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EFFECT OF PRODUCTIVE EXPENDITURE ON ECONOMIC GROWTH OF NIGERIA AS MODERATED BY PUBLIC DEBT

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Abstract

The study investigated the effect of productive expenditure on the economic growth in Nigeria as moderated by public debt for the period of thirty one years, from 1991-2021. Ex-post facto research design was adopted. The data used in this study were secondary data derived from the Central Bank of Nigeria Statistical Bulletin while public debt data was sourced from Debt Management Office Annual Reports. The study used multiple regression analysis and the result revealed that both economic service and social service expenditure have positive significant effect on economic growth but when moderated by public debt showed economic service expenditure has positive significant effect on economic growth while social service expenditure has a negative significant influence on economic growth in Nigeria. The study concluded that economic service and social service expenditures have effects on economic growth in Nigeria. The study recommends that the government should increase public spending on social services. This can be accomplished by utilizing public funding to improve educational quality at all levels of learning (primary, secondary, and higher education) through training programs that give the skills and information needed to increase labor productivity and create additional job possibilities. Furthermore, public spending in the health and social security sectors should be directed toward constructive expenditures that promote economic growth.

Key Words: Productive Expenditure, Expenditure, Economic Growth, Public Debt.

1. Introduction

Government expenditure remains an important instrument in the process of development. It plays a pivotal role in the functioning of any economy at almost all stages of growth and development. Most developing and developed countries today use government expenditure to improve income distribution, direct the allocation of resources in desired areas, and influence the composition of national income (Assi, *et al.*, 2019;

Vtyurina, 2020). The variation in government expenditure pattern is not only projected to guarantee stabilization but also to spur economic growth and expand employment opportunities (World Bank, 2015). Government expenditure constitutes a major element in the national income estimates using the expenditure method. Thus, government expenditure is a contributing factor to the size and growth of the economy. Its contributions to economic growth could come with positive or negative consequence. For instance, in

developing countries where there are market failures, it can encourage aggregate output growth or have adverse effect such as inflation and boom-bust cycles (Wang & Wen, 2013).

Government expenditures in Nigeria are broadly categorised as productive and protective expenditure. Productive expenditure includes economic service (agriculture, transport, construction and communication and other economic services) and social and community services (education, health and other social and community services). Protective expenditure captures general administration (defense, internal security and national assembly) and transfers (public debt servicing, pensions and gratuities, contingencies/subventions, etc) (Aruwa, 2010; CBN Statistical Bulletin, 2017). All these classes of government expenditures, apart from government transfers, have capital and recurrent components. Government expenditure effectiveness in improving the economy and promoting rapid economic growth depends on its productivity or unproductivity. Productive government expenditure would lead to positive effect on the economy, while unproductive expenditure would result in negative effect *ceteris paribus* (Aigheyisi, 2013). However, this focused on productive expenditure.

The size of government expenditures and its effect on economic growth, and vice versa, has been an issue of sustained interest for several decades now. The relationship between government expenditure and economic growth has continued to generate series of debate among scholars. Some have argued that increase in government expenditure on socio-economic and physical infrastructures encourage economic growth. For example, government expenditure on health and education raises the productivity of labour and increase the growth of national output. Similarly, expenditure on infrastructure such as roads, communications, power, etc, reduces production costs, increases private sector investment and profitability of firms, thus fostering economic growth. As observed by Danladi *et al.* (2015), the expansion of government expenditure contributes positively to economic growth. The general view is that public expenditure either recurrent or capital

expenditure, notably on social and economic infrastructure can be growth-enhancing (Magazzino, 2012; Ebaidalla, 2013; Wajid & Kashif, 2016). The provision of infrastructural services to meet the demands of business, households, and other users is one of the major challenges of economic growth in developing countries like Nigeria.

Public debt plays an important role in smoothing consumption and financing productive investments. However, there are many criticisms against public debt, as it may lead to debt trap and thereby impede on a country's growth process, but it will not have detrimental impact at all times on the economy when properly utilised (Burriel *et al.*, 2020). Furthermore, public debt is both useful and harmful to an emerging economy (Shahzad *et al.*, 2014). However, if it is used for productive public investment and infrastructural provisions, it becomes beneficial to a developing country. Borrowing for execution of capital projects is common among non-industrialised countries. Foreign loans are usually acquired to finance public investments required to unlock economic growth opportunities of a nation. Shehu and Aliyu (2014) opined that countries borrow for macroeconomic reasons, which involves financing of capital investment, higher consumption and the improvement of budget deficit. Thus, it is imperative for emerging countries to employ external loans to financing developmental projects and every other capital investment capable of developing the debtors' country (Odubuasi *et al.*, 2018). Furthermore, public debt as a main macroeconomic indicator depicts the picture of a country in the international markets and it is also a major determinant of inflow of foreign direct investment. It is on this basis that Umoru and Erunke (2016) decried that 80% of Nigeria's revenue is unavoidably used to service public debt which has become a regular phenomenon.

Recent general economic prediction expressed that by 2023 Nigeria would have used about 97% of its revenue to service debt (IMF, 2022). Governments in developing economies, where budget deficit and financial gaps exist between savings and investment, use debt as an imperative tool to finance its expenditures. But, if the proceeds of public debt are not prudently invested, it

would not only result in debt overhang but would also retard economic growth.

In Nigeria, government expenditure has continued to rise due to the increasing demand for public goods like roads, communication, power, education and health. Also, there is the increasing need to provide both internal and external security for the people and the nation. Furthermore, productive expenditure, economic services, social and community services have been on the rise. Government expenditure on social and community service expenditure increased from ₦79.63 billion in 2001 to ₦807.59 billion in 2015, and ₦1311.26 billion in 2019. While, economic services expenditure increased from ₦255.78 billion in 2016 to ₦450.77 billion in 2019. However, the GDP rose from 94144.96 in 2015 to 127736.82 in 2018 and 144210.49 in 2019 (CBN Statistical Bulletin, 2019). Despite all these, there is a mixed feeling depicting whether increasing government spending induces economic growth or not.

The need for such study is to bridge the gap in literature since these relationships have not been researched extensively in Nigeria. Thus, this study focused on economic service expenditure, social service expenditure, economic growth and public debt as the moderator variable. Furthermore, the main objective of this study is to examine the effect of productive expenditure (economic service and social service expenditure) on the economic growth (real gross domestic product) in Nigeria as moderated by public debt. Therefore, the objective of this study is to investigate the effect of productive expenditure on economic growth in Nigeria as moderated by public debt.

2. Literature Review

This study reviewed previous studies conducted in Nigeria regarding productive expenditure, economic growth and public debt, the conceptual framework in this study is presented as below:

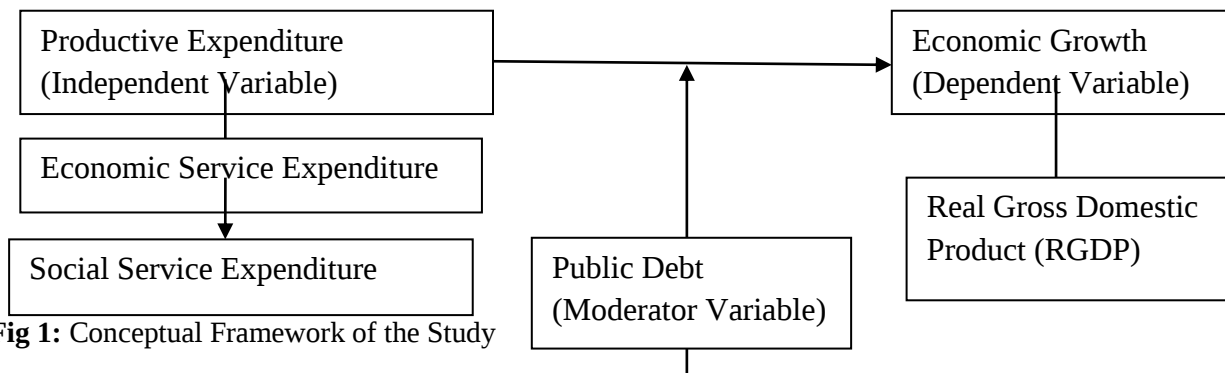


Fig 1: Conceptual Framework of the Study

Productive Expenditure: Productive expenditures are in the nature of investment which helps the economy in improving its productive capacity while the unproductive versions are expenditures in form of consumption. The productive ones are those that are committed to incur and maintain social overheads. Devarajan, *et al.* (1996) opined that productive expenditures, when used in excess, could become unproductive. According to CBN (2017), productive expenditure comprises of expenditures on economic services (Agriculture, construction, transportation and communication, industry, energy, mineral foreign trade

and others) and social services (Education, health, labour welfare, science, research and others).

Economic Service Expenditure: According to Mulinge (2016), economic service expenditure are expenditure incurred by government such as labour, salaries, interest on loans, and maintenance, agriculture, building, transportation, and communication, among other economic services expenditure components are all intended to help the economy grow.

Social Service Expenditure: According to Ihugba and Njoku (2016), social and community services include those services which benefit all of citizens rather than

just the individual who uses the service (such as public education and health, etc) and services that encourage equal opportunity and those services to people who are socially and economically disadvantaged or who have special needs for care and support. This expenditure promotes economic growth and aids in the reduction of income and wealth disparities among a country population. If used wisely, it can be used to promote economic growth by facilitating trade as well as correcting externalities and regional imbalances. Yesufy (2000) and Adamu (2003) assume that education, training, health care, and all investments in social services enhance and improve the human capacity and consequently the economic growth. However, in Nigeria, social capital spending varies from government to government, year to year, and political system to political system, leaving only evidence of mismanagement, misapplication, and misuse of funds allocated for infrastructure development. Therefore, education, health, and other social and community service are all included in social service recurrent expenditure.

Economic Growth: Solow (1956) described economic growth as a term used to indicate the increase in per capita GDP or other measures of aggregate income. In other words, economic growth refers to increase in a country's potential Gross Domestic Product (GDP), although this differs depending on how national product has been measured. Economic growth refers to the continuous increase in the national output or income of a country. It is the increase overtime of an economy's capacity to produce goods and services needed to improve the wellbeing of the citizen in increasing numbers and diversity. However, economic growth is described as the increase in output of an economy capacity to produce goods and services needed to improve the welfare of the citizens of the country (Balami, 2006; Muritala & Taiwo; 2011). Thus, the ultimate goal of economic growth is to make the people better off.

According to Ogundipe and Oluwatobi (2010), economic growth must be sustained for a developing economy to break the circle of poverty. Economic

growth can be defined as the steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income (Todaro & Smith, 2005). However, it is pertinent to note that growth is concerned solely with quantitative and measurable attributes (Ogboru, 2006).

More so, Bhatia (2002) noted that it is through public spending that infrastructure which promotes economic growth are created, regional disparities are reduced, social overheads are developed, education and training of the citizens are catered for etc. Rostow (1960) also identified public expenditure as an essential tool that developing nations like Nigeria needs to develop. He stated that for a country to move from the stage of precondition for take-off to the next stage of development there is need for social overhead capital, and this can mainly be provided by government because no private investor would invest in such project because it has long gestation period, rarely profitable, and has externalities. Thus, government has crucial role to play by providing such social overhead capital. Therefore, there is need for an increment in public expenditure for the economy to grow. Therefore, this study described economic growth as the increase in the market value of the goods and services produced by an economy over time. It is conventionally measured as a percent rate of increase in real gross domestic product (RGDP).

Public Debt: Public debt is the total amount that a government owes to its creditors. Public debt is characterised as either domestic (internal) debt or external (foreign) debt. According to Makau (2008), public debt is a nation's total debt comprising of national and local government debt, which is a portion of public spending financed through borrowing instead of by taxation. Akram (2011) stated that public debt can be classified into domestic debt and foreign debt. Oshandami (2006) defined domestic debt as debt instrument issued by the Federal government and dominated in local currency. Government can acquire domestic debt from different sources such as the Central Bank, commercial banks and non-bank financial institutions.

External debt is debt that is owed to external creditors who include multilateral creditors, bilateral creditors and private institutions such as the Standard Bank UK. Furthermore, external debt make new money available for a country to invest in provision of public infrastructure such as schools, hospitals, roads, dams, railways, power stations among others. Proper use of external debt leads to some benefits to an economy. For instance, acquisition of external loans provides an opportunity for a country to make capital investments such as purchase of advanced equipment and modernised technologies which are necessary for efficient production of goods and services. Thus, the impact of external debt on investment can either be positive or negative depending on whether the debt is efficiently utilised or not. If properly utilised, external debt acts as a lubricant for the economy by providing liquid capital for investment, facilitating employment creation and increasing national output for domestic use as well as for export (Munzara, 2015). Therefore, this study sees public debt as the total debt of Nigeria, both domestic debt and external debt.

2.1 Empirical Review

Economic Service Expenditure and Economic Growth

Studies on economic service expenditure and economic growth were reviewed and critique. Using panel co-integration based on Pedroni and Panel Vector Error Correction Model (PVECM) with Engle and Granger's procedure for empirical analysis, Onuoha and Agbede (2019) evaluated the long-run and short - run equilibrium relationship between economic growth and disaggregated public expenditure in selected West African Countries with panel data spanning 1990 - 2017. The study analysis revealed that expenditure on infrastructure has positive significant impact on economic growth. The strength of the study lies on the disaggregated data used to determine the individual short and long run relationship between variables of the study. Meanwhile, the study reviewed above is a cross country study and each country has some unique cultural, institutional, legal environments that cannot be captured by the study. Therefore, the results of the study cannot

be generalised to a specific country. Furthermore, the study used a panel data spanning from 1990 to 2017 which is not appropriate for a time series study like this. However, this current study will use a disaggregated time series data for the period of 31 years from 1991 to 2021 and include a moderating variable of public debt which makes it different from the study of Onuoha and Agbede (2019).

Using the sectorial economic function approach, Duruibe, *et al.* (2020) analysed the effect of government public expenditures on Nigeria's economic growth and development. The Real Gross Domestic Product (GDP) which is the outcome variable in this study was employed as the proxy for economic growth while government's expenditures on administrative services, economic services, social and community services, and transfers were used as the predictor variables in the study. The result from the cointegration test and Vector Error Correction Model estimate revealed that expenditures on economic services had a positive significant effect on economic growth. Also, the result from Wald coefficient diagnostic test revealed that there is short run causality running from the public expenditure aggregates to economic growth. The study analysed the effect of government expenditure on economic growth of Nigeria and used the right method of data analysis, while this study seeks to examine the effect of government expenditure on economic growth of Nigeria as moderated by public debt. this study will apply OLS, ADF and regression technique which is different from the method used by prior study and reason for using regression is because its accommodates time series data with varying order of integration.

The study conducted by Olayiwola, *et al.* (2021) used Vector Auto-regressive Analysis (VAR) to examine the effects of public expenditure on income growth in Nigeria. Administration, community services, defence and economic services are proxies for public expenditure. The study results showed that real income responds positively to public expenditures on economic services. The results also confirm the feed-back effects of income and government expenditures on economic services. The methodology used and period covered by

the study is adequate for a time series study. More so, the study used the appropriate proxies for government expenditure (administrative, community services, defence and economic services). However, this current study will use a disaggregated time series data for the period of 31 years from 1991 to 2021 and include a moderating variable of public debt which makes it different from the study of Olayiwola, *et al.* (2021).

Social Service Expenditure and Economic Growth

Previous studies social service expenditure and economic growth carried out in Nigeria were reviewed. However, Ejem and Ogbonna (2019) examined the effects of recurrent expenditure components; namely, Administration, Social and Community Services, Economic Services and Transfers, on economic growth in Nigeria. The VAR methodological framework was employed while the empirical data cover from 1981 to 2016. The results showed that while GDP responded negatively to a one standard deviation shock to recurrent expenditure on social and community services. The results further showed that most of the GDP shocks are due to own effect. However, the Granger Causality test showed that recurrent expenditure components none has a causal impact on GDP both individually and collectively. Therefore, the Keynesian view that public expenditure is a veritable fiscal tool for promoting and enhancing economic growth is not supported. The study reviewed above employed VAR technique of analyzing data while this current study will employ Augment Dickey Fuller test, OLS and regression technique of data analysis. However, this current study includes a moderating variable of public debt and also, cover the period when both government expenditure and public debt profile is rising but does not have relative increase in the GDP.

Onuoha and Agbede (2019) employed panel co-integration based on Pedroni and Panel Vector Error Correction Model (PVECM) with Engle and Granger procedure for empirical analysis to analyze the long-run and short-run equilibrium relationship between economic growth and disaggregated public expenditure in selected West African Countries with panel data

spanning 1990-2017. Findings revealed that expenditure on health and education has positive impact on economic growth. Also, education expenditures at lags have indirect and insignificant influence on economic growth while health expenditure has direct and insignificant impact on economic growth at all lags. The strength of the study lies on the disaggregated data used to determine the individual short and long run relationship between variables of the study. Meanwhile, the study reviewed above is a cross country study and each country has some unique cultural, institutional, legal environments that cannot be captured by the study. Therefore, the results of the study cannot be generalised to a specific country. Furthermore, the study used a panel data spanning from 1990 to 2017 which is not appropriate for a time series study like this. However, this current study will use a disaggregated time series data for the period of 31 years from 1991 to 2021 and include a moderating variable of public debt which makes it different from the study of Onuoha and Agbede (2019).

Onwuka (2021) employed the use of Augmented Dickey Fuller test, Co integration test and Vector Error Correction technique (VECM) as the statistical techniques of analysis to empirically examine the impact of disaggregated government expenditure on economic development in Nigeria using data spanning from the periods 1981 to 2020. From the study, the error correction model showed about 70.9 percent of the short run shocks in HDI in Nigeria are adjusted annually and such high speed of adjustment is very fundamental in the process of policy conception, formulation and implementation. Findings revealed that there is a long run equilibrium relationship between human development index and various government expenditures variables as shown by the error correction model which is very high significant. Also, the results showed that in the long run that government expenditure on education and health expenditure have a positive significant impact on human development index. Furthermore, the short run estimates showed that government expenditure on education was found to be significant at lag period one respectively. Conversely,

government expenditure on health has a direct and insignificant effect on human development index in Nigeria. The study method of data analysis and variables used are proper for a time series study. Therefore, this study examines the effect of government expenditure on economic growth of Nigeria as moderated by public debt. Meanwhile, this study introduced a moderating variable (public debt) which the study of Onwuka (2021) did not include.

Public Debt and Economic Growth

Public debt and economic growth were reviewed and critique. Ezenwobi and Anisiobi (2021) examined the resultant effect of government borrowings on economic development in Nigeria. The study span from the period of 1990 to 2020 and annual data was sourced secondarily from the World Development Indicators database (2020) and CBN statistical bulletin which were analysed using multiple regression model with Augmented Dickey-Fuller (ADF) unit root test, Johansen co-integration, and Error Correction Mechanism (ECM). The study employed external debt (EXD), domestic debt (DOD), interest rate (INTR), and inflation (INF) as independent variables whilst the human development index (HDI) was used as the dependent variable and was a proxy for development. The result revealed a positive statistically significant relationship between external debt and economic development the same as domestic debt and economic development in Nigeria, while interest rates have a negative statistically significant relationship with economic development in Nigeria.

Nwamuo and Agu (2021) investigated the impact of public debt on the economic growth in Nigeria. Annual time series data were obtained from the Central Bank of Nigeria Statistical for the period 1981 - 2019 on the variables used for the study. Unit root test was conducted using Augmented Dickey-Fuller test and Phillips-Perron test techniques and the results showed that the variables were stationary though at different levels. Co-integration test was also conducted using Johansen co-integration test method and the result showed that the variables in the model were co-

integrated meaning that the variables have a long run relationship. The error correction mechanism showed that the coefficient of multiple determinations (R^2) in the over parameterised model was 0.890783 while it was 0.846548 in the parsimonious model. The short run regression result showed that external debt has a negative and insignificant impact on the economic growth in Nigeria. The short run result also showed that domestic debt has a positive and significant impact on the economic growth in Nigeria while credit to private sector has a negative and insignificant impact on the economic growth in Nigeria. The result from long run dynamic analysis revealed that external debt has a negative and insignificant impact on the economic growth in Nigeria while domestic debt has a positive and significant impact on the economic growth in Nigeria. The long run dynamic analysis also showed that credit to private sector has a positive and significant impact on the economic growth in Nigeria.

There are several theories that explain the relationship between productive expenditure, economic growth and public debt in the literature of public finance. For the purpose of this study, Wagner's Theory, Keynesian Theory and Ricardian Theory Equivalence serve as a leading theory since attainment of productive expenditure, economic growth and public debt is our bases of the study.

3. Methodology

This study adopts ex post facto research design to establishing causal relationships between productive expenditure, economic growth and public debt. In other words, ex post facto research design helps to find out the cause of certain occurrences or non-occurrences. The data for the study were sourced from Central Bank of Nigeria Statistical Bulletin and Debt Management Office Annual Reports. These data were collected for the periods of thirty one (31) years, covering the periods of 1991 to 2021. However, the data for this study was analysed using regression analysis. Multicollinearity and normality test were carried out. The stationarity property of the time series variables was tested using the Augmented Dickey Fuller (ADF) test statistics for unit

root and avoid the problem of spurious regression since the data for the analysis is time series. Post diagnostic tests were carried out, such as Heteroskedasticity Test using Breusch-Pagan-Godfrey.

The econometric model for this study as stated below to test for possible relationship between the dependent variable and independent variables. The study is guided by the following model:

$$RGDP_t = \beta_0 + \beta_1 ESEX_t + \beta_2 SSEX_t + \beta_3 PUDT_t + \beta_4 ESEX_t * PUDT_t + \beta_5 SSEX_t * PUDT_t + \mu_t \quad (1)$$

Where;

RGDP = Real Gross Domestic Products

ESEX = Economic Service Expenditure

SSEX = Social Service Expenditure

PUBT=Public Debt

$\alpha_1, \alpha_2, \alpha_3, \alpha_4$ and α_5 examine the both short run dynamic relationship and investigate the long-run relationship between dependent variable and independent variables.

Table 1: Variable Measurement

S/N	VARIABLE	MEASUREMENT	Source	Empirical Support
1	Economic Service Expenditure (Independent Variable)	Economic services expenditures are government expenses on agriculture, construction, transportation and communication, and other economic services.	Central Bank of Nigeria Statistical Bulletin	Darma (2014); Bonmwa, and Ishmael (2017); Omokri, et al. (2018); Olufemi and Oladipo (2021)
2	Social Service Expenditure (Independent Variable)	Social and community service expenditures are government expenses on education, health and other social and community services.	Central Bank of Nigeria Statistical Bulletin	Darma (2014); Bonmwa, and Ishmael (2017); Omokri, et al. (2018); Olufemi and Oladipo (2021)
3	Economic Growth (dependent Variable)	Economic growth is described as the increase in the market value of the goods and services produced by an economy over time. It is conventionally measured as a percent rate of increase in real gross domestic product (RGDP)	Central Bank of Nigeria Statistical Bulletin	IMF (2012); Bonmwa, and Ishmael (2017); Jeff-Anyeneh and Ibenta (2019); Duruibe, et al. (2020)
4	Public Debt (Moderator Variable)	Public debt stock comprises of both domestic public debt and external public debt of the Federal Government of Nigeria and sub-nationals. This is represented by the disbursed outstanding debt as at 31 st December of each year.	Debt Management Office Annual Reports and Central Bank of Nigeria Statistical Bulletin	Obudah&Tombofa (2013); Asaleye, Oladipo &Obasaju (2018); Ogunjimi (2019)

Source: Researcher's Compilation, 2023

4. Results and Discussion

Table 2: Descriptive Statistics

	RGDP	ESEX	SSEX	PUDT	ESEX_PU DT	SSEX_PUD T
Mean	49584.47	189.6300	442.3526	739.5036	273652.3	760878.3
Maximum	176075.5	562.7500	1519.020	4221.653	2091089.	6071052.
Minimum	590.0600	1.300000	1.340000	19.40026	34.42853	25.92157
Std. Dev.	52707.36	182.0415	477.4981	1033.359	511084.8	1495589.
Observations	31	31	31	31	31	31

Source: E-view Output, 2023

Table 2 indicates the rundown of the descriptive statistics. It revealed the entirety of 31 years from 1991 - 2021. Table 2 shows the average value of Real Gross Domestic Product (RGDP) to be 49584.47 which indicates a low Real Gross Domestic Product (RGDP). The max value of RGDP is 176075.5 with mini value of 590.0600 and standard deviation of 52707.36. This implies that the data are widely dispersed from the mean value. Furthermore, Economic Service Expenditure (ESEX) mean is 189.6300, max is 562.7500, mini of 1.300000 and standard deviation of 182.0415. It implies that the data are not widely dispersed from the mean. Also, the mean value of Social Service Expenditure (SSEX) is 442.3526, max value is 1519.020, with the mini value of 1.340000 and standard deviation of 477.4981. This indicates that the data are widely

dispersed from the mean. More so, the average of Public Debt (PUDT) is 739.5036, the max value of 4221.653, mini value of 19.40026, standard deviation value of 1033.359. This implies that the data are widely dispersed from the mean.

Meanwhile, from Table 2 above, the moderated Economic Service Expenditure (ESEX) has average value of 273652.3, while max, mini and standard deviation value of 2091089, 34.42853 and 511084.8. This implies that the data are widely dispersed. However, moderated Social Service Expenditure (SSEX) has a mean value of 760878.3, while, max, mini and standard deviation value of 6071052, 25.92157 and 1495589. This indicates that the data are widely dispersed from the mean.

Table 3: Correlation Matrix

	RGDP	ESEX	SSEX	PUDT	ESEX__ PUDT	SSEX_PU DT
RGDP	1.000000					
ESEX	0.853439	1.000000				
SSEX	0.986248	0.867468	1.000000			
PUDT	0.935697	0.732892	0.908373	1.000000		
ESEX_PUDT	0.879778	0.721126	0.864037	0.980519	1.000000	
SSEX_PUDT	0.875788	0.686301	0.859810	0.981832	0.997844	1.000000

Source: E-view Output, 2023

The correlation matrix Table 3 above shows the association values between each explanatory variable and dependent variable. Therefore, the correlation matrix result indicates that Real Gross Domestic Product (RGDP) has a positive association with ESEX, SSEX,

PUDT, ESEX_PUDT, SSEX_PUDT, even when moderated by public debt. The study revealed both positive and negative association between the variables. However, the predictor variables do not exhibit any problem of collinearity.

Table 4: Variance Inflation Factors

	Coefficient	Uncentered	Centered
Variable	Variance	VIF	VIF
ESEX	122935.1	114.0912	1.143954
SSEX	1973912.	1771.197	4.146484
PUDT	933702.0	421.0711	4.175221
ESEX_PUDT	7.54E-16	10.27828	6.064100
SSEX_PUDT	3.90E-16	5.904601	4.171487
C	3.55E+08	3768.842	NA

Source: E-view Output, 2023

The tolerance values and the variance inflation factor are two good measures of assessing multicollinearity between the independent and dependent variables in a study. The result shows that variance inflation factor were consistently smaller than ten (10) indicating complete absence of multicollinearity (Neter, Kutner, Nachtsheim & Wasserman, 1996; Cassey *et al.*, 1999).

This shows the suitability of the study model been fit with the two independent variables. Also, the tolerance values were consistently smaller than 10.00, therefore extend the fact that there is complete absence of multicollinearity between the independent and dependent variables (Tobachmel & Fidell, 1996).

Table 5: Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.296492	Prob. F(9,20)	0.2986
Obs*R-squared	11.05369	Prob. Chi-Square(9)	0.2720
Scaled explained SS	4.411019	Prob. Chi-Square(9)	0.8823

Source: E-view Output, 2023

The Breusch Pagan-Godfrey Test of Heteroskedasticity shows that the probability chi-square value of 0.2720, this implies that the data are homokesdasticity. Thus, the p-value of 0.2720 and observe R-squared of 11.05369

which is greater than 0.05 makes the study to accept the null hypothesis that the residuals are not heteroskedasticity but homokesdasticity and is desirable.

Table 6: Unit Root Test for Stationarity (Augmented Dickey Fuller)

Variables	ADF Test	Critical Value			Order of Integration
		1% critical value	5% critical value	10%critical value	
RGDP	-8.717689	-3.689194	-2.971853	-2.625121	2 nd Diff
ESEX	-7.537460	-3.689194	-2.971853	-2.625121	2 nd Diff
SSEX	-6.439010	-3.689194	-2.971853	-2.625121	2 nd Diff
PUDT	-6.644935	-3.689194	-2.971853	-2.625121	2 nd Diff

Source: E-view Output, 2023

The unit root test in table 6 above shows that at various levels of significance (1%, 5% and 10%), the time series were stationary. From the result RGDP, ESEX, SSEX,

and PUDT were integrated of second order (second difference), therefore all the time series in this study are stationary.

Table 7: Regression Analysis Result

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(ESEX,2)	28.99392	15.19653	1.707931	0.0589
D(SSEX,2)	15.03845	7.684888	0.158655	0.0105
D(PUDT,2)	-0.597785	6.221993	-0.096076	0.9243
D(ESEX_PUDT,2)	0.073441	0.030191	2.432521	0.0232
D(SSEX_PUDT,2)	-0.038636	0.009860	-3.918545	0.0007
C	1276.942	584.9409	2.183027	0.0395
R-squared	0.474753	Mean dependent var		741.6279
Adjusted R-squared	0.360569	S.D. dependent var		3766.916
S.E. of regression	3012.193	Akaike info criterion		19.04072
Sum squared resid	2.09E+08	Schwarz criterion		19.32360
Log likelihood	-270.0904	Hannan-Quinn criter.		19.12931
F-statistic	4.157784	Durbin-Watson stat		1.450910
Prob(F-statistic)	0.007753			

Source: E-view Output, 2023

The regression line shows that $RGDP = 28.99392 + 15.03845 - 0.597785 + 0.073441 + 0.038636 + 1276.942$

The F-Statistic of 4.157784 and its corresponding P-value of 0.007753 indicates that the model is fit and the independent variables are properly selected, combined and used. The Coefficient of Determination (R^2) of 0.474753 indicates that about 47% of variation in RGDP can be explained by ESEX, SSEX, and PUDT or the ability of the regression line to predict RGDP is about 47%. The study therefore accepts that there is a significant moderating effect of Public Debt (PUDT) on the relationship between Productive Expenditure and Economic Growth (Real Gross Domestic Product) in Nigeria. Furthermore, the study accepts the alternate hypothesis which states that, economic service expenditure and social service expenditure have significant effect on economic growth in Nigeria.

Test of Hypotheses

The regression analysis result shows that the real gross domestic product (RGDP) will increase by 28.99392 units for every unit increase in economic service expenditure (ESEX). The significant value or P-value of ESEX is 0.0589, this significant value or P-value is less than the t-value of 0.05, which indicates that ESEX has positive significant effect on economic growth (RGDP) in Nigeria. Therefore, the study rejects the null hypothesis and accepts the alternative. Finding from this

study is in line with the findings of Duruibe, *et al.* (2020), and Olayiwola, *et al.* (2021).

Also, the regression line indicates that RGDP will increase by 15.038845 units for every unit increase in social service expenditure. The significant value of SSEX is 0.0105, this value is less than the t-value of 0.05, likewise, the coefficient value of SSEX is positive which indicates that SSEX has positive significant effect on RGDP in Nigeria. Therefore, the study rejects the null hypothesis. Meanwhile, the finding of this study contradicts the following findings of Onwuka (2021), and Onuoha and Agbede (2019)

The regression line exhibits that economic growth (RGDP) will decrease by 0.597785 units for every unit increase in public debt (PUDT). The significant value or P-value of PUDT is 0.9243, this significant value or P-value is greater than the t-value of 0.05, which indicates that PUDT has negative insignificant effects on economic growth (RGDP) in Nigeria. Therefore, the study accepts the null hypothesis. More so, the finding is in tandem with the finding of Nwamuo and Agu (2021).

Furthermore, the result indicates that the moderated economic service expenditure (ESEX) has a positive coefficient value of 0.073441 but has a P-value of 0.0232 which is less than the t-value of 0.05. This reveals that the moderated ESEX has a significant effect on economic growth (RGDP). This signifies that

spending on economic service will improve the livelihood of citizens and as well affect the economic growth of Nigeria positively. Therefore, this study rejects the null hypothesis.

In the same vein, the moderated social service expenditure (SSEX) has negative value of 0.038636 but has a P value of 0.0007, which is less than the t-value of 0.05. This shows that the moderated social service expenditure (SSEX) has a negative significant effect on economic growth (RGDP). This implies that increase in moderated government expenditure on social service will lead to decrease in economic growth (RGDP) in Nigeria. Therefore, this study rejects the null hypothesis.

5. Conclusion

This study discussed how economic service expenditure has influence on economic growth of Nigeria. It is clear that any increase in government spending on economic service will lead to improve economic growth and as well improve livelihood of citizens positively. Furthermore, increased government expenditure induces an increase in the flow of money in the economy and the private sector increases its production capacity. But, when moderated, economic growth was affected positively. This indicates that when borrowed fund are been used for the aim for which the fund was borrowed, it will definitely improve economic growth.

Government expenditure on social service affects economic growth positively. This indicates that increase social service expenditure will create more avenues for better economic growth. Meanwhile, when moderated by

public debt, economic growth is been influenced positively. Therefore, this implies that public debt when used for the appropriate reason the fund has borrowed for will influence economic growth.

Recommendations

The study offers the following recommendations based on the conclusion of this study:

- i. The government should stabilise spending and pursue productive spending on economic services (agriculture, construction, transportation, and communication, among other economic services expenditures that improve economic growth); additionally, it is not how much money is spent, but how well it is spent, that will address Nigeria's crisis.
- ii. To sustain vigorous economic growth, the government should increase public spending on social services. This can be accomplished by utilizing public funding to improve educational quality at all levels of learning (primary, secondary, and higher education) through training programs that give the skills and information needed to increase labor productivity and create additional job possibilities. Public spending in the health and social security sectors should be directed toward constructive expenditures that promote economic growth. Social security spending should be directed toward reducing economic disparity and poverty.

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