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The Role of Education Financing in Enhancing Economic Growth & Alleviating Poverty in Nigeria

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Abstract

The research sought to delve into the intricate dynamics between education financing, economic growth and poverty alleviation in Nigeria, using data spanning over four decades, from 1980 to 2022. Employing a methodological combination of trend analysis and Auto Regressive Distributive Lag (ARDL), the study aimed to unravel the trends, relationships, and consequential impacts of education financing on both economic growth and poverty reduction. The results from the education financing-growth model, dedicated to scrutinizing the nexus between education financing and economic growth, brought forth noteworthy insights. The findings pointed towards a positive and statistically significant influence of education financing on economic growth, discernible in both the short and long run, as evidenced by empirical data from Nigeria. Conversely, the second model, which delved into the association between education financing and poverty alleviation, revealed a statistically insignificant positive impact. This lack of significance was attributed to the glaringly low level of education financing, evident in the stylized facts concerning Total Government Expenditure on Education (TGEE% GDP). The study posited that the insufficient allocation of funds to essential aspects of education acted as a bottleneck to the development of contemporary skills necessary for optimal functioning in a world characterized by limited opportunities. Consequently, a stark scenario of persistent poverty, particularly driven by elevated unemployment rates among graduates, unfolded over the study period. The stylized facts for unemployment exhibited an upward trajectory, underscoring a direct correlation with the inadequacy of education financing relative to the country's burgeoning demand for education as a potent tool for poverty alleviation. In light of these findings, the researcher advocated for strategic interventions, chief among them being a substantial increase in Total Government Expenditure on Education (TGEE) to reach 10% of the Gross Domestic Product (GDP). This proposed augmentation in education financing was

positioned as a pivotal solution to address existing challenges and contribute significantly to the overarching socioeconomic development of Nigeria.

Keywords: Education, Financing, Economic growth, Poverty alleviation, Nigeria

INTRODUCTION

Governments aspire to achieve rapid economic growth and alleviate poverty among their citizens, recognizing that education plays a pivotal role in realizing these objectives. Education serves as the bedrock for fostering economic progress and poverty reduction within any nation. Hence, Bloom and Canning (2003) opined that by improving on health and education in Africa, the citizens may contribute to development in the following ways: (i) greater productivity at the workplace which is synonymous to improved income, (ii) ability to work much longer and retire later due to overall good health, (iii) invest more in their own education and training leading to enhanced productivity and; (iv) greater capacity to save and invest more with the expectation of a longer life. To them, health and education outcomes result in inclusive growth, equitable and sustainable access to resources.

It is through education that visionary leaders are nurtured, individuals capable of steering the nation toward prosperity and sustainable development. Educated minds are instrumental in formulating policies that contribute to sustained economic growth, ensuring a strategic and informed approach to national development. Furthermore, education is a catalyst for technological advancement. Innovations emerge from educated minds, and these technologies are diffused to address critical societal issues and streamline various aspects of life. The dissemination of knowledge facilitated by education financing becomes a conduit for the adoption of new ideas and techniques. This dissemination is vital for enhancing the skills and abilities of the workforce, contributing to overall improvements that are indispensable for economic growth and development.

As noted by Obele and Ayaba (2003), national development becomes a challenging endeavor without substantial investment, both qualitative and quantitative, in the education sub-sector. This underscores the belief that education financing is not just an expenditure but a strategic investment in the future of a nation. By channeling resources into education, governments lay the foundation for a more knowledgeable, skilled, and innovative society, fostering an environment conducive to rapid economic growth and poverty alleviation. Umo (2012) emphasized that the initial step in empowering individuals is to afford them the opportunity to receive an education. Education, as Umo articulated, confers upon the less privileged the ability to comprehend and master their living environment, endowing them with the skills requisite for securing a livelihood.

Recognizing the pivotal roles of education in economic growth and poverty alleviation, the federal government of Nigeria took a monumental step in 1969 by organizing the first national curriculum conference in education. This conference aimed to position education as an instrument for national development, as articulated by Ajeyalami (2009). The outcomes and

resolutions of this conference laid the groundwork for the national policy on education, initially published in 1977 and subsequently revised in 1981, 1996, 2004, 2009, and 2013.

According to the national policy on education (2013 edition), the federal government of Nigeria has embraced broad educational objectives. These objectives encompass instilling national consciousness and unity, cultivating the right values and attitudes for individual survival in society, training minds to understand the world, and acquiring appropriate skills and developing mental, physical, and social abilities. These competencies, as outlined in the policy, are viewed as essential equipment for individuals to live in and contribute to the development of the society (Federal Republic of Nigeria, 2013). In essence, education, as conceptualized by these frameworks, emerges as a catalyst for personal development, societal progress, and national prosperity.

Over the course of years, the Nigerian government has endeavored to realize the overarching objectives set for economic growth and poverty eradication. However, there is a prevailing opinion that the financial allocation to education is insufficient, especially considering the widespread demand for high-quality education in the country. Consequently, despite the surge in school enrollments, the educational infrastructure and facilities have struggled to keep pace with the rapid growth of the educational system, leading to concerns about the adequacy of resources to support an expanding and evolving educational landscape.

In a comprehensive examination of poverty, the Brookings Institution (2018) startlingly declared Nigeria as the new global epicenter of extreme poverty, surpassing India. According to their report, a staggering 86.9 million people in Nigeria were living in conditions of extreme poverty. This disconcerting revelation was echoed by British Prime Minister Theresa May (2018), who emphasized the paradox of Nigeria's economic resurgence coexisting with a stark reality — an alarming 87 million Nigerians subsisting on less than \$1.90 per day, thereby solidifying its status as the nation with the highest number of extremely impoverished individuals worldwide.

Meanwhile, researches have revealed that there is a positive relationship between population and poverty growth rate in Nigeria. According to World Poverty Clock (2020), 105 million Nigerians lived in extreme poverty as at May, 2020. This translates to 51% of Nigeria's population in the same year. As projected by Bill and Melinda Gates foundation (2018), "over 40% of the world's poorest people would live in Nigeria and Democratic Republic of Congo by 2050". But population increase should not be a problem and cause of poverty in any country if the population is given the means to function. No wonder, China with a population of 1.412 billion people in 2021, attains a zero poverty rate in 2020 having reduced the poverty rate steadily from its original rate of 30.5% in 2005 (worldometer, 2022).

It is on this notes that the researcher chooses to investigate the influence of education financing on economic growth and poverty alleviation in Nigeria. The lead question that this paper intends to answer is whether education financing translates to economic growth and also contributes to alleviation of poverty in Nigeria.

The specific objectives are to:

- (i) Examine the trends in education financing, economic growth and Poverty in Nigeria.
- (ii) Examine the relationship between education financing and economic growth in Nigeria.
- (iii) Investigate the relationship between education financing and poverty Alleviation in Nigeria.

The structure of this work comprises six sections. Section 1 serves as the introduction, while Section 2 provides a literature review. Section 3 delineates the methodology employed. Empirical results are presented in Section 4, followed by a discussion in Section 5. Finally, Section 6 offers recommendations based on the study's findings.

The seemingly straightforward question, "What is Poverty?" belies its complexity. The term "Poverty" derives from the Old French "Poverty" and the Latin "Paupertas," both signifying "Pauper" or "Poor." According to Sen (1999), poverty transcends mere income deficits; it is fundamentally about "capability deprivation." Sen posits that an individual experiences poverty when they lack the means to function in terms of their desired actions. In essence, poverty is synonymous with the "lack of capability to function," which may arise from insufficient income or various forms of social deprivation. This nuanced perspective challenges conventional notions, emphasizing the multifaceted nature of poverty encompassing both economic and social dimensions.

To provide a more nuanced understanding, Umo (2012) offers a comprehensive conceptualization of poverty, categorizing it into various dimensions. Absolute or Abject poverty denotes a state of deprivation where an individual lacks the means to afford basic necessities like food, shelter, clothing, and elementary education. Relative Poverty, on the other hand, gauges the extent to which one's income falls below societal expectations for a decent life, positioning an individual as relatively poor in comparison to others. Capability Poverty introduces a distinctive lens, framing poverty as capability deprivation rather than income or consumption deficiency. This perspective views poverty as a failure in capability, hindering individuals from achieving their desired actions. Additionally, there are other dimensions such as consumption, asset, subjective, knowledge, chronic, and transitory poverty, contributing to a more comprehensive understanding of the multifaceted nature of poverty.

The above definitions demonstrate that the effects of poverty on people are wide-reaching and can lead to lifelong struggles, especially when people don't receive full education. The link between poverty and education is inextricable, because, people living in poverty may stop going to school so they can work. This leaves most of them with no literacy and numeracy skills needed to further their careers. Their children in turn are in similar situation years later, with little income and few options but to leave school and work in order to earn a living.

Education, on the other hand, means different things to different people, culture and society. Ukeje (2002) opined education as a process, a product and a discipline. As a process, education is a set of activities which entails handling down the ideas, values and norms of the society across generations. As a product, education is measured by qualities and traits displayed by the educated persons. And as a discipline, education is defined in terms of benefits of the organized knowledge to which students are exposed to.

Aristotle (384-322 B.C.E.) provides a profound definition of education, portraying it as a systematic process aimed at training individuals to achieve their objectives by fully exercising all their faculties within the societal context. Aristotle's perspective diverges from the views of Socrates and Plato, emphasizing that education's objective transcends the mere acquisition of knowledge. For Aristotle, education is not solely about intellectual enrichment; it encompasses the pursuit of happiness and a virtuous life.

In Aristotle's philosophy, the aim of education extends beyond personal enlightenment; it is intricately linked to the attainment of virtue and a flourishing life. He posits that genuine virtue resides in achieving a good life. Therefore, an individual must possess both intellectual and moral fortitude to effectively contribute to society, benefiting not only themselves but also fostering the broader growth of the community.

Education financing, in Aristotle's context, emerges as a deliberate and conscious effort to establish an environment conducive to learning and the educational process. This effort seeks to enable learners to actively cultivate their potential, fostering spiritual strength, self-control, personality development, intelligence, noble character, and the practical skills essential for personal and societal advancement. Aristotle's timeless insights underscore the holistic nature of education, emphasizing its pivotal role in shaping individuals for the greater good of both themselves and the communities to which they belong.

In this paper, Education Financing is seen as means to human development. Human development here means a conscious and continuous effort of acquiring and increasing the number of people with the requisite skill, knowledge and experience that are crucial for economic growth and development. The economic benefits of human development includes higher productivity arising from more people improving their education, nutrition, health and other economic development indicators through adequate and proper education financing.

The United Nations Development Programme (UNDP, 1990), defines human development as the process of enlarging people choices; such choices allowing them to lead long and healthy life, to be educated, to enjoy a decent standard of living, as well as political freedom, other guaranteed human rights and various ingredients of self-respect. Therefore, the basic concern of Education Financing then is human development which centres on the capabilities to lead long and healthy lives, be educated, have access to resources and social services needed for a decent standard of living, and be able to participate in the life of the community.

The above concept of economic development is different from economic growth. Haller (2012), opined economic growth as the process of increasing the size of national economies, the macro-economic indicators, especially the GDP per capita is in ascendant but not necessarily in a linear direction, with positive effects on the economy, whereas, economic development shows how growth impacts on the society by increasing the standard of living. A country's economic growth is usually indicated by an increase in that country's gross domestic products (GDP). Generally, GDP is the total monetary value of goods and services produced by a country over a specified period of time. It reflects the value of a country's output.

Hence, the theory of human capital emphasizes education financing as a way of accumulating human capital for economic growth and development. According to Seers (1969), a country can only be said to be developed when such country is able to solve the problem of inequality, poverty, dependency and unemployment. Umo (2012) opined education financing can help to solve these problems by conferring on the poor, the ability to know and master the environment within which he or she lives, and equip him or her with the needed skills to find a means of livelihood. Therefore, education offers the recipient the ability to address and overcome several types of poverty through a productive employment. It could be noted that, for paid employment, formal education is needed for gaining the cognitive attributes and certificates that any employer requires at all levels. Hence, certificate or academic qualification serves as a screening device for the employment selection. Meanwhile, to be self-employed, one needs quality education to master the skills before setting up as a successful entrepreneur, and basic education enhances trainability, as it is difficult for one to absorb training and benefits from employment without basic education.

Umo (2012) emphasized that education sector contains cognitive skills, knowledge, technology, socio-political networking skills, health and migration which today underpins economic development. In this sense, education is indispensable for inventions, innovations, discoveries and extending frontiers of knowledge which serve as the most effective instrument of inclusive development. And, Owens (1987) suggested that development is when there is development of people (human development) and not development of things.

Nevertheless, the awareness of the role of education to economic growth and development dates back to Adam Smith. Smith (1776) recognized the importance of educational investments to economic growth and development by emphasizing that *“the acquired and useful abilities of all inhabitants or members of the society, the acquisitions of such talents, by the maintenance of the acquirer during his education, study or apprenticeship, always cost a real expense, which is a capital fixed and realized, as it were, in his persons those talents, as they make a part of his fortune, so do they likewise that of the society to which he belongs. The improved dexterity of a workman may be considered in the same light as a machine or instrument of trade which facilitates and abridges labour, and which though it costs a certain expense, repays the expense with a profit.”* In this sense, Smith advocated for investment in individuals as a means of developing the individuals in particular and the society in general.

The above definition implies that education is an economic good because, quality education demands a very high cost of production, thus, the need to prioritize its demand. This means that quality education to a greater extent is the determinant of success, any nation has in developing its economy to curb poverty and for technological innovations. For education to contribute to economic development, it must be of high quality and must match the skills demand in the economy. High quality education depends on the investments in the sector. With investments in education, three major effects can be expected: increase expenses as the accumulation of human capital requires investment just as physical capital; increase productivity

as people gain characteristics that enables them to produce more output; and return on investment in the form of higher income.

The endogenous growth model supports the inclusion of human capital in the Cobb-Douglas production function and discovered that economic development is primarily determined by endogenous forces as against the external forces. The endogenous growth model holds that investment in human capital; innovation and knowledge are significant contributors to economic growth. This means that economic growth in the long run is attributed to the accumulation of human capital. In order to produce human capital, education should be used. The theory focuses on positive externalities and spillover effects of education which lead to economic development. It shows that long run growth rate of an economy is a function of policy measures. For instance, subsidies for research and development or education increase the economic growth rate in Romo (1990) and Lucas (1998) models by increasing the incentive for motivation.

The proponents of Human Capital Theory (HCT), Smith (1776) and Becker (1964) opined education financing is highly instrumental and necessary to improve the productive capacity of the population. HCT states that educated population is the active population. The proponents of HCT see education financing as an investment in human beings which is more beneficial than an investment in physical capital. The basic concept of the HCT is that investment in individual can be mathematically measured based on the value they are able to contribute to the society.

Schumpeter (1912) theory of innovation and development emphasizes that government support can significantly promotes process innovation, industry-university-research knowledge integration and increase corporate performance. The theory sees innovation as the changes in the methods of production and transportation, production of new product, opening up of new market, etc. It adumbrate the process of technological change in a free market economy like Nigeria to consist of the following three parts: (1) Invention: -which means conceiving a new idea or process, (2) Innovation: - meaning to arrange the economic requirements for implementation of an invention and, (3) Diffusion:- a situation whereby people observing the new discovery adopt or imitate it. It opines “creative destruction” is inevitable in a developing economy. Creative destruction is a situation where booms and recessions are inevitable and cannot be avoided or corrected without distorting the creation of new wealth through innovation. It is a process in which new innovations replaces and make obsolete older innovations.

Bakare (2012), used Spearman Rank Correlation coefficient approach to examine the demand for education and economic growth in Nigeria. The findings revealed a positive correlation between demand for education and economic growth. This implies that higher school enrolments will lead to economic growth. The study concluded that effective ways to combat illiteracy, poverty, hunger and stimulate economic growth that is truly sustainable is through education. Although a positive relationship is established here between school enrolment and economic growth in Nigeria, there is need to establish causality between the two variables and this study fulfilled this provision by using school enrolment as one of the variables in running a

regression analysis to measure the extent to which economic growth depends on school enrolment in Nigeria.

Lloyd (2018) investigated government spending on education and economic growth in West African Countries. Data for the study covers the year 1990 to 2016 for 15 selected ECOWAS countries. Unit root co-integration analysis and casualty tests were conducted. The study findings include that government spending on education and economic growth in West African countries are positively and significantly related. Long-run Granger causality exists while there is no evidence of short-run Granger causality from government educational expenditure to economic growth. It indicated that in the long-run, government educational expenditure through its impacts on human capital, significantly and positively influenced economic growth. The study recommended collaborative spending on education among West African countries.

Ihugba; Ukwunna and Obiukwu (2019), examined the impact of government education expenditure on Primary School enrolment in Nigeria by applying the bounds testing (ARDL) approach to co-integration for the period 1970 to 2017. The model was constructed to identify the relationship between the two variables while also considering the interaction with control variables; per capita income, remittances, investment and population growth. The bounds tests suggest that the variables of interest are bound together in the long-run when primary school enrolment is the dependent variable. It was observed that an insignificant positive relationship exist between government education expenditure and primary school enrolment. This insignificant relationship was explained by low spending on education. Population growth has a positive relationship in a short run but a negative relationship in a long-run. The speed of adjustment to equilibrium is 88% within a year when the variables wander away from their equilibrium values. The study recommends that government policies directed at improving the expenditure towards education should largely increase, and money meant for the education sector should be distributed with high degree of transparency.

Dauda (2010), empirically investigated the relationship between investment in education and economic growth in Nigeria using annual time series data from 1977 to 2007. The paper employs Johansen Cointegration technique and error correction methodology. Empirical results indicated that there is a long-run relationship between investment in education and economic growth. All the variables including labour force, gross fixed capital formation and educational capital appear with the expected positive signs and are statistically significant (except labour force) in the Nigerian economy. The findings have a strong implication on educational policy in Nigeria. The study suggested that a concerted effort be made by policy makers to enhance educational investment in order to accelerate growth which would engender economic development.

Ifionu and Nteegah (2013), examined the impacts of government investments in education on economic growth in Nigeria over the period 1981 to 2012. Economic growth proxied by GDP growth rate was the dependent variable while government capital expenditure on social services, recurrent expenditure on education, primary schools' enrollment and primary

schools' pupils teacher ratio were explanatory variables. Employing the OLS technique, the paper found that government capital expenditure on social services (education and health) and government recurrent expenditure on education have significant implications on economic growth during the period of the study. The paper recommends an increase in government budgetary allocation to the education sector from the present less than 15% to UNDP/UNESCO requirement of 25% allocation to the sector, improvement in the welfare of educationists and regular monitoring of funds and services rendered in the sector to ensure improved standards as possible ways of making education growth friendly sector in the country.

Akpan, Okposin and Sunday (2022) investigated the influence of educational investments on sustainable development in Nigeria using data from 1999 – 2018. Trend Analysis Technique and Ordinary Least Square (OLS) method were adopted for the study. The key variables considered in their analysis were: HDI, TGEE, RGDP growth rates, interest rate spread, unemployment rate and capital expenditure as a percentage of GDP in Nigeria. The result revealed a downward trend of educational investment as a ratio of GDP but an upward trend of economic development in Nigeria. The impact analysis indicated a positive influence of educational investment on sustainable development in Nigeria. The study recommended that if educational investment in Nigeria is increased, it will stimulate the country's economy to fully employed available resources and achieved better standard of living for all Nigerians.

In summary, the literature review underscores the nuanced and varied causal relationships between education financing, economic growth, and poverty alleviation across countries. Disparities arise from differences in education measurement, study characteristics, model specifications, types of data utilized, research quality, and the socio-economic development levels of the observed countries. The earlier studies primarily focused on economic growth, often neglecting critical variables essential for comprehensively assessing the impact of education financing on poverty alleviation in Nigeria. To enhance the robustness of our models and discern the impact of education financing on economic growth and poverty alleviation, the researcher incorporates key variables such as real GDP growth rates, total government expenditure on education as a percentage of GDP, school enrollments, graduates outturn, exchange rates, inflation rates, unemployment rates, interest rates, and the Human Development Index (HDI). The inclusion of these variables aims to provide a more comprehensive understanding of the multifaceted relationship between education financing, economic dynamics, and poverty outcomes. The study utilizes secondary data spanning from 1980 to 2022, ensuring a comprehensive and contemporary analysis.

RESEARCH METHODOLOGY

The research design selected for this study is the Ex Post Facto Design. Kerlinger (1964) characterizes ex post facto research as an approach wherein the independent variable or variables have already taken place, and the researcher commences the study by observing the dependent variable or variables. Also known as "after the fact research," this design investigates how a group with specific qualities of independent variables, pre-existing before the study, influences a

dependent variable. Importantly, this method underscores that the independent variables possess inherent characteristics or traits that cannot be manipulated in the research setting, distinguishing it from experimental designs where researchers can control and manipulate independent variables.

Model Specification

In this study, the model for economic growth is specified as:

$$\text{GDPGR} = f(\text{TGEE}, \text{SSE}, \text{GOT}, \text{INTR}, \text{INFL}, \text{EXTR}) \quad 1.1$$

Where: GDPGR = Real Gross Domestic Product Growth Rates

TGEE= Total Government Expenditure on Education as a Ratio of GDP

SSE= School Enrolments in Millions

GOT= Graduates Out-turn as a Ratio of Total Out-turn in Nigeria

INF= Inflation Rates

INTR= Real Interest Rates

EXTR= Exchange Rates

During estimation, parameters are introduced and a disturbance term (U) to take care of variables not included in the model but affect economic growth and development. Therefore, equation1 above is transformed thus:

$$\text{GDPGR}_t = b_0 + b_1\text{TGEE}_t + b_2\text{LOG}(\text{SSE}_t) + b_3\text{GOT}_t + b_4\text{INF}_t + b_5\text{INTR}_t + b_6\text{EXTR}_t + U_t \quad 1.2$$

The dynamic model of equation2 after expressing same in log-linear form is specified as:

$$\text{GDPGR}_t = b_0 + b_1\text{TGEE} + b_2\ln\text{SSE} + b_3\text{GOT}_t + b_4\text{INF}_t + b_5\text{INTR}_t + b_6\text{EXTR}_t + U_t \quad \text{If } 1.3$$

Whereas, the model for poverty alleviation is specified as:

$$\text{HDI} = b_0 + b_1\text{TGEE} + b_2\text{GOT}_t + b_3\text{UNEMP}_t + b_4\text{GDPgr} + U_t \quad 1.4$$

Where: UNEMP= Unemployment Rates.

The Human Development Index (HDI) serves as a pivotal proxy for assessing poverty alleviation. In the context of this study, b1, b2, b3, b4, b5, and b6 represent the elasticities quantifying the impacts of various factors, including total government expenditure on education, school enrollment, graduates out-turn, inflation rates, interest rates, exchange rates, and unemployment rates, on both economic growth and poverty alleviation within the Nigerian context. These coefficients play a crucial role in elucidating the intricate relationships between these variables and the outcomes under investigation.

Apriori Expectations

The signs in the Parenthesis represent apriori expectations of each of the variables used in this study: TGEE (+), SSE(+), INF (+), GOT (+) INTR (-), EXTR (+), UNEMP (-).

Co-integration and Error Correction Model

Co-integration analysis is imperative for economic models utilizing non-stationary time series data. This precaution is crucial because, in the absence of co-integration, the risk of spurious regression arises, rendering econometric studies meaningless or even 'nonsensical'. Conversely, when stochastic trends offset each other, co-integration occurs, prompting the need for an error correction model (ECM). An ECM proves advantageous as it incorporates both long-run and short-run information, offering a comprehensive understanding of the model dynamics. In instances where there exists a long-run impact among variables, equations 3 and 4 can be transformed into an error correction model, enhancing the model's ability to capture and interpret both short-term fluctuations and long-term trends.

$$\text{GDPGR}_t = b_0 + b_1\Delta\text{TGEE}_t + b_2\Delta\ln\text{SSE}_t + b_3\Delta\text{GOT}_t + b_4\Delta\text{INF}_t + b_5\Delta\text{INTR}_t + b_6\Delta\text{EXTR}_t + \gamma\text{ECM}_{t-1} + V_t \quad 1.5$$

$$\text{HDI}_t = b_0 + b_1\Delta\text{TGEE}_t + b_2\Delta\text{GOT}_t + b_3\text{GDPGR}_t + b_4\Delta\text{UNEMP}_t + \gamma\text{ECM}_{t-1} + V_t \quad 1.6$$

Where: $\text{ECM} = (\Delta\text{GDPGR}_t - b_0 - b_1\Delta\text{TGEE}_t - b_2\Delta\ln\text{SSE}_t - b_3\Delta\text{GOT}_t - b_4\Delta\text{INF}_t - b_5\Delta\text{INTR}_t - b_6\Delta\text{EXTR}_t)_{t-1}$ = adjustment parameter which shows the extent to which the disequilibria in the dependent variables (GDPGR and HDI) are being corrected each period.

Δ = first difference operator

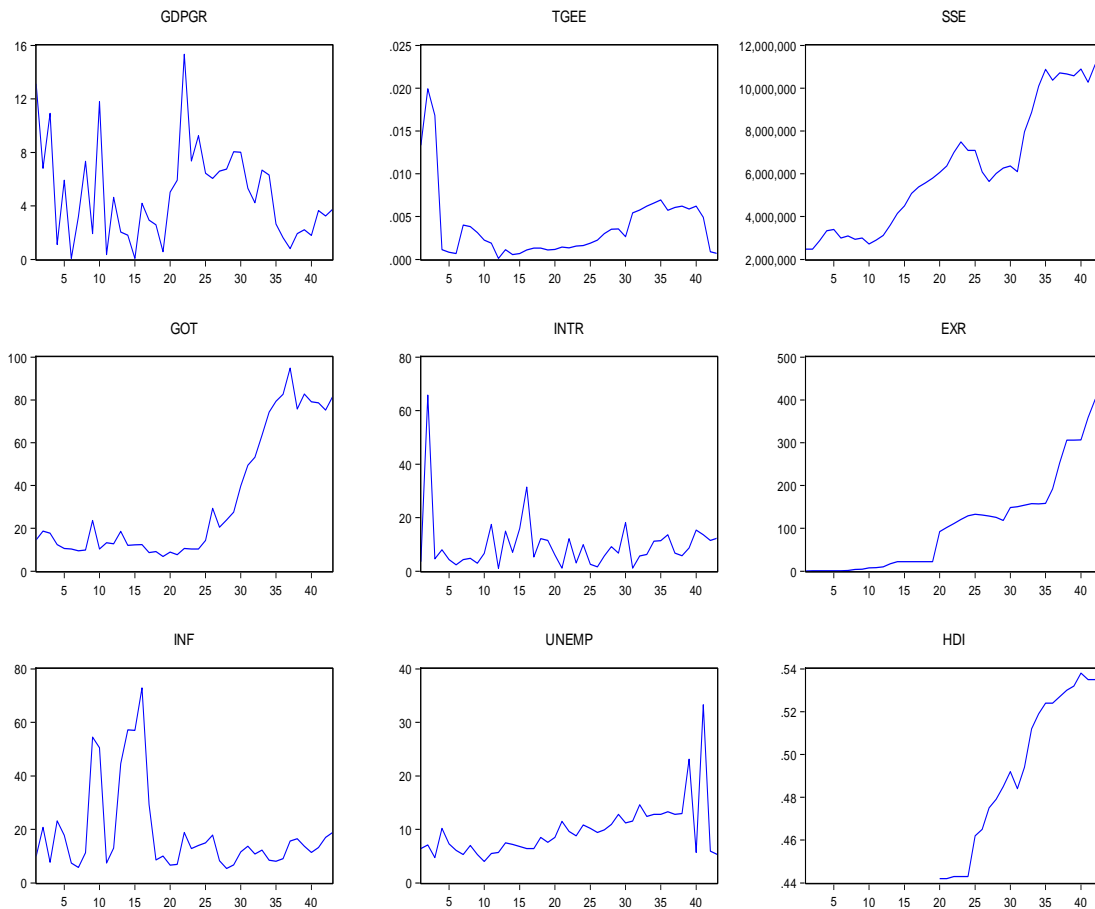
$$V_t = \Delta U_t = (U_t - U_{t-1})$$

Either equation 3 and 4 (if there is no long-run impact among the variables) or equation 5 and 6 (in case of a long-run impact among the variables) will be estimated. Hence, the second objective of this research work shall be captured by the respective test of significance on each of the explanatory variables and by evaluating the signs and magnitude of the elasticity.

RESULTS

Objective 1: Analyze the patterns in education financing, economic growth, and poverty alleviation in Nigeria spanning the period from 1980 to 2022

Descriptive Analysis of Education Financing, Economic Growth and Poverty in Nigeria are presented in this section. The stylized facts are for Gross Domestic Product Growth Rate (GDPGR) which serves as a proxy for economic growth, Total Government Expenditure on education (TGEE) as a proxy for Education financing which is the major explanatory variable, Schools enrolment (SSE), Graduates Out turned (GOT), Unemployment Rate (UNEMP), Interest Rate (INTR), Exchange Rate (EXT) and Human Development Index (HDI).



Figures: Trend Analysis of the major variables in the study, 1980-2022. Source: Author’s computation using E-views 9 (2023)

The trend line for GDPGR is erratic for the period under review; the graph shows sharp increases and decreases between different years within the time range. For example, the lowest growth were recorded in the year 1986 and 1995 with a value of 0.06% and 0.07% respectively within the two time period, whereas, the highest GDPGR was recorded in the year 2002 with the value of 15.32%. The reason for the volatility in the GDPGR may be attributed to the instability in the Nigeria’s economy as regarded the policy formulation and implementation.

Figure2 shows the trend of TGEE% of GDP. It is observed that the TGEE% GDP is relatively flat for most of the period under review, except for the sharp decrease in TGEE value between 1983 and 1985. The lowest percentage of TGEE% GDP was recorded in 1991 and the graph turn erratic with increase and decrease values till 2009. The graph exhibited an increasing trend between the year 2010 to 2014 but decline again in 2015 and continue being flat. The pattern of the GDPGR above could also be attributed to the behaviour of TGEE% GDP.

A look at figure 3 and 4 above revealed upward trends in Schools enrolment and graduate out-turn. Although the figures were slow over the years, it is important to notice that the trends were increasing. Hence, it is a good sign for Economic growth and poverty alleviation in the country if the education obtained is qualitative enough to equip the beneficiaries with the means to function optimally in any environment, they find themselves. It also represents economic

growth and poverty alleviation in the country as more people are expected to be opportune to break away from poverty by being gainfully employed after some years of schooling. The trend analysis shows that real exchange rate is positive over the years. This maybe a good sign to a sustainable growth in Nigeria as export is encouraged since price of identical baskets of goods is expected to be equal when expressed in common currency terms and this condition is commonly referred to as purchasing power parity. Figure 8 shows an increasing trend in Unemployment rate in Nigeria. This may be one of the reasons for the erratic trend in the Growth rate, as both human and material resources within the economy are not fully employed and utilized for maximum economic performance, hence, resulting in more people being poor in the country.

A look at the figure above revealed an upward trend in HDI which is the proxy for poverty alleviation. Although the increase is very slow over the years, it is important to notice that the trend was increasing, indicating an increased in the standard of living of people in the country over time. The question of whether this poverty alleviation was impacted by education financing shall be answered in the objective 2 when analyzing the signs and magnitude of TGEE % Of GDP.

Objective 2: Investigate the correlation between education financing, economic growth, and poverty alleviation in Nigeria

Unit Root Test

The data were tested for unit root before conducting the regression analysis. This was done because regressing non-stationary data can give spurious output. Thus, to avoid this, the Augmented Dickey-Fuller (ADF) Unit Root test was carried out on all the sub-variables. The results of the ADF test statistics is presented in Table1.

Table 1: Augmented Dickey Fuller Unit Root Test Result

Variable	ADF	1% critical value (**)	5% critical value (*)	Order of integration
GDPGR	-14.09158	-3.600987	-2.935001	I(1)
TGEE%GDP	-6.113410	-3.600987	-2.935001	I(0)
LOG(SSE)	-5.050219	-3.600987	-2.935001	I(1)
GOT (%)	-7.458677	-4.198503	-3.523623	I(1)
UEMP	-4.151301	-4.192337	-3.520787	I(0)
EXR	-4.242541	-3.600987	-2.935001	1(1)
INF	-3.601884	-3.600987	-2.935001	1(0)
INTR	-7.110723	-3.596616	-2.933158	1(0)

HDI -4.541457 -3.769597 -3.004861 1(1)

Source: Author’s computation using E-Views 9 (2024)

The result of the unit root test for the Augmented Dickey fuller test shows that all the variables used for this study were stationary at level and first difference order of integration as shown in table 1, as such, the study is justified to employ the Auto Regressive Distributive lag (ARDL) method to test for long run relationship.

ARDL Bound Test

The ARDL Bound Test for Co-integration was employed to determine the presence of a long-term relationship among the variables, following the confirmation of data being free from unit root. In Table 2, the calculated F-statistics value of 5.87 surpasses both the upper-bound critical value of 2.45 and the lower-bound critical value of 3.61 at the 5% significance level. This rejection of the null hypothesis, indicating no co-integration or significant long-term relationship among the variables, suggests the presence of co-integration—a substantial long-term relationship between the examined variables. This outcome supports the notion that the variables are interrelated over an extended time horizon.

Table 2: ARDL Bound Test Result

Test Statistic	Value	K
F-statistic	5.873811	6
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.45	3.61
2.5%	2.75	3.99
1%	3.15	4.43

Source: Authours Computation using E-views 9 (2024)

Objective 2: Investigate the correlation between education financing and economic growth in Nigeria.

Table 3: ARDL Short run Long run Error Correction Test Result

Variable	Cointegrating Form			Prob.
	Coefficient	Std. Error	t-Statistic	
D(TGEE)	552.605346	180.858448	3.055458	0.0044
DLOG(SSE)	2.282869	2.064127	1.105973	0.2765
D(GOT)	-0.134742	0.037334	-	0.0010
			3.609096	
D(EXR)	0.017172	0.009620	1.785010	0.0832
D(INF)	0.017460	0.034870	0.500704	0.6198
D(INTR)	-0.082155	0.056678	-	0.1564

CointEq(-1)	-0.944168	0.146397	1.449518	-	0.0000
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$$\text{Cointeq} = \text{GDPGR} - (585.2828 * \text{TGEE} + 2.4179 * \text{LOG}(\text{SSE}) - 0.1427 * \text{GOT} + 0.0182 * \text{EXR} + 0.0185 * \text{INF} - 0.0870 * \text{INTR} - 31.8944)$$

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
TGEE	585.282837	195.49983	2.993777	0.0051
LOG(SSE)	2.417863	2.195071	1.101497	0.2784
GOT	-0.142709	0.040468	-	0.0012
EXR	0.018188	0.010478	1.735721	0.0917
INF	0.018492	0.037674	0.490836	0.6267
INTR	-0.087013	0.063433	-	0.1791
C	-31.894375	33.518824	-	0.3480

Source: Authour's Computation using E-views 9 (2024)

Objective 3: Investigate the correlation between education financing and poverty alleviation in Nigeria

Table 4: ARDL Short Run Test Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
HDI(-1)	0.850271	0.161473	5.265720	0.0001
TGEE	0.708057	0.949717	0.745545	0.4661
GDPGR	7.37E-05	0.000681	0.108229	0.9151
GOT	0.000137	0.000208	0.659938	0.5181
UNEMP	-0.000233	0.000262	-0.890641	0.3856
C	0.070668	0.071352	0.990417	0.3359
R-squared	0.974654	Mean dependent var		0.496609
Adjusted R-squared	0.967199	S.D. dependent var		0.034959
S.E. of regression	0.006332	Akaike info criterion		-7.067095
Sum squared resid	0.000681	Schwarz criterion		-6.770879
Log likelihood	87.27159	Hannan-Quinn criter.		-6.992597
F-statistic	130.7418	Durbin-Watson stat		2.108426
Prob(F-statistic)	0.000000			

Source: Author's computation using E-views 9(2024)

Diagnostic Tests

Diagnostic tests for serial correlation and heteroskedasticity were performed, and the outcomes are outlined in Table 3 below. The serial correlation results reveal the absence of serial correlation in the model's errors. The heteroskedasticity test indicates that the variance in the model is uniformly distributed. Furthermore, the normality test of the model attests to the equation's adherence to a normal distribution, affirming the appropriateness of the model for statistical analysis. These diagnostic assessments contribute to the robustness and reliability of the model's results.

Table 5: Summary of the Post Diagnostic Tests Result

Test	R ² Statistics	Probability Value
Breush-Godfrey LM test for serial correlation	3.799414	0.1496
Breusch – Pagan - Godfrey Heteroskedasticity	3.403587	0.8453
Normality Test	1.663680	0.4352

Source: Author's computation using E-Views 9 (2024)

DISCUSSION

The results of the ARDL short-run long-run error correction test, as presented in Table 3, unveil a positive and significant relationship between education financing and economic growth in Nigeria, both in the short run and the long run. Specifically, the findings suggest that a unit increase in education financing corresponds to a significant increase of 585.28 units in economic growth, surpassing the 5% level of significance. The error correction term $CointEq(-1)$ exhibits the expected sign, negative, and is significant at a 5% probability level. This implies the presence of long-run equilibrium among the time series for education financing and economic growth.

The slope coefficient of the error correction term, at 0.944168 in absolute terms, signifies the speed of adjustment, aligning with the hypothesis of convergence towards long-run equilibrium. Notably, this coefficient indicates that approximately 94.41% of short-run disequilibrium and inconsistencies are being corrected and adjusted toward the long-run equilibrium path. These results echo the findings of Lloyd (2018), whose study emphasized the positive impact of government education expenditure on human capital, significantly influencing long-term economic growth and development. Additionally, Akpan, Okposin, and Sunday (2022) recommended that increased educational investment in Nigeria would stimulate the economy, leading to full employment of available resources and an improved standard of living.

Despite these positive associations, the stylized facts reveal a lack of commitment from Nigeria to elevate its education financing levels. While education financing exhibits a positive and significant influence on economic growth (as seen in Table 3), the influence on poverty alleviation is found to be insignificant (Table 4). This insignificance is attributed to the markedly low levels of education financing, as indicated by the stylized facts for Total Government Expenditure on Education as a percentage of GDP (TGEE%GDP). The inadequacy of funding results in insufficient support for teachers' welfare, school infrastructure, and facilities, hindering learners from acquiring the modern skills needed for optimal functioning in a world of limited opportunities.

Table 4 underscores the positive impact of school enrollment on sustainable economic growth, aligning with Bakare's (2012) assertion that higher school enrollments contribute to economic growth and development. However, when higher school enrollments are not complemented by adequate education financing, it may lead to economic growth and development challenges. The pressure on existing educational facilities without corresponding funding leads to wear and tear with minimal replacements. This, in turn, lowers teacher morale due to insufficient funds for on-the-job training and welfare, while the quality of education output suffers due to inadequate attention to learners and a lack of modern technology use. In the long run, this adversely affects the quality of labor, human capital, and outputs, resulting in unemployment, poverty, dependency, insecurity, and other economic challenges.

The erratic nature of the stylized fact in Figure 1 further confirms the inconsistency in economic growth in Nigeria over the studied period. This inconsistency is reflective of the challenges associated with the educational sector, where low financing hampers the sector's capacity to meet the evolving needs of learners and the broader economy. In conclusion, the

study highlights the critical importance of adequate education financing to not only drive economic growth but also to effectively address poverty alleviation challenges by equipping individuals with the skills necessary for meaningful participation in a rapidly changing world.

Recommendations

- (i) It is imperative for the government, recognizing its pivotal role in national development, to urgently prioritize and augment Total Government Expenditure on Education (TGEE) from its present level to 10% of the Gross Domestic Product (GDP). Sustaining this heightened investment is crucial to fostering enduring economic growth and significantly advancing poverty alleviation initiatives in the country. This strategic move underscores the government's commitment to building a robust educational foundation as a cornerstone for broader socioeconomic progress and improved well-being for its citizens.
- (ii) The government must institute proactive policies aimed at empowering Nigerians to optimize the economic benefits derived from favorable exchange rates in the country. Initiatives such as lowering interest rates specifically for graduate entrepreneurs seeking venture capital, expanding the accessibility of credit facilities, fostering collaboration among economic stakeholders, and providing subsidies to firms engaged in the production of export commodities could be pivotal. These policy measures are poised to create an environment conducive to capitalizing on positive exchange rate impacts, promoting entrepreneurship, and stimulating economic growth.
- (iii) Copperrate organizations are urged to capitalize on the positive outcomes associated with increased school enrollments, as demonstrated in this study, by actively supporting education financing initiatives in the country. Such support can play a pivotal role in fostering process innovation, facilitating the integration of knowledge among industry, universities, and research institutions, ultimately leading to an enhancement in corporate performance. By investing in education financing, corporate entities contribute not only to the development of a skilled workforce but also to the overall growth and competitiveness of the nation's economy.

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