Journal of Good Governance and Sustainable Development in Africa (JGGSDA), Vol. 6, No 5, September, 2021 Available online at http://journals.rcmss.com/index.php/jggsda; www.academix.ng
ISSN: 2346-724X (P) ISSN: 2354-158X (E)
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Public Debt and Sustainable Development: Evidence from Nigeria

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Abstract
This study investigated Public Debt and Sustainable Development in Nigeria utilizing Domestic Debt and External Debt as dimensions of Public Debt and Gross Domestic Product per Capita, Life Expectancy at Birth and Primary School Enrollment as the measures of Sustainable Development. The study used secondary data from 1970-2019 sourced from Debt Management Office of Nigeria, Central Bank of Nigeria and the World Bank. The study employed econometric tests such as Unit Root Test, Johansen Co-integration Test and Vector Error Correction Model for the diagnostic data analysis. This study found that in Nigeria, domestic debt has a negative and insignificant effect on Gross Domestic Product per Capita; domestic debt has a negative and insignificant effect on Life Expectancy at Birth and domestic debt has a positive and significant effect on Primary School Enrollment. Furthermore, it found that in Nigeria, external debt has a positive but insignificantly effect on Gross Domestic Product per Capita; external debt has no significant effect on Life Expectancy at Birth and finally, external debt has a negative and insignificant effect on Primary School Enrollment. Hence, concludes that of the two dimensions of public debt only domestic debt is significant in boosting sustainable development in Nigeria. Therefore, recommends that Government should reduce maximally external debt; urgently start pleading for debt forgiveness/cancellation from the creditors especially from external creditors like World Bank, African Development Bank and China and have a deep cut on cost of governance.

KEY WORDS*: External Debt, Domestic Debt, SDGs, GDPpC, Life Expectancy at Birth, Primary School Enrolment, Nigeria.*

JEL Classification Codes: H63, O10, I10, I20, O55

DOI URL:https://doi.org/10.36758/jggsda/v6n5.2021/1

INTRODUCTION

Governments over the years in Nigeria have always engaged in one form of developmental programme or the other. In recent years, the topic sustainable development has provoked several intellectual discussions globally and achieving sustainable development is the target of every country generally and Nigeria is not left out. Sustainable Development is defined as a type of development that suits the needs of the present-day generation without hindering on the ability of the future

generations from meeting theirs (UN, 2020). To practically realize Sustainable Development (SD), in the year 2000, eight (8) Millennium Development Goals (MDGs) were established by the United Nations (UN) and this elapsed in 2015. In September 2015, the UN came up with another set of seventeen (17) goals called Sustainable Development Goals (SDGs) to be achieved by member countries which Nigeria is one of them, on or before 2030.

Governments all over the world including Nigeria need funds to provide basic amenities and quality infrastructure to spur growth and development but due to the insufficiency of these funds, they resort to borrowing both internally and externally. These borrowings are called public debt.

This study examined the effect of Public debt on Sustainable Development in Nigeria using secondary data from 1970-2019 (50 Years) collected from the World Bank, Central Bank of Nigeria (CBN) and Debt Management Office (DMO) of Nigeria.

The dimensions of the exogenous variable public debt are Domestic Debt (DD) proxied by Domestic Debt Stock (DDS) and External Debt (ED) proxied by External Debt Stock (EDS).

The measures of the endogenous variable sustainable development in this study are three (3) SDGs. These three (3) selected SDGs are measured using three (3) related World Bank Development Indicators. They are SDG 8 – Decent Work and Economic Growth measured by Gross Domestic Product per Capita (GDPpC); SDG 3 – Good Health and Well Being measured by Life Expectancy at Birth (Total) (LEB) and SDG 4 – Quality Education measured by Primary School Enrolment (PSE). These three (3) SDGs were chosen out of the 17 SDGs because of the availability of their data for the 50 years from the database of World Bank Development Indicators and using convenience sampling approach.

Some of the problems that ignited this study are stated below. One in every five out-of-school children in the world is in Nigeria (UNICEF, 2013). WHO (2018) quoted in WorldLifeExpectancy (2019), life expectancy in Nigeria as at 2018 was: male 54.7, female 55.7 and total life expectancy was 55.2 which gives Nigeria a World Life ranking of 178 out of 195 countries. In 2019, according to Macrotrend (2020), Life Expectancy in Nigeria was 54.49 years.

Paucity of funds and the necessity to solve some socio-economic and infrastructural inadequacies led Nigeria to borrow. Nigeria has borrowed monies worth several billions of US Dollars over these 50 years from external sources like from World Bank Group (WBG), African Development Bank (AfDB) Group, China, India etc, and internally from Federal Government (FG) Bonds, FG Sukuk, Treasury Bills (TBs), etc with the intent to rejig several key economic sectors like the power sector, transport, health, education among others (DMO, 2020).

For clarity, a country's indebtedness does not necessarily slow growth, rather not optimally utilizing these credits to drive the economy and ensuring effective servicing of such debt is what hampers the benefits from being enjoyed by the people (Okonjo-Iweala, 2011). To circumvent such, it becomes a necessity that the quantum and structure of the nation's debt be carefully managed in alignment with its growth and developmental aspirations (Sanusi, 2003).

Nigeria's public debt stock both domestic and external by the Federal Government (FG), 36 States and the Federal Capital Territory(FCT) as at 31st December 2019 is **US$84,053,320,000** (**N27,401,381,290,000)** (DMO,2020). A recently published data of the total outstanding Public Debt

in Nigeria as at 31st Dec. 2020 is **N32.915 Trillion** (DMO, 2021). Matching this debt to a GDP (Current) of **US$448.12** Billion; a population of **200,963,599** and a GDP per Capita of **US$2,229.859** for 2019 (World Bank, 2020) were part of the factors that triggered this study.

The aim of this study is to investigate the effect of Public Debt on Sustainable Development in Nigeria. The specific objectives are to:

i. determine the effect of Domestic Debt Stock (DDS) on GDP per Capita (GDPpC);
ii. examine the effect of DDS on Life Expectancy at Birth (LEB);
iii. ascertain the effect of DDS on Primary School Enrolment (PSE);
iv. evaluate the effect of External Debt Stock (EDS) on GDPpC;
v. ascertain the effect of EDS on LEB and
vi. determine the effect of External Debt Stock on PSE.

Research Questions

Below are the research questions.

i. What is the effect of Domestic Debt Stock on GDP per Capita?
   a. `What effect does Domestic Debt Stock have on Life Expectancy at Birth?
ii. What is the effect of Domestic Debt Stock on Primary School Enrolment?
iii. What effect does External Debt Stock have on GDP per Capita?
iv. What is the effect of External Debt Stock on Life Expectancy at Birth?
v. What effect does External Debt Stock have on Primary School Enrolment?

Research Hypotheses

This study is predicated upon the hypotheses listed below. They are clearly stated concisely in their null forms to enable us to find empirical answers to the research questions.

Ho1: Domestic Debt Stock does not have any significant effect on GDP per Capita in Nigeria.
Ho2: Domestic Debt Stock does not have any significant effect on Life Expectancy at Birth in Nigeria.
Ho3: Domestic Debt Stock does not have any significant effect on Primary School Enrolment in Nigeria.
Ho4: External Debt Stock does not have any significant effect on GDP per Capita in Nigeria.
Ho5: External Debt Stock does not have any significant effect on Life Expectancy at Birth in Nigeria.
Ho6: External Debt Stock does not have any significant effect on Primary School Enrolment in Nigeria.

This study is significant because of the necessity to examine the effectiveness of Public Debt in achieving Sustainable Development in Nigeria. To the governments, policymakers and all stakeholders they will benefit as the findings will lead them to know whether public debt has influenced sustainable development or not and guide them in debt management policy formulation strategies that target in achieving the SDGs by year 2030 as stipulated by the UN for its member countries.

This study is delimited to issues relating public debt and sustainable development only and it concentrated on the macro-level unit study by using the aggregate values of the selected variables of study in Nigeria. Nigeria is the geographical terrain selected based on the key importance the economy is to Africa and the world generally.

The remaining sections of this article are as follows: section 2 for literature review; methodology is contained in section 3; results and discussion are in section 4 and finally, section 5 comprises of summary, conclusions and recommendations and here, contributions to knowledge were succinctly stated.

2. LITERATURE REVIEW

Theoretical Framework

The main theory that underpins this work is **Sustainability Theory** because it encourages businesses, governments and citizens to frame decisions in terms of years and decades instead of today's needs, month's or next quarter's earnings report and to consider more factors than simply profit or loss that is involved. This concept Sustainability or *Nachhaltigkeit* in German can be traced back to Hans Carl von Carlowitz (1645-1714) and it was applied in Forestry (Environmentandsociety, 2021). However, it was made prominent by the Brundtland Commission of 1983 set up by the UN in their Report "Our Common Future" transmitted to the United Nations General Assembly in 1987 (UN, 2020).

Overlapping Generation Model/Theory This model according to Nwinee and Torbira (2012), states that a burden is created for generations unborn even when the debts are totally sourced internally. This model explains that debt burdens can be transferred across generations.

Amongst the two theories reviewed above, the major theory that underpins this empirical study is Sustainability theory.

Conceptual Review

Sustainable Development is the kind of development that meets the needs of the present generation without compromising the ability of the future generations to meet their own needs (UN, 2020).

Sustainable Development Goals (SDGs): are seventeen (17) goals set by the UN to be accomplished by its member countries attainable on or before 2030. These SDGs are the measures of sustainable development in this study. SDG 8, SDG 3 and SDG 4 were chosen based on the availability of their data for the 50-year period from the database of World Bank Development Indicators.

Public Debt: These are borrowings by the government(s) owed to persons (Private), Organizations (Multilateral), or other governments (Bilateral) internally (Domestic) or externally (External).

Domestic Debt Stock (DDS): This is the total debt the nation owes to lenders internally comprising of the DDS of the Federal Government (FG), 36 States and the Federal Capital Territory (FCT).

External Debt Stock (EDS): This is the total debt the nation owes to lenders from outside the shores of Nigeria.

GDP is the volume of goods and services produced in an economy in a period of time irrespective of the nationality of the people who produced them.

GDP per Capita is a measure of the economic output of a country that accounts for its number of people, it is derived by dividing the GDP by the population of the country. One of the targets of SDG8 – Decent Work and Economic Growth is to sustain economic growth per capita in alignment with the domestic situation and particularly at a lowest of 7 percent (%) GDP growth annually in the

poorly developed nations (UN, 2020), hence, making the study to use GDP per Capita (GDPpC) as an indicator of sustainable development in this study.

Life Expectancy at Birth, Total (Years) This indicates the average number of years a newborn infant would live if prevailing patterns of mortality at the time of its birth were to stay the same all through its life (World Bank, 2020). The key focus of SDG3 – Good Health and Well-Being is the health of citizens, promotion of programmes that reduce mother and child deaths, combating communicable ailments and the increase in life expectancy of citizens(UN, 2020), thus making this study use Life Expectancy at Birth (LEB) as a measurable sustainable development index.

Primary School Enrolment is the number of pupils of school-age group for primary education, enrolled in primary education expressed as a percentage of the total population in that age group (Knoema, 2020; UNESCO, 2019 and World Bank, 2020). One of the key targets of SDG4 – Quality Education is to ensure that children have totally free, standard and equitable education at both primary and secondary stages leading to important Goal 4 effective learning results (UN, 2020), therefore, the study used Primary School Enrollment as a measure of SDG4 inter alia, sustainable development.

Empirical Review

Butkus and Seputiene (2018) used data from 152 countries of the world for a period covering 1996-2016 utilizing System-Generalized Method of Moments (SYS-GMM) Estimator, they found out that proper governance does not necessarily circumvent the adverse effects of debt.

A European-wide study was carried out by Dombi and Dedak (2019) using data from 1981-2016. They discovered that public debt reduces long-run output and also the burden of public debt is country-specific depending mainly on the savings rate and the population growth rate.

Yusuf and Said (2018) in their study in Tanzania analyzing data from 1970-2015 and using Vector Error Correction Model (VECM), Granger Causality Test (GCT), Unit Root Test (URT), Johansen Co-integration Test (JCT) for data analysis. It revealed a negative association between public debt and Tanzania's economic growth. They advised that policyholders and government should cease accumulating external debt stock and stop concealing the motives behind its accumulation.

Nwali and Nkwede (2016) whose scope covered data from 1961-2013 in Nigeria and having employed VECM, established that public debt has a negative short run and long run impact on economic growth in Nigeria. They recommended that policymakers in Nigeria should always strive and certify that the Debt-GDP ratio does not exceed the international ratio for debt sustainability.

Lucy et al. (2015) researched with data from Ghana from 1990-2015. Using Ordinary Least Square (OLS) technique, they proved a negative relationship between debt both domestic debt and external debt and the economic output of Ghana. They advised against borrowings by the government rather the revenue base should be increased via tax reforms.

Monogbe (2016) found that external debt has a positive and outstanding influence on economic growth in the study of Nigeria from 1981-2014 using OLS and Error Correction Model (ECM). Monogbe from the findings advised that when government is increasing her borrowings through external debt and they should be prudent in its usage.

Ogunbiyi and Okunlola (2015) examined Domestic Debt and Real Sector Growth: A VAR Approach from 1980-2013 in Nigeria employing Descriptive Statistics -Skewness, Kurtosis and Jarque-Bera Statistics and econometric methods of data analysis- URT and Vector Auto Regression Analysis (VAR), found that where they consistently apply project-tied-borrowing, the real sector of the economy will experience development.

Izedonmi and Ilaboya (2012) using data from 1980-2010 in Nigeria and employed Co-integration and ECM found a significant negative relationship between public debt burden and economic growth. They recommended that a ban should be put on acquiring new public loans except where it is extremely important. Ihugba et al. (2019) using data from 1970-2017 in Nigeria found that there is an insignificant positive relationship that exists between government education expenditure on Primary School Enrolment.

Predrag (2011) studied openness and GDPpC using data from fifty-one (51) countries globally in 2007 with Jeffrey A. and David Romer's Model (1996) and found that growth of openness (foreign trade) by 1% point leads to an increase in GDPpC by 0.58%. Hendricks and Graves (2009) in their study predicting Life Expectancy (LE) used data from 158 countries globally in the 2001 survey. Technology, disposable income, education and healthcare were the predictors while life expectancy was the response variable. Employing a Cross-sectional model, they revealed that all the predictors were positively significant on life expectancy at every income level. They recommended that low-cost policy interventions can have dramatic impacts on life expectancy.

Gaps in Literature

The researchers established a knowledge gap as there is a dearth of studies that critically assess the linkage between public debt and sustainable development in Nigeria. Therefore, public debt and sustainable development studies had been underemphasized.

GDP was mainly used as a proxy of economic growth and development. The researchers looked at the GDP per Capita instead, one of the World Bank Economic Development Indices that is more definitive than just GDP. The researchers identified a period gap. Unlike the previous studies above, data from 1970 up to more recent data of 2019 was used, thereby reflecting current realities. This long period is considered robust enough for data analysis and helpful in arriving at more reliable findings.

3. METHODOLOGY

The study adopted ex-post facto research design because the data for the variables used are already in existence, the researchers have no influence on them and the data cannot be manipulated.

The population is the entire macroeconomic indices of the selected variables associated with public debt and SD in Nigeria. A census sampling approach was adopted where the entire Nigeria economy is the sample size.

Secondary data was used which are time-series data extracted yearly from World Bank, CBN and DMO of Nigeria and other related useful online databases. The data were secondary data from published statistical reports from the World Bank, CBN and DMO and other related useful secondary material.

To realize the study objectives, three models were formulated where three proxies are used to measure sustainable development (LEB, PSE and GDPpC) while two variables were used as dimensions of public debt (ADDS and AEDS).

The models are:

Model 1
The Functional Model is:
GDPpC = f (**ADDS, AEDS**)----------(1)

The Mathematical Model is:
$\mathbf{GDPpC} = \beta_0 + \beta_1 \mathbf{ADDS}_t + \beta_2 \mathbf{AEDS}_t$ ----------(2)

And the Econometric Model is:
$\mathbf{GDPpC} = \beta_0 + \beta_1 \mathbf{ADDS}_t + \beta_2 \mathbf{AEDS}_t + \mu_t$ ---------- (3)

Model 2

The Functional Model is:
LEB = f(ADDS, AEDS) ----------(4)

The Mathematical Model is:
$\mathbf{LEB} = \alpha_0 + \alpha_1 \mathbf{ADDS}_t + \alpha_2 \mathbf{AEDS}_t$ ----------(5)
The Econometric Model is:
$\mathbf{LEB} = \alpha_0 + \alpha_1 \mathbf{ADDS}_t + \alpha_2 \mathbf{AEDS}_t + \mathbf{y}_{it}$ ---------(6)

Model 3

Its Functional Model is:
PSE = f(**ADDS**, **AEDS**) ----------(7)

The Mathematical Model is:
$\mathbf{PSE} = \delta_0 + \delta_1 \mathbf{ADDS}_t + \delta_2 \mathbf{AEDS}_t$ ----------(8)
The Econometric Model is:
$\mathbf{PSE}_t = \delta_0 + \delta_1 \mathbf{ADDS}_t + \delta_2 \mathbf{AEDS}_t + \pi_{it}$ ---------(9)

Theoretical (Apriori) Expectations: It is expected that public debt will have a positive and significant effect on sustainable development based on the traditional Keynesian theory which pre-supposes that increase in public debt has a positive effect on sustainable development.

Method of Data Analyses: the following econometric tests were carried out:

a) Stationarity Tests/Unit Root Test (URT)
b) Johansen Co-integration Test (JCT)
c) Vector Error Correction Model (VECM)

These econometric tests were also employed by other experts like Yusuf and Said (2018) and Nwali and Nkwede (2016) in related studies.

Operational Measures of Variables: To avoid analytical paralysis that would arise if the various variables are used in their original state of measurements, the absolute figures of Aggregate External Debt Stock (AEDS), Aggregate Domestic Debt Stock (ADDS) and Life Expectancy at Birth (LEB) and ratio values given in GPD per Capita (GDPpC) and Primary School Enrolment (PSE) were logged and interpreted with respect to their elasticity.

Econometric software: The econometric software used for data analysis is the E-views 10.0.

4. RESULTS AND DISCUSSION

Econometric Analysis

The **Unit root tests** revealed that the entire variables are stationary at first difference. In other words, all the variables are integrated of order one, I(1) establishing that the data set are reliable and can be trusted for subsequent estimates as seen in Table 4.1 below.

Table 4.1 Augmented Dickey-Fuller (ADF) Unit Root Test

	P-Val	ADF Test Statistic	Critical Values			
Variables		1st difference	1%	5%	10%	Remarks
GDPpC	0.0000	-5.595015	-3.574446	-2.923780	-2.599925	Stationary
PSE	0.0071	-3.698892	-3.574446	-2.923780	-2.599925	Stationary
LEB	0.0196	-3.574446	-3.3.315869	-2.923780	-2.599925	Stationary
ADDS	0.0001	-5.322324	-3.574446	-2.923780	-2.599925	Stationary
AEDS	0.0001	-5.096823	-3.584743	-2.928142	-2.602225	Stationary

Extracted from E-Views 10.0 Output

The researchers thus resorted to testing for co-integration between the variables since the study is a long run study and further proceeded to test for the long-run relationship that might have existed among the series using **Johansen Co-integration Tests (JCT),** it was found that one co-integrating equation existed in the series thereby suggesting the existence of a long-run relationship between public debt and sustainable development indices in Nigeria. The existence of co-integrating equations formed the basis for the researchers' use of the **Vector Error Correction Model (VECM).** VECM was used to test the hypothesis and arrive at conclusions.

Hypothesis Testing

The results of the Vector Error Correction Model (VECM) were used in testing the hypotheses at a 5% degree of freedom (df).

This implies that the study rejects the Null Hypothesis where the Probability value (P-value) is less than 0.05. Conversely, where the P-value is greater than 0.05, the study will fail to reject the Null Hypothesis.

VECM RESULTS

Model One

$$\mathbf{GDPpc} = \beta_0 + \beta_1 \mathbf{ADDS}_t + \beta_2 \mathbf{AEDS}_t + \mu_t \text{ --------(1)}$$

See the VECM Result in Table 4.2 below.

Table 4.2 Presentation of Parsimonious Results of VECM of Model 1

Dependent Variable: D(GDPPC)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 07/28/20 Time: 09:04
Sample (adjusted): 1972 2019
Included observations: 46 after adjustments
D(GDPPC) = C(1)*(GDPPC(-1) - 0.215751452777*ADDS(-1) + 1.00135928218*AEDS(-1) - 14.9313122157) + C(2)*D(GDPPC(-1)) + C(3)*D(ADDS(-1)) + C(4)*D(AEDS(-1)) + C(5)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.082582	0.032017	-2.579340	0.0136
C(2)	0.176342	0.135194	1.304363	0.1994
C(3)	-0.381294	0.231300	-1.648484	0.1069
C(4)	0.091173	0.090712	1.005079	0.3208
C(5)	0.111697	0.056266	1.985171	0.0538

R-squared	0.641222	Mean dependent var	0.049367
Adjusted R-squared	0.567195	S.D. dependent var	0.239238
S.E. of regression	0.218324	Akaike info criterion	-0.103347
Sum squared resid	1.954287	Schwarz criterion	0.095418
Log likelihood	7.376989	Hannan-Quinn criter.	-0.028889
F-statistic	3.258562	Durbin-Watson stat	1.979749
Prob(F-statistic)	0.020726		

Extracted from E-Views 10.0 Output

From Table 4.2 VECM result above, C(3) and C(4) represent ADDS and AEDS. ADDS exhibited a negative coefficient of -0.381294 alongside an insignificant P-value of 0.1069 which implies the existence of a negative and insignificant relationship among the series. By implication, the result asserts that aggregate domestic debt inversely affects the sustainable development index (GDPpc). This implies that an increase in ADDS is capable of a decrease in sustainable development (GDPpc) to the tune of 38 percent. This is against the apriori expectation.

Further, AEDS exhibited a positive coefficient of 0.091173 alongside an insignificant P-value of 0.3208 which implies the presence of direct and insignificant nexus among the series. Although the researcher expects a positive and significant contribution from AEDS to sustainable development (GDPpc), the result shows otherwise as there was an insignificant effect.

The economic implication could be that these public debts over these 50 years have been constantly deployed in unproductive sectors or non-GDP promoting ventures or on recurrent expenditures that do not directly promote production.

Model Two

$$\mathbf{LEB = \alpha_0 + \alpha_1 ADDS_t + \alpha_2 AEDS_t + y_{it}' \quad .....(2)}$$

See the VECM Result in Table 4.3 below for the Hypothesis Testing

Table 4.3: Presentation of Parsimonious Results of VECM of Model 2

Dependent Variable: D(LEB)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 07/28/20 Time: 13:14
Sample (adjusted): 1972 2019
Included observations: 46 after adjustments
D(LEB) = C(1)*(LEB(-1) - 0.101963707578*ADDS(-1) + 0.581372832409 *AEDS(-1) - 8.70115973852) + C(2)*D(LEB(-1)) + C(3)*D(ADDS(-1)) + C(4)*D(AEDS(-1)) + C(5)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.006347	0.001980	-3.205597	0.0026
C(2)	-0.065145	0.225975	-0.288283	0.7746
C(3)	-0.005428	0.005199	-1.044177	0.3025
C(4)	0.000594	0.002028	0.292638	0.7713
C(5)	0.007647	0.001843	4.148968	0.0002

R-squared	0.656469	Mean dependent var	0.006162
Adjusted R-squared	0.593685	S.D. dependent var	0.005865
S.E. of regression	0.004929	Akaike info criterion	-7.684837
Sum squared resid	0.000996	Schwarz criterion	-7.486071
Log likelihood	181.7512	Hannan-Quinn criter.	-7.610378
F-statistic	5.677738	Durbin-Watson stat	1.622497
Prob(F-statistic)	0.000989		

Extracted from E-Views 10.0 Output

From the VECM result in Table 4.3 above, C(3) and C(4) represent ADDS and AEDS. Aggregate domestic debt stock (ADDS) exhibited a negative coefficient of -0.005428 alongside an insignificant P-value of 0.3025 thus suggesting the existence of an inverse relationship among the series. The result further provided evidence to assert that a significant relationship does not exist between LEB and ADDS against the apriori expectation.

AEDS exhibited a positive coefficient of 0.00059 alongside an insignificant P-value of 0.7713. The result does not fall in line with our apriori expectation as significant relation is expected among the series.

The result further provided substantial evidence to assert that public debt does not significantly boost LEB which is one of the measures of sustainable development in Nigeria. This is identified from their insignificant P-values respectively.

This insignificant effect of public debt on sustainable development index LEB could be attributed to improper accounting and auditing of these public debts or possibly corruption (Papachristou, 2019).

Model Three

$$\mathbf{PSE_t = \delta_0 + \delta_1 ADDS_t + \delta_2 AEDS_t + \pi_{it} \quad .....(3)}$$

See the VECM Result in Table 4.4 below for the Hypothesis Testing.

Table 4.4: Presentation of Parsimonious Results of VECM of Model 3

Dependent Variable: D(PSE)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 07/30/20 Time: 12:32
Sample (adjusted): 1972 2019
Included observations: 45 after adjustments
D(PSE) = C(1)*(PSE(-1) - 1.93008537*ADDS(-1) + 2.5048377245*AEDS(-1) - 74.3226903323) + C(2)*D(PSE(-1)) + C(3)*D(ADDS(-1)) + C(4) *D(AEDS(-1)) + C(5)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.011748	0.011462	-1.024869	0.0116
C(2)	0.594935	0.122955	4.838653	0.0000
C(3)	0.104955	0.037358	2.809424	0.0076
C(4)	-0.012501	0.022572	-0.553843	0.5828
C(5)	0.533058	0.713717	0.746876	0.4595

R-squared	0.410940	Mean dependent var	1.232556
Adjusted R-squared	0.352034	S.D. dependent var	5.819874
S.E. of regression	4.684786	Akaike info criterion	6.030957
Sum squared resid	877.8890	Schwarz criterion	6.231697
Log likelihood	-130.6965	Hannan-Quinn criter.	6.105791
F-statistic	6.976193	Durbin-Watson stat	1.934600
Prob(F-statistic)	0.000233		

Extracted from E-Views 10.0 Output

The VECM result shown in Table 4.4 above, C(3) and C(4) represent ADDS and AEDS and they seem to display varying relationships with PSE in Nigeria. ADDS exhibited a significant P-value of 0.0076 alongside a positive coefficient of 0.1049 thus signifying that domestic debt has contributed to PSE in Nigeria which is a measure of sustainable development to the tune of 10.49% over time. This implies that DDS has significantly and positively impacted basic education in Nigeria over these 50 years.

Meanwhile, AEDS exhibited a negative coefficient of -0.012501 alongside an insignificant P-value of 0.5828 thus depicting an inverse relationship among the series. The economic implication of this result is that aggregate external debt has impacted sustainable development in Nigeria in a negative manner.

The VECM results were summarized in Table 4.5 below.

Table 4.5 Summary of VECM Results

HYPOTHESES	CO-EFFICIENT	P-VALUE	REMARK
Ho1: DDS does not have any significant effect on GDPpC in Nigeria.	-0.381294 (Negative)	0.1069 (Insignificant)	Supported
Ho2: DDS has no significant impact on LEB in Nigeria.	-0.005428 (Negative)	0.3025 (Insignificant)	Supported
Ho3: DDS does not have any significant effect on PSE in Nigeria.	0.104955 (Positive)	0.0076 (Significant)	Not supported
Ho4: EDS does not have any significant effect on GDPpC in Nigeria.	0.091173 (Positive)	0.3208 (Insignificant)	Supported
Ho5: EDS does not have any significant impact on LEB in Nigeria.	0.000594 (Positive)	0.7713 (Insignificant)	Supported
Ho6: EDS has no significant influence on PSE in Nigeria.	-0.012501 (Negative)	0.5828 (Insignificant)	Supported

Extracted from E-Views 10.0 Output

Hypothesis One:
Ho_1: Domestic Debt Stock (DDS) does not have any significant effect on GDP per Capita (GDPpC) in Nigeria.

In line with the result of the VECM, the study found that Domestic Debt Stock exhibited a negative coefficient of -0.38129 alongside an insignificant P-value of 0.1069 which suggests the existence of an inverse relationship among the series. The P-value result gives statistical support to the null hypothesis. On this basis, the null hypothesis will not be rejected and thus conclude that a significant relationship does not exist between Domestic Debt Stock and Gross Domestic Product per Capita in Nigeria.

Hypothesis Two:
H_{o2}: Domestic Debt Stock (DDS) has no significant effect on Life Expectancy at Birth (LEB) in Nigeria.

Still in agreement with the report of the VECM, it was found that an inverse relationship exists between Domestic Debt Stock and Life Expectancy at Birth in Nigeria. Domestic Debt Stock exhibited a negative coefficient of -0.005428 alongside an insignificant P-value of 0.3025 which suggests that an increase in Domestic Debt Stock will result in a decrease in Life Expectancy at Birth. The P-value result gives statistical support to the null hypothesis. On this basis, the study does not

reject the null hypothesis and thus concludes that Domestic Debt Stock does not significantly influence Life Expectancy at Birth in Nigeria.

Hypothesis Three

H_{o3}: Domestic Debt Stock (DDS) does not have any significant effect on Primary School Enrolment (PSE) in Nigeria.

In line with the result of VECM, domestic debt stock exhibited a positive coefficient of 0.10495 alongside a significant P-value of 0.0076 which suggests the existence of a significant and direct relationship among the series. The P-value result does not give statistical support to the null hypothesis. As such, the study rejects the null hypothesis and thus concludes that Domestic Debt Stock has a positive and significant effect on PSE in Nigeria.

Hypothesis Four

H_{o4}: External Debt Stock (EDS) does not have any significant effect on GDP per Capita (GDPpC) in Nigeria.

The VECM result shows that a direct relationship exists between External Debt Stock and Gross Domestic Product per Capita in Nigeria. This is identified from the positive coefficient of 0.09117 alongside an insignificant P-value of 0.3208. The P-value result gives statistical support to the null hypothesis. As such, we fail to reject the null hypothesis and thus conclude that external debt stock does not have any significant effect on GDP per Capita in Nigeria.

Hypothesis Five

Ho5: External Debt Stock (EDS) does not have any significant effect on Life Expectancy at Birth (LEB) in Nigeria.

The result of the VECM shows that external debt stock has contributed to Life Expectancy at Birth positively, though in an insignificant manner. External Debt Stock exhibited a positive coefficient of 0.000594 alongside an insignificant P-value of 0.7113 thus suggesting the existence of a positive and insignificant effect among the series. The P-value result gives statistical support to the null hypothesis. As such, we do not reject the null hypothesis and thus conclude that External Debt Stock does not have any significant effect on Life Expectancy at Birth in Nigeria.

Hypothesis Six

H_{o6}: External Debt Stock (EDS) has no significant effect on Primary School Enrolment (PSE) in Nigeria.

The result the VECM has provided the evidence to assert that External Debt Stock negatively affects Primary School Enrolment in Nigeria. This is identified from its negative coefficient of -0.012501 alongside an insignificant P-value of 0.5828 thus suggesting the existence of an inverse relationship. The P-value result gives statistical support to the null hypothesis. As such, we fail to reject the null hypothesis and thus conclude that External Debt Stock has no significant effect on PSE in Nigeria.

Discussion of Findings

Report from this study provided evidence to assert that Domestic Debt Stock does not significantly boost GDP per Capita in Nigeria. The insignificant relationship identified in this study could be traced to moral hazard, fund misappropriation and siphoning. It could also imply that these domestic debts have been constantly deployed in unproductive sectors of the economy or non-GDP-promoting ventures. This agrees with the findings of Izedonmi and Ilaboya (2012).

This study affirmed that domestic debt stock exhibited a positive coefficient and significant P-value which implies that a significant relationship exists between Domestic Debt Stock and Primary School Enrollment. The report from this investigation validates empirical findings of Onuorah and Ogbonna (2014) which revealed that domestic debt significantly promotes economic growth in Nigeria than external debt. Their study further explains that domestic debt has contributed to economic development in Nigeria cause of its low cost of servicing compared to external debt that requires a huge amount of money to service.

It was affirmed within the conferment of this study that there exists no significant relationship between External Debt Stock and GDPpC, Life Expectancy at Birth and Primary School Enrollment which are the measures of Sustainable Development in this study. The economic implication is that the external debt deployed in the general health and welfare of citizens to promote longevity; primary education and average goods and services per citizenry in the country are not effectively utilized or they are not yielding the right results possibly due to poor accountability and corruption. The findings are in line with the findings of Yusuf and Said (2018).

5. CONCLUSIONS AND RECOMMENDATIONS

Conclusions

The study concludes that of the two dimensions of public debt only domestic debt appears to be significant in boosting sustainable development in Nigeria. The external debt accumulated over this 50-year period consistently showed an insignificant effect on sustainable development in Nigeria. Hence, we conclude that external debt is detrimental to achieving sustainable development in Nigeria. Its usage in Nigeria negates the main theory anchoring this work, sustainability theory.

The major limitation of this study is the sources of these data. The researchers witnessed the constant changes of data in the website of some of the world acclaimed reliable sources of data particularly, the World Bank databank. This gave the researchers some challenges. However, the researchers were made to understand that World Bank frequently reviews their databank to update it with current information at their disposal. Despite the stated limitation, the data used in this study were the latest update of information in World Bank Databank as at June 30th 2020.

Recommendations

i. The Federal Government, the 36 state governments and the FCT should reduce greatly the buildup of public debt especially, external debt considering the consistent insignificant effect it has had on sustainable development for the 50 years it has been deployed in Nigeria.

ii. Government should initiate plans immediately for pleading for debt forgiveness/cancellation from the external creditors especially from the World Bank, African Development Bank (AfDB) and China. The deadly Coronavirus - COVID-19 which emanated from Wuhan China should be used as a major argument in the appeal to China for debt forgiveness

considering the huge negative impact the COVID-19 pandemic caused to the meager resources of government and Nigerian economy generally.

iii. Using borrowed funds to support recurrent expenditures in the budgets should stop. The funds should only be invested in GDP-boosting infrastructures. These productive ventures will generate enough revenue to service the debts if properly managed.

iv. Investment of the public debt on facilities that promote good health and well-being of citizens should be encouraged considering the current poor statistics Nigeria has on average Life Expectancy at Birth. Concerted efforts should be done in channeling resources in medical infrastructures and sanitation facilities so that citizens can have accessible and affordable healthcare services that promote long life for the citizens and the projects to which these funds are channeled should be properly and adequately monitored.

v. Strong Institutions should be instituted to disburse, execute, monitor the public debt to ensure proper accountability, transparency and also met out adequate punishment to embezzlers and those who misappropriate public debt in Nigeria.

vi. Constantly having deficit budgets that encourage excessive borrowings should stop in Nigeria. There is a possibility of running a country with the available resources without resorting to borrowing if the political will to achieve it is there. Cost saving measures are further recommended below to ensure that Nigeria does not always borrow:

a. By drastically cutting government size through cutting the size of political office-holders and their aids.
b. Selling off of some national assets that add nothing to the GDP like the many Presidential Jets Nigeria has, some government buildings that are dilapidating in several states and the Federal Capital Territory (FCT).
c. Not building white elephant projects that add nothing to economic output.
d. There should be a policy put up to cut unnecessary oversea travels which government officials usually embark on to enjoy estacodes that come with it which usually run into millions of foreign currency.
e. Not venturing into erection of gigantic offices for MDAs and government parastatals that majorly dwell on bureaucracy and not productivity with its exquisite and luxurious furnishing which do not directly contribute to productivity. These gigantic government buildings are also very difficult to maintain hence create more recurrent expenditures to keep them running.
f. Not sharing obnoxious allowances to the managers of the projects sponsored by these Multilateral bodies like World Bank, AfDB, etc;
g. Stop the constant changes of official cars, frequent renovations of official residencies and office buildings even when nothing is wrong with it just to satisfy the luxurious lifestyles of government officials and their relatives at the detriment of the generality of the masses.
h. Cutting down the cost of governance by eliminating duplicating roles in government offices.

The above recommendations when implemented will help Nigeria to achieve sustainable development that will be enjoyed by the present-day generation without hindering the coming generations from achieving theirs as opined by sustainability theory which is the major theory underpinning this work.

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