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ANALYSIS OF SOCIAL EXPENDITURE AND ECONOMIC GROWTH IN NIGERIA

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Abstract: This study investigated the impact of social expenditure (expenditure on education and health) on economic growth in Nigeria for the period 1989-2020. Secondary data were collected from World Bank Development Indicators and the Central Bank Statistical Bulletin (2021). The variables used include real GDP, education expenditure, health expenditure, inflation rate, debt service payment, real interest rate and real exchange rate. To check if the variables were stationary, unit root test was carried out and cointegration analysis was done to ascertain the existence of long run relationship between the variables and economic growth in Nigeria. The Autoregressive Distributive Lag model (ARDL) was used to estimate the model and the error correction model was used as well to identify the short run effect of social expenditure on economic growth. Based on the objectives of the study, the empirical evidence revealed that health expenditure in the long run, had a positive and significant impact on economic growth. However, for the period under consideration, education expenditure had a significant negative impact on Nigeria's economic growth. This study also investigated the short-run impact of social expenditure on economic growth in Nigeria, and it was found empirically that only health expenditure had a significant positive impact on economic growth, while education expenditure had significant negative impact on growth. In line with these findings, the educational system should be supervised to guarantee that funding intended for education are used appropriately. Finally, since health expenditure has a major positive effect on economic growth, the government of Nigeria must double its budgetary allocation to the sector.

Keywords: health expenditure, education expenditure, social expenditure, economic growth

JEL Codes: I1, I2, P24

1. INTRODUCTION

The health and education sectors are vital to the development of any nation's economy and social structure. They play an important role in supporting the production of highly-skilled workers and in improving the quality of life for all citizens. As a result, human capital development has been acknowledged as a critical component in accomplishing the Sustainable Development Goals (SDGs). During the 1990s, International Development Assistance (IDA) to Nigeria as well as other Sub-Saharan African (SSA) countries began to target social objectives openly. Since 1999, international organisations such as the International Monetary Fund (IMF) and the World Bank, have urged African countries to pay greater attention to the content of government expenditures and to boost or, at a bare minimum, maintain social expenditure shares in their budget allocations year after year (Nwodo and Ukaegbu 2017).

The funding of national healthcare, education, housing, and other social or welfare services is referred to as social spending. In order to attain economic growth and development, nations have set the goal of providing social services to its citizens. Economic growth and development are expected if available resources are allocated properly to key sectors. Some examples of social amenities that could help achieve long-term economic growth are social community services, education, and affordable healthcare.

Production is required for economic growth and development, and this can only happen if labour is properly educated and healthy and this stresses the importance of the health and education sector (Nwodo and Ukaegbu 2017). Investing on human capital, such as education and health care, aids in skill development and productivity growth. Human capital of high quality is a driving force in poverty reduction (World Bank, 2002). Quality social spending is a tool for launching a country into the world of science and technology, as well as the hope of human advancement in terms of living conditions and environmental development. Quality education, health care, housing, water, and sanitation are the lifelines of any nation's industries. They are the foundation of its people's moral regeneration and revival. As a result, no country can afford to make a show of social spending on education, health, and housing.

The value of the health and education sectors in the development of any economy cannot be overstated. Over the years, the government's commitment to healthcare and education in Nigeria has led to an increase in public expenditure allocation to both the health and education sectors, which will further boost the country's growth and development (Olajide, Akinlabi, and Tijani 2013). In terms of education spending, Nigeria spent N0.17 billion, N0.26 billion, N0.62 billion, N11.67 billion, N39.88 billion, N119.02 billion, N335.80 billion, N339.28 billion, and N593.44 billion in 1981, 1986, 1991, 1996, 2001, 2006, 2011, 2016, and 2020, respectively. In terms of health spending,

Nigeria spent N0.08 billion, N0.13 billion, N0.62 billion, N3.18 billion, N24.52 billion, N62.25 billion, N231.80 billion, N200.82 billion, and 369.25 billion in 1981, 1986, 1991, 1996, 2001, 2006, 2011, 2016, and 2020, respectively. The statistics show that social expenditure has risen over time.

Notwithstanding these intriguing figures, Nigeria has one of the lowest commitments to education in Africa, and consequently in the world. Between 1997 and 2006, the country spent below 1% of its GDP on education, although the educational expenditure-budget ratio was approximately 9.5%. In comparison, Ghana has a 4% GDP and a 24% budget, while Malaysia has a 5% GDP and a 20% budget (Umo, 2012).

Abayomi (2012), Ojewumi and Oladimeji (2016) all provided interesting statistics to show that Nigeria invests only a modest percentage of its financial resources on education. Education budgets as a percentage of total national budgets were 8.43% and 8.67% in 2012 and 2013 respectively, falling short of UNESCO's recommendation of 26%. Other developing countries such as Ghana, South Africa, Kenya, Morocco, and Cote d'Ivoire, had 31%, 25.8%, 23%, 17.7%, and 30% for their annual budgets for education, respectively. The numbers point to the country's lack of commitment to increased social expenditure.

Good health care services, according to Bakare and Olubokun (2011), are crucial for poverty reduction, health promotion, greater national growth, and achieving sustainable development goals (SDGs). The health of a living organism is defined as its functional and metabolic efficiency. Health, as defined by the World Health Organization (WHO) in its constitution of 1948, is "a state of complete bodily, mental, and social well-being, rather than merely the absence of sickness or infirmity" (WHO, 2013). Consequently, assessing a country's economic growth and development can provide insight into its overall economic health (Romer, 1990). Good health care services, according to Bakare and Olubokun (2011), are crucial for poverty reduction, health promotion, greater national growth, and achieving sustainable development goals (SDGs). The health of a living organism is defined as its functional and metabolic efficiency. Healthy people are expected to contribute more to output than sick people since they are more physically and cognitively fit, improving productivity and positively impacting economic growth. When a person is healthy, his or her life expectancy increases, which supports individual savings and private education investments.

Similarly, to promote personal and social development, increase productivity, reduce social inequality and stimulate economic growth, expenditure on education is paramount. A critical decision undertaken by governments, businesses, students, and their families is the proportion of aggregate financial resources devoted to education. In every way, one of the most significant components in development is education. If there is no

major investment in human capital, then it is impossible to achieve economic growth that is long-term. Education helps broaden the perspectives people have on themselves and the world at large. The term "education" refers to the process of learning new things. Unsurprisingly, Hartshorne (1985) and Olayiwola (2007) believe that a vital way to attain economic growth is through formal education. Hence, human capital as well as physical infrastructure, helps to ensure that a country becomes prosperous. High and sustainable growth rates in the economy are often as a result of human capital. This has motivated developing countries to work hard to increase their human capital stock in a variety of ways, including government investment on healthcare and education, including public spending on other social services. An assumption proposed by Yesufu (2000), Sakthivel and Inder Sekhar (2007), and Adamu (2003), is that health and education build and strengthen the potential in humans, which leads to economic progress. It has also been proven empirically that there is a relationship between government spending on social services and economic growth.

However, despite increases in social expenditure such as education and health spending, the Nigerian economy has not been growing as expected). Nigeria spent N0.17 billion, N0.26 billion, N0.62 billion, N11.67 billion, N39.88 billion, N119.02 billion, N335.80 billion, N339.28 billion, and N593.44 billion in 1981, 1986, 1991, 1996, 2001, 2006, 2011, 2016 and 2020 respectively on education. Also on health expenditure, Nigeria spent N0.08 billion, N0.13 billion, N0.62 billion, N3.18 billion, N24.52 billion, N62.25 billion, N231.80 billion, N200.82 billion, and 369.25 billion in 1981, 1986, 1991, 1996, 2001, 2006, 2011, 2016, and 2020, respectively. The Nigerian GDP has been decreasing in recent years despite the increase in social expenditure. GDP growth rate was -1.62% and -1.79% in 2016 and 2020 respectively.

Table 1: Table for Social expenditure and GDP growth in Nigeria from 1981 to 2020

Year	*Edu_Exp (N' Billion)*	*Health_Exp (N' Billion)*	*GDP Growth%*
1981	0.17	0.08	-13.13%
1986	0.26	0.13	0.06%
1991	0.62	0.62	0.36%
1996	11.67	3.18	4.19%
2001	39.88	24.52	5.92%
2006	119.02	62.25	6.06%
2011	335.80	231.80	5.31%
2016	339.28	200.82	-1.62%
2020	593.44	369.35	-1.79

Source(s): CBN Statistical Bulletin (2020) and World Bank Development Indicators (2020)

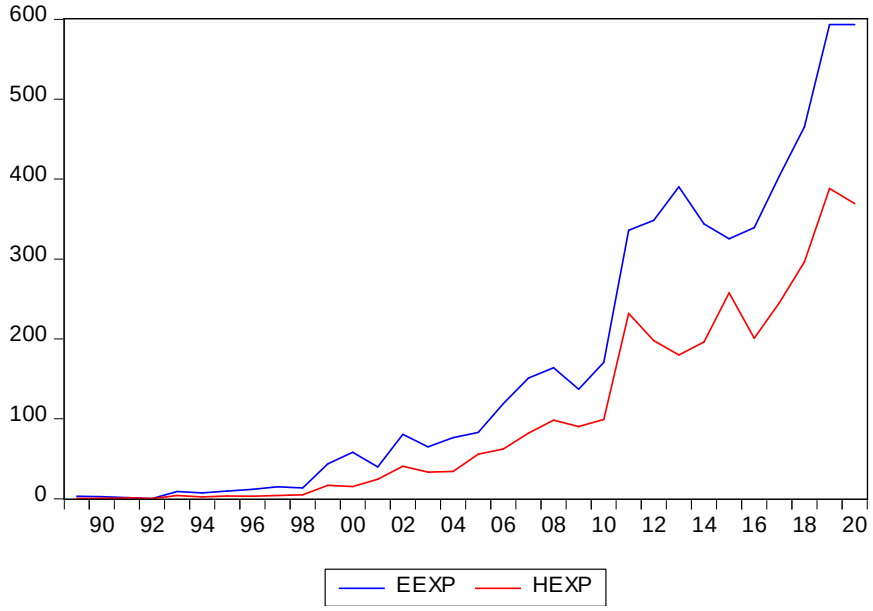

Figure 1: Social expenditure in Nigeria from 1989 to 2020

Source: Researchers' computation using Eviews 10

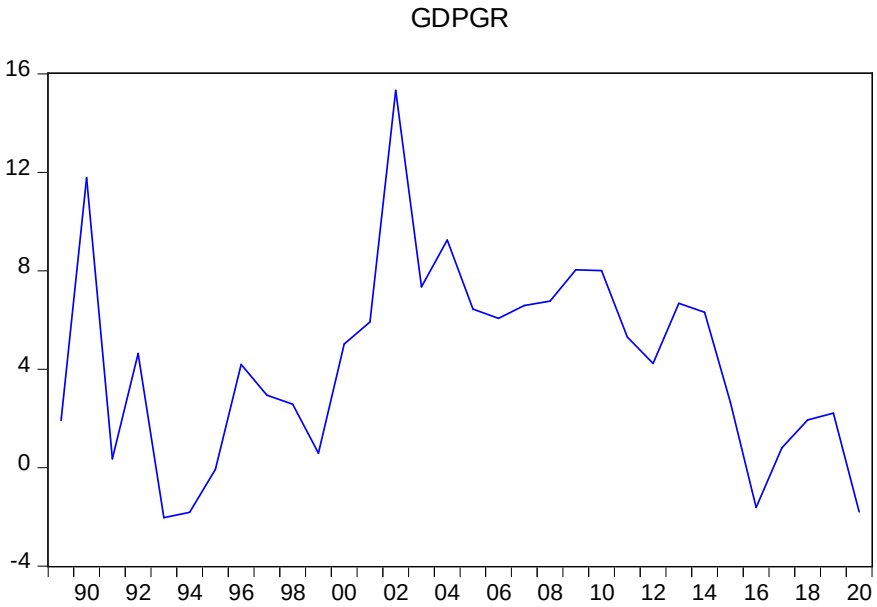

Figure 2: GDP Growth rate in Nigeria from 1989 to 2020

Source: Researchers' computation using Eviews 10

From the table and graphs it is evident that despite increases in social expenditure over the years, GDP has been nosediving particularly since 2002. In fact, in 2016, the Nigerian economy went into a recession with a GDP growth rate of -1.62%. The Nigerian economy's catastrophic and inefficient state necessitated this research, which aims to empirically investigate whether social expenditure has any impact on economic growth.

As previously stated, the government's goal is to increase economic growth through social expenditures. Therefore, what impact does health expenditure have on Nigeria's economy? What impact does education expenditure have on Nigeria's economy? Is there a long-run relationship between social expenditure and economic growth? Based on the foregoing, the purpose of this paper is to critically examine these questions.

2. LITERATURE REVIEW

2.1. Theoretical Literature

Four economic theories that highlights on the concept of social expenditure and economic growth will be examined in this section. The Keynesian Theory and Peacock and Wiseman's Displacement Effect highlights the concept of social expenditure while the Endogenous Growth Theory and the Roy and Evsey Domar Growth Theory highlights the concept of economic growth.

The British economist and father of macroeconomics, John M. Keynes (1936), believed that government spending is a key predictor of economic growth. According to Keynes' theory, fiscal policy (i.e., government spending) is a critical tool which can be used to achieve stability and superior long-run growth rates in the short-term. To attain economic stability, this theory argues that the government should intervene in the economy by using economic policy, particularly fiscal policy. Government expenditure, according to Keynesian philosophy, will spur economic growth. Keynes asserted that government intervention is required because it has the ability to affect economic downturns by circulating funds from the private sector and then returning it to the private sector through various programmes which are centred around expenditure. Furthermore, government capital and recurrent expenditures on the development of high-quality classrooms and labs, hospitals and clinics, the acquisition of teaching and learning tools such as computers and medical equipment, and salary payments will have multiplier effects on the economy. Education and health spending will increase production and development by raising the quality of the workforce. It will also aid in the formation of a cadre of healthy and educated economic planners and managers in both the private and public sectors.

Following their research of public expenditure in the United Kingdom from 1890 to 1955, Jack Wiseman and T. Peacock (1961) proposed another explanation for the

growth of government spending. They argued that public expenditure increases in jerks or stepwise fashion, rather than in a smooth and continuous manner. They favoured a post-ante analysis of direction of causality on government budgets, claiming that at times, social or additional instability occurs, necessitating an increase in public expenditure that current public revenue will not be able to meet. Each social upheaval or crisis has the effect of raising the electorate's tolerance for taxation to new heights, resulting in a willingness to accept a higher tax burden to fund a larger government. With the displacement and inspection effects as link variables, there is a mechanism that stabilizes both government revenue and expenditure at new and higher levels following each social disturbance or crisis. As a result, a significant crisis causes the public sector to expand in proportion to the economy, resulting in a dualistic concentration effect. However, according to Ezirim (2005), during the study period, and up until the Wiseman-Peacock research in 1961, the pressure escalated and produced an increase in public expenditure to the point where the apparent inadequacy of current revenue was exposed to every economic watch and analysis. The development resembled a revenue-expenditure spiral, which had an impact on a country's economic activity. They noted that governments enjoy spending money while citizens dislike paying taxes, and concluded that governments should pay greater regard to the wishes of citizens. The individual voter is portrayed as a "free rider" who enjoys the benefits of public goods and services without being prepared to pay for them through taxes in their presentation. As a result, they believe the government is aware of the public's reaction to the tax implications of the budget's expenditure side. As a result, they believe there are reasonable level of taxes that works as a check on government behaviour. However, as the economy grows, tax revenue grows at a steady rate, allowing government spending to grow in lockstep with GDP (Agiobenebo, 2003). Revenue constraint, they claim, had a domineering and limiting influence on public expenditure expansion early in the research period, which was driven, in part, by insufficient public expenditure pressure.

The significant advantage in the Endogenous Growth Theory over earlier models, according to Chude and Chude (2013), is that it looks at the determinants of technology. That is, it does not assume technology as exogenous, it rather models it actively. It is significant because it provides a new idea of human capital, in which knowledge and abilities are encompassed and this allows workers to be more productive. The process of learning is a key source of economic growth if economic agents are able to utilise their productive resources more effectively over time. This is because the return on investment on human capital development are high or increasing. As a consequence, the rate of growth is highly influenced by the type of capital invested in by a country. Government spending on development of human capital, particularly education, should be increased in order to spur economic growth. The theory at the same time anticipates

positive externalities aa well as spill-over effects that comes as a result of the development of an increased knowledge economy capable of building and retaining a competitive advantage in the broader economy's growth industries.

Harrod (1939) and Domar (1946) devised a steady-state economic growth model that yielded comparable results but differed significantly in specifics. Their model's purpose was to develop a strategy to achieve long-term growth. The short-run Keynesian model was extended, which assumed the volatility of the capitalist economy, to one that assumed long-term stability. In the Harrod-Domar model, growth is considered sustainable if the following growth rates are equal: natural growth rate, actual growth rate, and guaranteed growth rate. This was dubbed the "golden age" by Harrod. Investment has a significant part in the economic growth process, according to Harrod and Domar. They underlined the need of investment in the growth process.

First, it generates income, which boosts the economy's aggregate demand. Second, it boosts the economy's productive capability by growing its capital stock. As a result, the Harrod-Domar model argued that output and real income will keep growing as long as net investment occurs in the economy. However, if this expansion is to continue unabated, real income and output must grow at an equal rate along with the capital stock's productive capacity. If any of these rates disagree, there will be an excess of idle capacity, which will lead to a reduction in capital investment by capitalists. And if this happens, the economy will suffer as a result of the forced reduction in income and employment. However, if equilibrium requires equalization of family savings and capitalist investments, their model's assumption of equality of those three rates will be difficult to maintain (Jhingan, 2010).

In this theory, the savings rate is considered exogenous, which means it is determined outside of the model, and the same is true for population growth, which is assumed to be driven by natural dynamics. Additionally, it is assumed in the model that there is a fixed capital-labor ratio, which means that no substitution of production elements is conceivable. As a result, the three rates of growth cannot be balanced. Two difficulties are revealed in the model. First, it is not possible for a capitalist economy to grow at a certain rate of growth while maintaining full employment since economic expansion is always in tandem with involuntary unemployment. Second, in a capitalist system, it is not possible to converge towards a steady state or equilibrium. As a result, Harrod and Domar revealed the unsustainable nature of economic advancement by unintentionally seeking an equilibrium path that is dynamic (Lukasz, 2014).

2.2. Empirical Literature

Annual time series data from 1951 to 2009 was used by Chandra (2010) to investigate the relationship between education spending and economic growth in India, employing

both linear and non-linear Granger causality tests. The research found a bidirectional causal relationship between education spending and economic growth.

The goal of the research carried out by Elmi and Sadeghi (2012) was to look at how health spending impacts on economic growth, taking a sample of some developing countries from 1990 to 2009 using vector error correction model (VECM). A relationship which was bi-directional was discovered between GDP and health expenditure in the short-run as well as the long-run.

Hussin, Muhammad, Hussin, and Razak (2012) explored the long-run relationship and causality between Malaysian economic growth and government education spending. Time series data from 1970 to 2010 were analysed using the Vector Auto Regression (VAR) approach. Economic growth is positively cointegrated with three factors, according to the study's findings: fixed capital formation, labour force participation, and government investment on education. According to the causality result, economic growth in the short-term Granger causes changes in education variables and vice versa. Malaysia's economic growth was significantly impacted by education spending according to the findings of the study.

A study conducted by Victor (2015) in Ghana focused on the relationship that exists between education spending and economic growth from a period which spanned from 1970 to 2012. Variables used in the study were real GDP, education spending, labour participation, and gross capital formation. It was discovered that a positive as well as a significant relationship exists between education spending and all of the economic growth metrics employed in the study.

The Vector Error Correction Model was used by Mandiefe and Tieguhong (2015) to study the impact of public health investments on economic growth in Cameroon from 1988 to 2013 using annual times series data. According to the estimates, Cameroon's economy only received contribution from public health investments only in the long run. As a result, they proposed that the government increase its investment in health to 15% or 10% of GDP, as recommended by the World Health Organisation (WHO), and the African Union (AU) respectively; secondly, improve the provision of health care services by the private sector; and third, improve the level of medical care provided by awarding competitive prizes to health centres that deliver excellent medical care.

Usman, Mobolaji, Kilishi, Yaru, and Yakubo (2011) investigated the influence of public expenditure on economic growth in Nigeria from 1970 to 2008 using an augmented Solow growth model which was specified in Cobb-Douglas form, measuring education, health, human capital, building infrastructure, communication and transportation, social services, gross domestic product, foreign capital inflow, and domestic capital. The data suggested that government expenditure had an impact on growth in the economy only in the long run.

To investigate the nature of the relationship and the impact of government spending on education and economic growth in Nigeria, Ohwofasa, Obeh, and Atumah (2012) used time series data from 1986 to 2011. The Johansen co-integration methodology and the error correction method were employed in the study to establish a long-run relationship between the variables. Additionally, the data reveal that a one-year lag in GDP, current levels of recurrent education expenditure, two-year lags in recurrent education expenditure, and current and two-year lags in gross capital formation all have a favourable impact on Nigeria's economic growth. Previous year capital spending on education and human capital development on the other hand, had a considerable negative influence on economic growth throughout the period of the research.

From 1990 to 2009, Akwe (2014) researched the association between social public expenditure (education and health) and Nigerian economic growth. In the investigation, the causality-based Vector Error Correction model was applied (VEC). Wagner's law, he argued, was supported by unidirectional causality that linked economic growth to health spending. As a result, the paper discovered that economic development, aggregate social expenditure, and education were the drivers of causality. Yet, the work was concluded on the idea that social public investment boosts aggregate economic growth and that the government should enhance its budgetary allocation to both the education and health sectors.

Ojewumi and Oladimeji (2016) conducted empirical research on the effect of government spending on educational growth in Nigeria. The analysis classified public education spending into two categories (recurrent and capital expenditure). The data used extended from 1981 to 2013 and was of a secondary type. The majority of the data came from publications by the Central Bank of Nigeria, the National Bureau of Statistics, and the World Bank. The OLS econometrics technique was used to analyse the data. The major finding demonstrated that both capital and recurrent expenditure had a negative impact on educational growth in Nigeria over the study period. The report suggested investigation should be carried out to curtail the high level of corruption in the educational sector to ensure that funds intended for education, particularly capital investment in the sector, are used properly. Nigerian governments at all levels should increase capital and recurrent spending to expand higher education.

Nwodo and Ukaegbu (2017) used GDP and education and health expenditures to calculate Nigeria's public social expenditure mix and economic growth from 1981 to 2015. A negative and significant relationship was identified.

Several academics have evaluated the influence of social spending on economic growth in Nigeria, according to a survey of empirical literature, but none of the studies were conducted after the 2016 recession. In other words, no research has been conducted

to investigate the relationship between social spending and economic growth in Nigeria after the 2016 recession. This study will look into this relationship in the aftermath of the crisis.

3. METHODOLOGY

3.1. Theoretical Framework

The methodology used in this study is based on the simple Cobb-Douglas production function, in which output is expressed as a function of labour and physical capital input:

$$(Q(L, K) = (A\ L^{â}\ K^{á}.)) \quad (1)$$

Where;

Q = Output

L = Labour input K = Physical capital input

A = Functional operator, α and β = Parameters.

By taking the natural logarithm of the equation, the existing quadratic relationship in the Cobb-Douglas principle can be linearized. Similarly, this study expresses economic growth as a function of several input factors such as education expenditure, health expenditure, inflation rate, debt service payment, real interest rate and real exchange rate. As a result, the appropriate frameworks are expressed in the following section.

3.2. Pre-estimation Tests

3.2.1. Unit Root Test/Stationarity Test

In econometrics, it is commonly assumed that most annual time series data are not stationary at levels. As a result, the variables of interest in this study were subjected to a unit root test using the augmented Dickey-Fuller (ADF), which is stated as:

$$\Delta Y_t = \beta_1 + \beta_2 + \delta Y_{t-1} + \Sigma_{i=1}^{m} \alpha i\, \Delta Y_{t-1} + \varepsilon_t \quad (2)$$

Where:

Y= a time series variable, Ä= the first difference operator, t= a linear time trend, m= the optimum number of lags of the variable, while â, ä, á = parameters, and å= the error term.

The test determines whether the variables' means, variances, and covariances do not change over time. The unit root test for stationarity determines the order of integration per variable at any of these orders, I(0), I(1), or I(2).

When the variables are integrated at orders of I(0), I(1), or an admixture of both, the ARDL bounds test approach is applicable. As a result, at I(2), the ARDL bounds testing assumptions become inefficient and inapplicable.

3.2.2. Bounds Test for Co-integration

Co-integration tests are commonly used in econometric modelling to determine whether variables are stable over time or have a stable long-run relationship. In another sense, the co-integration test is required to avoid spurious regression because it tells us whether the variables exhibit similar long-run behaviour. Variables are co-integrated when unit root tests on residuals reveal that they are stationary.

There are several co-integration tests. However, Emran, Shilip and Alam (2007) argue that the bounds test approach to co-integration is superior to other conventional tests because it effectively corrects for any possibility of explanatory variable endogeneity. Furthermore, the bounds test for co-integration is advantageous because it can be applied regardless of whether the series is I(0) or I(1), thereby ignoring the uncertainty introduced by the stationarity pre-estimation test. Furthermore, unlike other co-integration approaches, the ARDL bounds technique is applicable to small sample sizes.

Interestingly, this study employs the ARDL technique despite the fact that, according to Narayan (2005), it can simultaneously estimate the model's short and long run relationships. The following model estimation conditions are expected when using the bounds test approach to co-integration:

(a) No Co-integration = Use another co-integration method or estimate a short-run ARDL model.

(b) Co-integration = Develop a long-run model as well as an ECM model that integrates long-run and short-run dynamic parameters.

3.3. The Model

ARDL is a least squares regression with dependent and explanatory variable lags, according to Nwodo and Asogwa (2017). The notation ARDL (p, q1,...,qk) is often used, where 'p' denotes the number of lags of the dependant variable, 'q1' represents the number of lags of the first independent variable, and 'qk' represents the number of lags of the k-th independent variable.

In this study, ARDL is used to quantify the impact of social spending on Nigerian economic growth. Pesaran and Pesaran (1997) created it, and it has been utilised by Orji (2014), Owusu (2012), Saibu (2014), and Nwodo and Asogwa (2017), among others. The use of ARDL in this work is intended to address the model's endogeneity issue.

An ARDL model helps to evaluate the dynamic relationship between a dependent variable and independent variables. The ARDL approach was used in this study because of its flexibility, which implies that it may be used when the variables are integrated in different orders of integration (Pesaran and Pesaran, 1997), specifically when the

variables are integrated of I(0) and I(1) (1). It can also be used in research with a small sample size (Pesaran et al., 2001). Furthermore, the ARDL technique may estimate the model's long-run and short-run parameters simultaneously.

3.3.1. Optimum Lag Length Selection

The maximum number of lags to include in the model is determined by optimal lag length. According to Pesaran and Shin (1999), ARDL representation of estimating co-integrating models does not require lag length symmetry. This means that the number of lag terms for each variable may vary. In addition, for annual data, Pesaran et al (2001) recommend a maximum lag length of two. In addition, Lutkepohl (2005) contends that the Schwarz Bayesian Information Criterion (SBIC, SC, or SIC) is superior in small sample sizes for lag length selection. Nonetheless, the smaller the criterion, the better the model.

After obtaining the estimates of an unrestricted vector autoregressive model (VAR), this study will select the least lag across all of the various information criteria to determine an appropriate maximum lag length.

3.4. Model Specification

3.4.1. The Mathematical Form of the Model

The mathematical form of the model in this study is expressed as;

$$LRGDP = F\ (LEEXP, LHEXP, INFR, LDSP, RIR, LREXCH) \quad (3)$$

Where;

L = The natural log of a particular variable,

RGDP = Real Gross Domestic Product,

EEXP = Education Expenditure,

HEXP = Health Expenditure,

INFR = Inflation rate,

DSP = Debt service payment,

RIR = Real interest rate,

REXCH = Real exchange rate.

3.4.2. The Econometric Form of the Model

The above model can be transformed to an econometric model as follows;

$$LRGDPt = \beta_0 + \beta_1 LEEXPt + \beta_2 LHEXPt + \beta_3 INFRt + \beta_4 LDSPt + \beta_5 RIRt + \beta_6 LREXCHt + \mu t \quad (4)$$

Where;
t = Time series property of the respective variables,
β_0 = The intercept term,
$\beta_1 - \beta_6$ = The slope or parameters of the respective independent variables,
μt = The random or stochastic term.

3.4.3. The Generalized form of the Model

The generalized ARDL form of the model is expressed as follows:

$$Y_t = \alpha_{0\,j} + \Sigma_{i=1}^{p} \Psi_{1i} Y_{t-1} \Sigma_{i=0}^{q} \Psi_{2i} X_{t-1} + \omega_t \tag{5}$$

Where;
provided that p and q do not necessarily suggest symmetry of lag-lengths,
p = optimum lag length for the predicted parameter.
q = optimum lag length for the predictors

The ARDL long run model of estimation of equation 5 above is expressed as follows:

$$LRGDP_t = \alpha_0 + \Sigma_{i=1}^{p} \Psi_{1i}\, LRGDP_{t-i} + \Sigma_{i=0}^{q} \Psi_{2i}\, LEEXP_{t-i} + \Sigma_{i=0}^{q} \Psi_{3i} LHEXP_{t-i} +$$

$$\Sigma_{i=0}^{q} \Psi_{4i} INFR_{t-i} + \Sigma_{i=0}^{q} \Psi_{5i} LDSP_{t-i} + \Sigma_{i=0}^{q} \Psi_{6i} RIR_{t-i} + \Sigma_{i=0}^{q} \Psi_{7i} LREXCH_{t-i} + \omega_t \tag{6}$$

Where;
The variables (RGDP, EEXP, HEXP, INFR, DSP, RIR, REXCH) are the same as earlier defined.
L = same as earlier defined.
Σ and $t - i$ = Summation operator and lagged terms of respective variables.
ψ_{1i}, ψ_{2i}, ψ_{3i}, ψ_{4i}, ψ_{5i}, ψ_{6i} and ψ_{7i} = ARDL long-run parameters for the explanatory variables.
α_0 and ω_t = Intercept parameter and stochastic term respectively.
p and q = Maximum lag lengths of the dependent and independent variable respectively (It is vital to note that symmetry of lag length is not necessarily required).

3.4.4. The ARDL-ECM form of the Model

The residual variable is obtained from the long run relationship in the final step of the ARDL bounds test approach. It is then used to estimate the ECM model. The short-run and long-run parameters are combined in the ECM model. It is specified for the purposes of this study as follows:

$$\Delta LRGDP_t = \alpha_0 + \Sigma_{i=1}^{p} \Omega_{1i}\, \Delta LRGDP_{t-i} + \Sigma_{i=0}^{q} \Omega_{2i}\, \Delta LEEXP_{t-i} + \Sigma_{i=0}^{q} \Omega_{3i}\, \Delta LHEXP_{t-i} + \Sigma_{i=0}^{q} \Omega_{4i}$$
$$\Delta INFR_{t-i} + \Sigma_{i=0}^{q} \Omega_{5i}\, \Delta LDSP_{t-i} + \Sigma_{i=0}^{q} \Omega_{6i}\, \Delta RIR_{t-i} + \Sigma_{i=0}^{q} \Omega_{7i}\, \Delta LREXCH_{t-i} + \theta ECM_{t-i} + \nu_t \tag{7}$$

Where;

The variables (RGDP, EEXP, HEXP, INFR, DSP, RIR and REXCH) and other similar terms with equation (7) remain the same as earlier defined.

Ω_{1i}, Ω_{2i}, Ω_{3i}, Ω_{4i}, Ω_{5i}, Ω_{6i} and Ω_{7i} = ARDL short-run parameters for the independent variables.

Δ = Short-run operator.

v_t = Short-run error term.

ECM_{t-i} = Error correction term obtained from the long-run equilibrium relationship.

θ = The parameter of ECM_{t-i} indicating the speed-level of adjustment to equilibrium after a disturbance.

4. RESULTS

4.1. Unit Root Tests and the Order of Integration

The overview of the unit root test results for the series is shown in Table 2. The ADF (Augmented Dickey-Fuller) test was employed. Only LDSP was stationary at levels, while all other variables were non-stationary, as their absolute value of the ADF test statistic exceeded the critical value only at first difference. As a result, we observe that most of the variables became stationary at their first difference, allowing the error correction model to be used in the autoregressive framework. The results also show that not a single of the variables are I(2), which supports the adoption of the ARDL model for the research.

Table 2: Augmented Dickey-Fuller Test Results

Variable	*ADF.T-Statistic at levels*	*ADF. 5% Critical value*	*ADF.T-Statistic at 1st Difference*	*ADF. 5% Critical value at 1st Difference*	*Order of Integration*
LRGDP	-0.22	-2.96	-3.19	-2.96	I (1)
LEEXP	-3.22	-3.56	-5.64	-3.57	I (1)
LHEXP	-0.63	-3.60	-6.13	-3.60	I (1)
INFR	-3.47	-3.57	-4.86	-3.63	I (1)
LDSP	-3.19	-2.96	-	-	I (0)
RIR	-3.48	-3.57	-4.30	-3.58	I (1)
LREXCH	-2.03	-3.56	-5.27	-3.57	I (1)

Source: Authors' Computation using Eviews output

As shown from the result of table 2 above, none of the variables is I(2). The variables are all I(1) except one, which is one of the major conditions to use ARDL

estimation technique as those variables are an admixture of orders of co-integration or stationarity.

4.2. Optimum Lag-length Selection

According to section three of this study, the ARDL model requires determining the maximum lag length of variables based on various selection criteria.

The decision rule is to choose the lag length with the least asterisked values across all information criterion. The lowest value best minimises the model's error.

Table 3: Lag-length Estimation Result

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	51.16481	NA	0.002525	-3.15463	-2.82158	-3.05281
1	85.80555	49.48677	0.00023	-5.55754	-5.17691	-5.44118
2	88.72017	3.955544*	0.000202*	-5.6943	-5.266089*	-5.563390*
3	89.70803	1.270106	0.000204	-5.69343	-5.21764	-5.54798
4	90.94463	1.501593	0.000203	-5.710331*	-5.18697	-5.55033

Source: Authors' Computation using Eviews output

4.3. ARDL Bounds Test

We use the Autoregressive Distributed Lag (ARDL) bound testing approach to see if there is a long run relationship between the variables in the study (Pesaran and Shin, 1999). The critical value of the ARDL Bound testing is determined by the chosen lag length; thus, the ideal lag (p) is established empirically using the Hannan Quinn Criteria (HQC).

Table 4: The ARDL Bounds Test

F-Bounds Test			*Null Hypothesis: No levels relationship*	
Test Statistic	*Value*	*Signif.*	*I(0)*	*I(1)*
			Asymptotic: n=1000	
F-statistic	9.550745	10%	2.12	3.23
K	6	5%	2.45	3.61
		2.5%	2.75	3.99
		1%	3.15	4.43

Table 4 shows that the F-statistic of the Wald test is bigger (>) than the lower and upper critical bounds at the 5% level of significance. As a result, the null hypothesis is

rejected, and we infer that co-integration exists among the variables used in this study. That is, there is a stable, long-term relationship. As a result, this study estimates the long-run and short-run models. In addition, an ECM model is estimated to account for a certain time of adjustment.

4.3. Estimation Results for the model

Table 5: Estimated Long-run Coefficients Based on ARDL (1, 2, 1, 0, 2, 0, 1)

Dependent Variable: LRGDP				
Variable	*Coefficient*	*Std. Error*	*T-Stat*	*Prob*
C	14.99042	0.590063	25.40478	0.0000
LEEXP	-0.235549	0.060634	-3.884744	0.0013
LHEXP	0.291051	0.064206	4.533068	0.0003
INFR	-0.00372	0.003529	-1.054048	0.3075
LDSP	-0.058463	0.028366	-2.060996	0.0559
RIR	-0.003326	0.005222	-0.636967	0.5332
LREXCH	0.006110	0.054163	0.112812	0.9116

R-squared = 0.998964; Adjusted R-squared = 0.998121; D-W Stat = 2.245656; F-Stat = 1186.208; Prob(F-Stat) = 0.000000

Diagnostic Tests

Test	χ_2 *value*	*Prob. Value*
Autocorrelation Test	0.930842	0.3346
Hetereoscedasticity Test	14.28772	0.3539
Ramsey Reset Test	1.294658 (F-Stat)	0.2730

Source: Authors' Computation from Eviews Output.

The constant term in the regression result, as shown in Table 5 above, has a value of 14.99042, indicating that RGDP will grow by 14.99042 when all other explanatory variables are held constant or set equal to zero. However, this has no economic significance because the independent variables cannot take zero values in reality.

Education expenditure has a long-run negative coefficient of -0.235549, which implies that holding all other variables constant, a percentage increase in LEEXP will on the average decrease RGDP by 0.235549%. Thus, the regression result shows that LEEXP has a negative relationship with RGDP. This does not conform to *a priori* expectation which states that, the higher the expenditure on education, the higher the economy will grow. The result is also statistically significant. The reason for this

unexpected result could be that the huge expenditures on education are being siphoned into private pockets and are not being utilised as required. This is consistent with the work of Ojewumi and Oladimeji (2016) in Nigeria.

Health expenditure has a long-run positive coefficient of 0.291051, which implies that holding all other variables constant, a percentage increase in LHEXP will on the average increase RGDP by 0.291051%. Thus, the regression result shows that LHEXP has a positive relationship with RGDP. This conforms to *a priori* expectation which states that, the higher the expenditure on health, the higher the economy will grow. The result is also statistically significant. This achievement could be attributed to Nigeria's improved public expenditure strategy, which has contributed positively to the country's real output growth. This is consistent with Oni's (2014) work in Nigeria.

The R^2 of the model in table 5 above is 0.998964 which means that about 99.9%, of the total variations in economic growth (LRGDP) are explained by variations in the regressors such as LEEXP, LHEXP, INFR, LDSP, RIR, and LREXCH. This also shows that the model is a good fit.

The overall significance of the model is evaluated here using the probability value of the F-statistic. If the Prob. (F-Stat.) is less than 5%, the model is statistically significant. Table 5 reveals that the probability value of F-statistics is 0.0000, which is less than the 5% level of significance; thus, the model is statistically significant at the 5% level.

The diagnostic test in table 5 above also indicates that the model is free from the problems of autocorrelation, heteroscedasticity and mis-specification error.

Table 6: Short-run and ECM Regression Result

Dependent Variable: LRGDP

Variable	*Coefficient*	*Std. Error*	*T-Stat*	*Prob*
D(LEEXP)	-0.018824	0.004782	-3.93671	0.0012
D(LEEXP(-1))	-0.010788	0.002134	-5.055799	0.0001
D(LHEXP)	0.014538	0.00501	2.901771	0.0104
D(LDSP)	-0.002363	0.001936	-1.220947	0.2398
D(LDSP(-1))	0.004818	0.001935	2.489434	0.0242
D(LREXCH)	-0.018774	0.004893	-3.83662	0.0015
ECM(-1)	-0.171658	0.010387	-16.52599	0.0000

Source: Authors' Computation from Eviews Output.

Table 6 shows the short-run dynamics of education spending, health spending, and real GDP in Nigeria. The error correction term parameter has a negative sign and is statistically significant, showing that it is consistent with economic expectations to the degree that it indicates the possibility of correcting lags or disequilibrium in the

long run. The coefficient of the error correction model is -0.171658. This means that any shocks or disturbances from the previous year will be corrected by up to 17.2% the following year. This means that if an economic shock occurs, the variables do not return to long run equilibrium rapidly.

5. CONCLUSION AND RECOMMENDATION

This study examined the impact of social spending on economic growth in Nigeria using annual data from 1989 through 2020. The Autoregressive Distributed Lag model was used to analyse the long-run and short-run relationship between growth in the economy and social expenditure. The error correction model was used to reconcile the short run dynamics with the long run equilibrium of the variables. In this work, the Cobb-Douglas production function was modified and applied.

Economic growth in Nigeria was revealed to increase as a result of an increase in health spending both in the short-run and the long-run. As a result, the budgetary allocation meant for the health sector should be increased by the government. The use of disbursed funds for projects can be carefully scrutinized by establishing a good administrative/monitoring team, particularly in the area of acquisition of materials, as this is a major channel through which political office holders and other government appointees collude with government contractors to syphon or misappropriate taxpayer resources in the country.

But so far, education spending had a negative and considerable impact on economic growth over the study period. In order for expenditure on education to have a positive influence on economic growth, the educational system should be probed to ensure that education funding is used appropriately.

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