes in a country.

2.3 Overview of Education and Government Expenditure in Nigeria

Nigeria's education system involves three different sectors: basic education (nine years), post-basic/senior secondary education (three years), and tertiary education (four to six years, depending on the program of study). According to Nigeria's National Policy on Education (2004), basic education covers nine years of formal (compulsory) schooling consisting of six years of elementary and three years of junior secondary education. Post-basic education includes three years of senior secondary education. At the tertiary level, the system consists of a university sector and a non-university sector while the latter is composed of polytechnics, monotechnics, and colleges of education. The tertiary sector as a whole offers opportunities for undergraduate, graduate, and vocational and technical education.

Nigeria's basic education sector is overburdened by strong population growth as 44% of the country's population lied below the age of 15 in 2015. According to the United Nations (2010), 8.73 million elementary school-aged children in 2010 did not participate in education at all, making Nigeria the country with the highest number of out-of-school children in the world. The lack of adequate education for its children weakens the Nigerian system at its foundation. To address the problem, thousands of new schools have been built in recent years. Despite recent improvements in total enrollment numbers in elementary schools, the basic education system remain underfunded; facilities are often poor, teachers inadequately trained, and participation rates are low by international standards. In 2010, the net enrollment rate at the elementary level was 63.8 percent compared to a global average of 88.8 percent. According to recent statistics on completion rates, approximately one quarter of current pupils drop out of elementary school. These low participation rates perpetuate illiteracy rates in Nigeria, which, while relatively high compared to other Sub-Saharan countries, are well below the global average. The country in 2015 had a youth literacy rate of 72.8 percent and an adult literacy rate of 59.6 percent compared to global rates of 90.6 percent (2010) and 85.3 percent (2010), respectively (data reported by the World Bank). Within Nigeria, there is a distinct regional difference in participation rates in education between the oil-rich South and the impoverished North of the country, in some parts of which elementary enrollment rates were reportedly below 25 percent in 2010.

The most pressing problems for Nigeria's higher education system remain the severe underfunding of her institutions of learning. The Federal government, which is responsible for sustaining public universities, has over the past decade failed to significantly increase the share of the government budget dedicated to education, despite the increasing number of students. Between 2003 and 2013 education spending fluctuated from 8.21% of the total budget in 2003 to 6.42% in 2009 and to 8.7% in 2013 although it significantly increased to 10.7% in 2014. Due to funding constraints, most of Nigeria's public universities are in deteriorating condition. And while efforts at

increasing capacity by building new universities have generally been positive for access in absolute terms, they have also created issues related to instructional quality. Nigeria's institutions and lecture halls are severely overcrowded, student to teacher ratios have skyrocketed. Lab facilities, libraries and other university facilities are not left as they have recorded significant deterioration. Globally, Nigerian universities are ranked low compared to other African countries like South Africa, Ghana, and Uganda who are ranked considerably higher. In 2017, only one of Nigeria's universities was listed among the top 1,000 in international university rankings in the Times Higher Education Ranking. Strikes has also become an almost ritual occurrence at Nigerian universities, disrupting lectures, causing delayed graduations, the loss income for university staff, and further eroding the already low trust in the education system. Interestingly, government has continued to provide reforms and initiatives to improve the Nigerian educational system.

Theoretical Review

Adolph Wagner's Law of Increasing State Activity

Wagnar's law states that "as the economy develops over time, the activities and functions of the government increase". According to Adolph Wagner, "comprehensive comparisons of different countries and different times show that among progressive peoples (societies), with which alone we are concerned; an increase regularly takes place in the activity of both the central government and local governments constantly undertake new functions, while they perform both old and new functions more efficiently and more completely. In this way economic needs of the people to an increasing extent and in a more satisfactory fashion, are satisfied by the central and local governments." In Progressive societies, the functions/activities of the government increases systematically. Governments undertake new functions in the interest of the society. The purpose of the government activities is to meet the economic needs of the people. The expansion and strengthening of government function and activities lead to an increase in public expenditure.

The Peacock-Wiseman Hypothesis

Peacock and Wiseman conducted a new study based on Wagner's Law. They studied the public expenditure from 1891 to 1955 in U.K. They found out that Wagner's Law is still valid. Peacock and Wiseman further stated that the rise in public expenditure greatly depends on revenue collection. Over the years, economic development results in substantial revenue to the governments, this enabled to increase public expenditure". Furthermore, there exists a big gap between the expectations of the people about public expenditure and the tolerance level of taxation. Therefore, governments cannot ignore the demands made by people regarding various services, especially, when the revenue collection is increasing at constant rate of taxation. The Hypothesis further showed that during the times of war, government further increases the tax rates, and enlarges the tax structure to generate more funds to meet the increase in defence expenditure. After the war, the new tax rates and tax structures may remain the same, as people get used to them. Therefore, the increase in revenue results in rise in government expenditure.

Musgrave's Theory of Public Finance

A key feature of Musgrave's Theory of Public Finance was the division of the problem of public finance into three "branches." One "branch" was devoted to the problem of achieving full employment in which Musgrave applied the ideas of Keynesian fiscal policy to using tax reductions and government spending to increasing aggregate demand. A second "branch" focused on economic efficiency, that is, on the design of taxes that would raise revenue with the least distortion to incentives and therefore the least loss of real incomes. The third "branch" dealt with issues of redistribution to achieve a politically acceptable distribution of income. According to Edame and Eturoma (2014), economic growth takes place when the balance of public investment shift towards human capital development through increased spending on education, health and welfare services.

Human Capital Theory

Human capital theory builds on the assumption that education is highly influential and necessary in improving the productive capacity of a population. Human capital theorists argue that an educated population is a productive population. The theory lays emphasis on how education increases the productivity and efficiency of workers by increasing the level of cognitive stock of economically productive human capability, which is a product of intrinsic abilities and investment in human beings. The provision of formal education is seen as an investment in human capital, which proponents of the theory have considered as equally or even more worthwhile than that of physical capital (Woodhall, 1997). Human capital theory is the most influential economic theory as it sets the framework for government policies.

Empirical Review

Ojike, Uwajumogu and Didigu (2022) employed an Autoregressive Distributed Lag Model (ARDL) bounds test technique to assess the effect of education outcomes on sustainable development in Nigeria for the period 1990q1–2018q4. Adjusted net savings (ANS) were utilized as a measure of sustainable development in the study. The adult literacy rate, primary school enrolment, and secondary school enrolment were used as proxies for educational outcomes. The research found that adult literacy rates had a strong favourable effect on sustainable development in both the short-run and long-run. The study however recommended increased budgetary allocation and subsidies for Nigerian education.

Ude and Ekesiobi (2014) empirically investigated the states social spending and social outcomes with specific emphasis on education in Nigeria. The study employed panel data from 36 states of the federation. The panel data covered from 2009 through 2013. The study applied fixed effects and random effects models. Each of the education outcomes were modelled against states spending on education and controlled for states spending on health and states per capita expenditure. Their results showed that states spending on education have a significant impact on total primary enrolment, total secondary enrolment and adult literacy enrolment in Nigeria using fixed and random effects but significant using only fixed effect on total tertiary enrolment in Nigeria.

Obi and Obi (2014) examined the impact of government expenditure on education in Nigeria. The paper focused on the impact of education expenditure on economic growth as a means of achieving the desired socio-economic change needed in Nigeria. The study used time series data from 1981 to 2012. The Johansen's co-integration analysis and ordinary least square (OLS) econometric techniques were used to analyze the relationship between gross domestic product (GDP) and recurrent education expenditure. Findings indicated a positive relationship between education expenditure and economic growth; although a long run relationship does not exist over the period under study. The paper recommended for improvement of the education system through efficient use of public resources through good governance, accountability and transparency.

Obi, Ekesiobi, Dimnwobi and Mgbemena (2016) studied on government education spending and education outcome in Nigeria. Employing Augmented Dickey Fuller (ADF) unit root test and Ordinary Least Square (OLS) technique, the study revealed that public education spending has a positive and significant effect on education outcome in Nigeria. Public health expenditure and urban population growth were also found to have positive effects on education outcome but are non-significant in determining education outcome. The study recommended that government should spend more on education which needs to be targeted for the desired effects to be realized. Also, government should monitor spending given the history of corruption and embezzlement of public funds in Nigeria.

Methodology

The human capital and investment theory provides the theoretical framework for the study. According to Fagerlind and Saha (1997), human capital theory provides a basic justification for large public expenditure on education both in developing and developed nations. The success of any nation in terms of human development is largely dependent upon the physical and human capital stock. Education plays a great and significant role in the economy of a nation; thus, educational expenditures are found to constitute a form of investment. In order to enhance human development in the general society, it is important for government to increase investment in such priority areas, such as education.

The study follows the approach and model of Gupta, Verhoeven, and Tiongsan (1999) in Dauda (2011) who specified education production function given as:

$Y_n = f\ (X_{1n}, X_{2n}, Z_n)$ Eqn 1

Where Y_n, is a social indicator replicating education attainment for a country n as measured by adult literacy, which is a function of aggregate public spending on education as a share of GDP, X_{1n} represents the allocations to different programs within the sector; X_{2n}; and a vector of socioeconomic variables Z_t.

This study therefore modifies and incorporates additional variables to achieve the objective of the study. The model is specified thus;

EDO = f (PEE, PSE, SER, TER) Eqn 2

Re-specifying the model mathematically and taking the natural logs, the model is

expressed as

$$InEDO = \beta_0 + \beta_1 EE + \beta_2 PSE + \beta_3 SER + \beta_4 TER + \alpha \quad \text{Eqn 3}$$

$\beta_0, \beta_1, \beta_2, \beta_3$ and $\beta_4 > 0$

Where EDO represents the Educational outcome which is a proxy of Adult literacy rate, PEE is Public Education Expenditure which is a percentage of GDP, PSE is primary school Enrolment rate, SER is Secondary School Enrolment rate and TER is Tertiary Enrolment rate.

$\beta_0, \beta_1, \beta_2, \beta_3$ and β_4 represent the slope or parameters of coefficient of the model

Equation (3) is then specified using the Autoregressive Distributed Lag (ARDL) model of order k as follows

$$\Delta EDO_t = \tau_0 + \sum_{j=1}^{n} \tau_{1j} \Delta EDO_{t-j} + \sum_{j=0}^{n} \tau_{2j} \Delta PEE_{t-j} + \sum_{j=0}^{n} \tau_{3j} \Delta PER_{t-j} + \sum_{j=0}^{n} \tau_{4j} \Delta SER_{t-j} + \sum_{j=0}^{n} \tau_{5j} \Delta TER_{t-j} + \varepsilon_t \quad \text{Eqn 4}$$

Where; Δ is the first difference operator; the parameters j, where j = 1, 2, 3, 4, 5 are the respective long-run multipliers; of the ARDL model in the equation; εt denotes the white noise error term. The Bounds co-integration test involves estimating the above equation and restricting the parameters of the lag level variables to zero. Equation (4) can be rewritten to obtain the error correction representation which is of the form;

$$\Delta EDO_t = \tau_0 + \sum_{j=1}^{n} \tau_{1j} \Delta EDO_{t-j} + \sum_{j=0}^{n} \tau_{2j} \Delta PEE_{t-j} + \sum_{j=0}^{n} \tau_{3j} \Delta PER_{t-j} + \sum_{j=0}^{n} \tau_{4j} \Delta SER_{t-j} + \sum_{j=0}^{n} \tau_{5j} \Delta TER_{t-j} \psi ECM_{t-1} + \varepsilon_t \quad \text{Eqn 5}$$

The parameters $\tau_1, \tau_2, \tau_3, \tau_4, \tau_5$, are the short run dynamic coefficients of the underlying ARDL model in the equation while ψ is a parameter indicating the speed of adjustment to the equilibrium level after any particular shock. The sign of ECM_{t-1} must be negative and significant to ensure effective convergence of short-run dynamics to the long-run equilibrium. The value of the coefficient,ψ, which signifies the speed of convergence to the equilibrium process, usually ranges from -1 to 0. The value of -1 signifies perfect and instantaneous convergence while 0 means no convergence after a shock in the process.

Result and Discussion

Descriptive Statistics Analysis

The descriptive statistics for the selected variables are indicated in the table below.

Table 1 Summary of Descriptive Statistics

Variables	Mean	Max.	Min.	Std. Dev	Skewness	Kurtosis	Probability
EDO	3.9447	4.01542	3.7483	0.0684	-1.1214	3.8663	0.0103
PEE	20.4973	22.2643	16.8693	1.2412	-0.4892	3.1275	0.4626
PSE	4.5416	4.7278	4.3646	0.0836	0.3341	2.8082	0.6821
SER	3.3983	4.0286	2.6155	0.0864	0.1777	2.7521	0.8619
TER	1.7990	2.3499	0.6101	0.5111	-0.5243	2.1042	0.2219

Source: Researchers' computation using E-views10

From the table, the mean values of Educational outcome (EDO), Public education expenditure (PEE), Primary school enrollment (PSE), Secondary school enrollment (SER) and Tertiary education enrollment are 3.94, 20.50, 4.54, 3.40 and 1.80

respectively. The standard deviation which reveals the measure of variability of the variables from their respective long term mean values annually are 0.068, 1.24, 0.083, 0.086 and 0.511 respectively. Finally, the respective variables showed a positive Kurtosis with values of 3.87, 3.13, 2.81, 2.75 and 2.10 respectively.

Unit Root Test Result

The result of the unit root test based on Phillips-Perron test is presented in the table below

Table 2 Phillips-Perron Unit root test

Variables	PP t-statistic	Order of Integration	Critical Value
LNEDO	-3.121153	I(0)	5%
LNPEE	-9.233846	I(1)	5%
LNPSE	-4.022196	I(1)	5%
LNSER	-3.291492	I(1)	5%
LNTER	-3.667717	I(0)	5%

Source: Researchers' computation using E-views10

From the table above, LNEDO and LNTER are stationary at level while LNPEE, LNPSE and LNSER are stationary at first difference. Thus, we reject the null hypothesis at 5% level of significance.

ARDL Co-integration Result

Since the series are stationary, we can now proceed to test for long run relation between the dependent variable and the independent variables. The data series provides evidence for the use of Autoregressive Distributed Lag (ARDL) technique of analysis. As posited by Pesaran et al (2001), ARDL is more suitable for variables at different order of integration.

Table 3 ARDL Bounds Test for Cointegration

Variables	F-Statistic	Cointegration
F(EDO, PEE, PSE, SER, TER)	14.36646	Cointegration Exist
Critical Value	Lower Bound	Upper Bound
1%	3.29	4.37
5%	2.56	3.49
10%	2.2	3.09

Source: Researchers' computation using E-views10

The estimated F-statistics of the normalized equations (F=14.36646) is greater than the lower and upper critical bound at 5% level as in Table 3 above. This implies that the null hypothesis of no long run relationship is rejected at 5% significance level. The implication of the above is that educational outcome (EDO), public education expenditure (PEE), primary school enrolment rate(PSE), secondary school enrollment rate (SER) and tertiary enrollment rate (TER) all have equilibrium condition that keep them together in the long run.

Long run Coefficient Estimates

Having established the existence of cointegration, the conditional ARDL for the long run relationship is presented in the table below

Table 4 Long run Estimate coefficients using ARDL Approach
Dependent Variable: LNEDO

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNPEE	0.266785	0.394667	0.675974	0.5068
LNPSE	-0.852525	1.023166	-0.833222	0.4146
LNSER	-0.344133	0.553132	-0.622154	0.5409
LNTER	-0.749712	1.071326	-0.699798	0.4921
C	4.969472	1.532532	3.242654	0.0041

Source: Researchers' computation using E-views10

The long run estimates suggest that primary school enrolment rate (PSE), secondary school enrollment rate (SER) and tertiary enrollment rate (TER) all have negative impact on educational outcome in Nigeria with exception of public education expenditure (PEE) which exerts positive influence. Specifically, a 1% point decrease in primary school enrolment rate (PSE), secondary school enrollment rate (SER) and tertiary enrollment rate (TER) will lead to 0.85, 0.34 and 0.75 percent increase in educational outcome respectively, in the long run. Obviously, this could be as a result of inadequate or insufficient carrying capacities of institutions as they are overpopulated with an abysmal teacher to student ratio. As expected, public education expenditure (PEE) with a positive coefficient indicates that a 1% point increase in government expenditure to education will increase the education outcome by 0.27 percent. Meanwhile, the long run estimation also showed that all the variables were not statistically significant. This is understandable given the rate of educational outcome in the country which has not recorded any significant breakthrough irrespective of various interventions to the sector over time.

Short run Estimate using ARDL Approach

The study examined the pressure of the estimated long run equilibrium on the short run dynamics using the error correction model.

Table 5 Error correction model: ARDL (4, 0, 0, 3, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNEDO(-1))	0.503227	0.091153	5.520662	0.0000
D(LNEDO(-2))	-0.202767	0.110356	-1.837392	0.0811
D(LNEDO(-3))	0.140265	0.080598	1.740308	0.0972
D(LNSER)	0.008282	0.007205	1.149455	0.2639
D(LNSER(-1))	-0.012955	0.007984	-1.622672	0.1203
D(LNSER(-2))	-0.013568	0.007429	-1.826447	0.0827
D(LNTER)	0.010211	0.010760	0.948958	0.3540

D(LNTER(-1))	0.026886	0.011853	2.268338	0.0345
ECM (-1)*	-0.023669	0.002280	-10.38019	0.0000

R-squared	0.976129
Adjusted R-squared	0.968491

Source: Researchers' computation using E-views10

The results of the short run dynamics associated with the ARDL models are reported in the table above. The coefficient of the ECM (-1) shows the speed of adjustment from short run to long run for all the models. The coefficient of the lagged error correction model (-0.0237) is negative and statistically significant at 5% which means that the variables would converge to long run equilibrium. The test of goodness of fit shows that about 97.6% variations in the dependent variable are explained by the variations in the independent variables while the rest of the variation is explained by the variables not included in the model. The adjusted R^2 also laid credence to the result of goodness of fit of the model with about 96%. Using the lagged variables, the result shows that the D(LNEDO) lagged by the 1st and 3rd period is positive and statistically significant. The 2nd period is negative but statistically significant. The current level of SER is positive although not statistically significant, while the lagged value at 1st and 2nd periods are negative. The current level of TER is positive and statistically insignificant while the lagged value at 1st period is positive and statistically significant. In summary, the result of the ECM indicates that the model is not affected much in the short run hence the 2.4% disequilibrium.

Residual Diagnostic Result

The estimated ARDL model is tested for serial correlation, heteroskedasticity, normality and stability test. The results from these tests are shown in table below

Table 6 Residual diagnostic based test on component of ARDL models

Test	Statistics	P value
Serial Correlation Breusch-Godfrey LM test	2.001606	0.1641
Heteroskedasticity Breusch-Pagan-Godfrey	0.431342	0.9383
Normality	2.515896	0.284237

Source: Researchers' computation using E-views10

The coefficient of LM estimated statistically conforms to absence of serial correlation at 5% level of significance. Similarly, the probability value of the heteroscedasticity test show that the variance is not time dependent, hence, it is homoscedasticity for all outcome of the estimated equations. The probability value of Jarque-Bera indicates that the residuals are normally. Finally, from the CUSUM result, the cumulative sum lies between the two critical points at 5%. We therefore conclude that the model is stable and can be used for prediction and forecasting.

Conclusion and Recommendations

This study reassessed the impact of government education expenditure on educational outcome in Nigeria between 1981 and 2022. The data was analysed using the Autoregressive Distributed Lag (ARDL) model as developed by Pesaran et al (2001). The results obtained confirmed and supported the existence of cointegration among the variables that are mutually cointegrated. The negative value of the coefficient of ECM indicates the presence of short run dynamics. Expectedly, public education expenditure has a positive relationship with education outcome which is a proxy of adult literacy rate. This means that an increased government spending to the sector will boost education outcome in Nigeria. Enrollment rate which includes primary, secondary and tertiary was negative. This could be as a result of inadequate or insufficient carrying capacities of institutions as they are overpopulated with an appalling teacher to student ratio. Finally, the test of goodness of fit shows that about 97.6% variations in the dependent variable were explained by the variations in the independent variables while the rest of the variation is explained by the variables not included in the model. The adjusted R^2 also laid credence to the result of goodness of fit of the model with about 96%. As a result, this will enhance knowledge that would improve political transition and economic development, thereby, raising the standard of education in Africa, so that African Nations will experience high quality education that will lead to improved/transparent political transition and economic development.

Based on the findings, the study recommends:

1. For the implementation of effective educational policies by the government. These policies should be capable of enhancing educational attainment through adequate public financing under a stable macroeconomic environment. This means that the mechanisms through which funding is governed, distributed and monitored should be effective and efficient as it plays a key role in ensuring that resources are directed to areas they can make the most difference.
2. Also, priority should be given to educational financing. Further to this, educational facilities across various institutions of learning should be overhauled in order to make learning real and easier.
3. Also, it will be healthy if our leaders would give education priority attention, putting aside their unfriendly political policies that is hampering the progress of education and economic development in the continent, and ensure the promotion of quality education that would attract wider and better economic development in Nigeria and Africa in general.

References

Abiodun, A.A. (2002). "Rebuilding the foundations of education in Nigeria" *Newsletter of the Social Science Academy of Nigeria*, 5(2), 21-31.

Agarwal, J. C. (2023); Philosophical Foundation of Education (Shri Vinod Pustak Mandir). Available at euhutch.blgspot.com (assessed: 14/03/2023

Akinola, D. B., & Ogunode, N. J. (2022). Effects of Corruption on Educational Administration in a Democratic Nigeria. *International Journal on Integrated Education*, *5*(2), 194-203.

Anyanwu, J. C., & Erhijakpor, A. E. (2007). Education expenditures and school

enrolment in Africa: Illustrations from Nigeria and the other SAWE Countries. Paper presented at the 50th Anniversary and Annual Conference of the Nigerian Economic Society, Abuja, Nigeria.

Dauda, R. (2011). Effect of public educational spending and macroeconomic uncertainty on schooling outcome: Evidence from Nigeria. *Journal of Economics, Finance and Administrative Science*, 16 (31), 7 21.

Edame, G. E., & Eturoma, A. D. (2014). The determinants of public expenditure on educational infrastructural facilities and economic growth in Nigeria. *Journal of Business Management and Economics*, 5 (6), 152-161 .

Gupta, S., Verhoeven, M., & Tiongsan, E. (1999). *Does higher spending buy better results in education and health care?* (IMF Working Paper WP/99/21) Washington, D. C.: International Monetary Fund.

Hanushek, E. (1996). School resources and student performance. In *Does money matter: The link between schools, student achievement and adult success,*ed. G. Burtless, 43–73. Washington, DC: Brookings Institute.

Musgrave, R. A., & Musgrave, P. B. (1989). *Public finance in theory and practice*. 5th Edition. New York: McGraw-Hill International Editions, Finance Series.

Obi, C. U., Ekesiobi, S. C., Dimnwobi, S. K., Mgbemena, E. M. (2016). Government education spending and education outcome in Nigeria. *International Journal of Economics, Finance and Management Sciences* 4(4), 223-234.

Obi, Z. C., & Obi, C. O. (2014). Impact of government expenditure on education: The Nigerian experience. *International Journal of Business and Finance Management Research*, 2, 42-48.

Odeleye A. T. (2012). Education and economic growth in Nigeria: A comparative analytical approach. *European Journal of Global Development Research* 6(1):330-342.

Ojike, R. O., Uwajumogu, N. R., & Didigu, C. E. (2022). Do Education Outcomes Enhance Sustainable Development In Nigeria? *Journal of Economics and Allied Research*, *7*(2), 53–66. Retrieved from https://jearecons.com/index.php/jearecons/article/view/193

Peacock, A. & Wiseman, J. (1967). *The growth of public expenditure in the UK.* Princeton, USA: Princeton University Press.

Ude, D., & Ekesiobi, S. (2014). Panel investigation of states social spending and social outcome: Perspective of education in Nigeria. *International Journal of Economics, Finance and Management* 3 (5), 244–255.