

Public Debt Management and Economic Growth in Nigeria

FESTUS FOLAJIMI ADEGBIE¹, EMMANUEL DARE OTITOLAIYE¹,
THEOPHILUS ANAEKENWA AGUGUOM², ADEMOLA AJAYI¹

¹Department of Accounting, Babcock University, Ilishan-Remo, Ogun State, NIGERIA

²Department of Accounting and Finance, Augustine University, Ilara-Epe, Lagos State, NIGERIA

Abstract: - Globally, when various channels of revenue available to the government fail to yield adequate resources to handle government expenditure or financial responsibilities, the government resorts to borrowing as an alternative source to complement revenue from taxes and other sources. However, the inability to optimally utilize borrowed funds had resulted in a high public debt profile and had retarded the economic growth of the Nigerian economy over the years. Consequently, this study investigated the effect of public debt management on economic growth in Nigeria. An *ex-post facto* research design was employed, while time-series data on the relevance of macroeconomic variables to public debt management and economic growth were sourced from secondary sources. The sample population purposively was chosen from data available from the 2020 edition of the Central Bank of Nigeria's (CBN) Statistical Bulletin, which covers 40 years (1981-2020). Results revealed that public debt management RGDP had a positive significant effect on economic growth in Nigeria ($AdjR^2 = 0.995$; $F_{(5, 31)} = 99.562$; $p\text{-value} = 0.000$). The conclusion validated that effective public debt management tends to have a positive significant effect on economic growth in Nigeria. It is therefore recommended that adequate measures be put in place to ensure optimal investment of borrowed funds in productive ventures in Nigeria. Also, the loans should be serviced when they are due to avoid sanctions and accumulation default charges.

Key-words: Economic growth, domestic debts, external debts, exchange rate, real GDP, public debt management.

Received: July 20, 2021. Revised: February 24, 2022. Accepted: March 29, 2022. Published: April 29, 2022.

1 Introduction

Government resorts to borrowing when it becomes obvious that the revenue generated from various sources of income was not sufficient to carry on its activities. In some periods when the government's various channels of revenue turn out to be inadequate to cater for all its streams of expenditure, the government resorts to borrowing as a critical alternative to supplement other revenue from taxes and other sources in order to handle public spending [1]. This process over the years has left some countries predominantly among the developing countries with massive and substantial outstanding debts, hence policies must be put in place in these concerned countries to manage these debts that have accrued over the years [2]. According to Elom-Obed, et. al., [3], it is economically reasonable for countries to borrow funds for investment purposes in order to finance public infrastructural development which are key drivers of the economic development of the country. Also, some unexpected natural disasters necessitate borrowing especially when local and international aids are inadequate depending on the

extent of such catastrophes [4]. In most cases, taxation creates an undue distortionary adverse effect on economic growth as posited by the Ricardian invariance theorem making borrowing indispensable in an economy's growth [5], [6], [33].

On the contrary, while borrowing for investment and infrastructural development is commendable, excessive borrowing without strong strategic policies and planning for investments or capital formation is unreasonable on the part of the government. This can lead, to a heavy debt burden on the country [7], [8]. Public borrowing can impact the economy depending on the purpose of borrowing, the mechanism put in place to manage public debt and the estimated debt-to-GDP ratio of a country [9]. Studies have asserted that the debt-to-GDP ratio in developing countries should be below 88.2%; and that if this is not the case, the ripple effects of loans could adversely harm the overall economic growth and development of such developing economies [10]. The World Bank, for instance, reported the ratios of 29.1%, 91.9%, 57%, 71.8% and 30.7% for Nigeria, Zambia, Seychelles, Tunisia, and Indonesia respectively [42]. In addition,

high public debts are critically undesirable, unnecessary and injurious to the economic growth of a country. They create uncertainties and undue pressures and lead to stagnation of the economy. Loans also have negative effects on the stock market and reduce productive investment opportunities as well as employment [11].

The historical antecedent of Nigeria's debt is disturbing and unreasonable. It is an all-time chronicle of decades of mismanagement of public funds, corporate incompetence in optimal utilisation of revenue and productive infrastructural investment of decades of huge oil revenue in Nigeria [12], [13]. Sadly, despite the rich oil deposits and natural resources, Nigeria is still regarded as being among the poor nations of the world and rated 149 out of 180 most corrupt nations of the world, scoring only 25/100 in the recent 2020 International Perception Index [14]. In addition, Transparency International reports that 44% of public service users in Nigeria paid a bribe in the years preceding 2020. Ranking and high profile corrupt officers among the public servants do not decline [14].

In recent times, the Nigerian government has made strategic efforts to revive and sustain economic growth by embarking on strategies that can improve economic growth. These include systematic policies that deliver general prices, reduction of commodities, alternative non-oil revenues to supplement oil revenue that has been volatile, an improvement in security, trade politics, and other policies capable of setting the economy on the path of stability and recovery.

The government has recently invested in infrastructure to encourage private sector capacity and diversification of the economy to enhance growth, prosperity, and a globally competitive economy. The public debt management has achieved a remarkable milestone in articulating a holistic and accurate verification of creditors' claims, various agencies' debt portfolio profile of Nigerian debts and monitoring of service arrangements, defaults, and penalties in promoting economic incentives for economic growth in Nigeria [1]. Public debt management enhances transparent incentives for consistent and well-streamlined borrowing policies and public debt management strategies that will serve to put a strategic constraint on state governors' unbridled appetite for foreign loan facilities [15].

Nigeria witnesses inconsistent and unstable economic growth considering the myriad of infrastructural deficits and strategic mismatched investments in the economic growth of the key drivers over the years [16]. Despite the high profile of oil boom windfall revenues, there have never been concerted efforts to increase expenditure in productive infrastructures; hence capital formation has not shown any signal of increase but a continuous decline [17]. Evidently, there has been no substantial indication of progress for years. The country has continued to experience low productive investment and inadequate infrastructures. Nothing seems to have moved the Nigerian economic situation beyond the stagnated state which characterizes low foreign savings, unprecedented corrupt practices, punitive and unwholesome unpatriotic actions, insurgency, terrorism and insecurity challenges, high cost of business operations, high-interest rates, inflation and high cost of raw materials, weak Naira to Dollar exchange rates and balance of payment deficits and unstable government policies and regulations [18].

The challenges of economic growth in Nigeria are appalling: there is unprecedented decay in all sectors of the economy. The country is filled with dilapidated infrastructures, from power grids that are on continuous collapse, to bad roads that have been abandoned to the mercy of bandits and kidnappers. There is a general deficiency of good governance [1]. Huge acclaimed infrastructural spending and investments have not stimulated the economy; the private investments in Nigeria suffer higher interest rates, high costs, a multiplicity of taxes, and sluggish economic growth while the Naira loses its value unabated as the depletion of foreign reserves keeps rising [12]

Incidentally, all of these worsen social and economic issues and reduce the state of the Nigerian economic growth to the level of an alarming deterioration as reflected in dipping crude oil production quota, unstable crude oil prices, and disruption in oil production. Consistent with this position, Rafindadi and Musa [19] argued that economic growth in Nigeria has taken a downslope due to poor and inadequate infrastructures, inflation, and the weak state of the Naira as some individuals are obsessed with a high appetite for foreign and imported items. Studies have advanced that economic growth is a gradual process of strategic and pragmatic efforts of the government in putting things in their deserving perspectives.

Studies have found empirical evidence linking effective public debt management to adequate investment in productive infrastructure that can enhance economic growth [17]. Sluggish economic growth despite huge infrastructural investments and debt reduction through debt management has also been reported [3], [19].

While inconsistencies in results exist, fewer studies reveal positive effects of public debt on economic growth and consider the solution of economic growth from the perspective of the measures of economic growth and the inability to put to productive use a series of government loans in supplementing generated revenue from crude oil sales, taxation, and other non-tax revenue accruable to the government [20], [21]. Donavre and Taivan [22] found that public debt management had a negative and insignificant effect on economic growth, this argument is consistent with the result reported in the studies [10], [20]. However, Eke and Akujuobi [1] asserted the fact that the majority of loans in Nigeria end up being diverted or misappropriated, hence public debt management seems to be a reactive exercise when the loans were never invested in infrastructural development projects.

Consequent to the observed indecisiveness and inconsistencies, divergent opinions and mixed results, an attempt was made, in this study, to fill some gaps in the literature, hence the following research objective, question, and hypothesis were proposed:

Research Objectives: *To investigate the effect of public debt management on Real Domestic Products in Nigeria*

Research Question: *To what extent does public debt management affect Real Domestic Products in Nigeria?*

Hypotheses: (Ho1): *There is no significant effect of public debt management on Real Gross Domestic Product in Nigeria.*

The rest of the study was structured in this manner: In section 2, the study considered literature and theoretical framework, methodology in section 3, while data analysis, results and discussions in section 4. The study concluded in section 5 with the

conclusion, recommendations and suggestions for further studies.

2 Literature Review and Theoretical Framework

2.1 Conceptual Review

Economic Growth: Economic growth in this study is considered from the perspective of a sustained increase in the Nigerian economy's real national income for a prolonged period, and this includes real national income in the value of national output and/or national expenditure. This position has been criticised in some studies, with the argument that there is a possibility for national income to increase while the standards of living of the citizens remain unaffected [22], [23]. However, another school of thought places emphasis on economic growth from the perspective of per-capita income [24]. The position here is that economic growth should reflect an annual increase in a country's real per-capita income over a period. It should depict national output per head of population and reflect the investment of public debts in infrastructures that should affect the standards of living of the populace [8].

Public Debt: The process of irrational borrowing by the government creates public debt while borrowing for the purpose of infrastructural development and to purchase certain capital projects capable of enhancing positive economic proceeds are reproductive public debt.

However, on the contrary, loans that are borrowed to provide relief during disasters and wars; and to fund current expenditure, are termed dead-weight public debts [15], [25], [26].

Public Debt Management: The Nigerian debt management office (DMO) reported that the Nigerian public debt stock of the Federal government and that of the States and Federal Capital Territory as of the end of March 2021 is valued at thirty-three trillion Naira (N33.107) or \$87.239 billion [1]. In addition, the DMO revealed that the debt stock includes Promissory Notes totaling N940.220 billion issued to settle inherited areas of the Federal Government to states, oil companies engaged in marketing oil marketing, exporters, and local contractors. This was compared to the public debt stock of N32.916 trillion of the country as of December 2020, indicating an

increase of 0.58 per cent. In a further analysis of the Nigerian debt profile, the Federal Government's share of the domestic debt includes FGN bonds, Sukuk and Green bonds utilised in financing infrastructural and capital projects in addition to the promissory notes, while the external debt stock stands at \$32.86 billion [1]. The Nigerian domestic source of borrowing is bank borrowing, issued treasury bills, bonds, and securitised papers among others.

2.2 Theoretical Review

Endogenous Growth Theory: The Endogenous Growth Theory was propounded by one of the Neo-classical scholars of Solo-Swan growth and a Nobel Prize-winning economist, Robert Solow in the years 1957 [27]. The theory suggests that economic growth is not appropriately related to externally generated revenue but to internally generated variables in fixed capital formations, investments in infrastructures and internally generated economic drivers in a particular economy, through endogenous variables and not exogenous factors [28]. The endogenous growth theory is in contradiction with the classical growth model which postulates exogenous growth, asserting that growth factors such as technological innovations are the main source of economic growth. By economic implications, endogenous growth theory posited that government policies have significant roles to play in economic growth if the government policies are directed toward infrastructural development that is capable of stimulating growth towards market competitive advantages and innovation in the production of domestic products and services [29], [30].

One of the key implications of endogenous growth theory includes increasing returns to scale from capital investments in the enhancement of industrial sectors, education, healthcare, telecommunications, and other infrastructures that can improve indigenous growth. Issues of investments in internally generated research and development are also considered major sources of technological progress for any given economy. Some of the assumptions of the theory are that an investment in the capital project without a corresponding investment in human capital will lead to disequilibrium and may not leave enduring and enduring growth in the economy of a nation but could only reflect on the economic growth on a temporary basis, leading to a short-lived expected growth. In addition, the endogenous theory hypothesises that a sustainable and enduring

investment and increase in capital investment can improve a nation's economy [31].

2.3 Empirical Review

Public Debt Management and Economic Growth

Eke and Akujuobi [1] carried out an empirical study of the effect of public debt on economic growth in Nigeria for a period of 38 years, covering 1981 to 2018. The ex-post facto research design with a co-integration approach was used in analysing the data.

The study revealed that a positive significance exists in the short run between public debt and economic growth. In addition, it was revealed that external debts have a negatively significant effect on economic growth. Furthermore, the study revealed that external borrowings in Nigeria are not optimally used for infrastructural development in Nigeria that will stimulate economic growth. The study of Eke and Akujuobi [1] was found to be consistent with the study of Ochuko and Idowu [10] who emphasized adequate monitoring and public debt management in Nigeria.

Consistent with a recent study by Eke and Akujuobi [1], Panagiotis [32] considered the nexus between public debt management and drivers of economic development from the perspective of private and public investments, consumption and trade openness and the recent population in Greece. Unit root tests and auto-regressive distributed lag (ARDL) were carried out for the study. While the unit root exhibited mixed integration of order zero and order one among the tested variables, the ARDL revealed a long-run positive effect on trade openness. In addition, it was revealed that government debt and population growth had a negative effect on economic growth in Greece.

Yusuf and Saidatulakmal [33] studied the impact of public debt on Nigeria's economic growth. Time series data obtained from an annual report covering a period of 39 years: 1980 to 2018, was used to analyse data in the study. Autoregressive Distributed Lag Technique (ADLT) was adopted for the study and domestic debt and external debts in the long- and short-term periods were employed as the measures of public debts. The regression analysis carried out revealed that external debts were the major problem negating economic long-term growth in Nigeria. In addition, the study results revealed that domestic debt had a positive significant effect on long-term growth whereas short term debts had a negative effect. In addition, it was shown that debt servicing had a

negative effect on economic growth, and can result in economic retardation and debt overhang effect.

Saungweme and Odhiambho [34] examined the causal effect association between public debts and general debt service payments on the economic growth of Zambia, covering a period of 39 years from 1979 to 2017. The study models real gross domestic product as a function of Zambian public debts, fiscal balance, and debts savings as a percentage of Gross Domestic Product. Findings revealed that there is a unidirectional causal association between public debts and general servicing payments on Zambia's economic growth.

Ochuko and Idowu [10] examined the impact of public debt on economic growth in the Nigerian economy for a period of 38 years, covering 1981 to 2018. The *ex-post facto* research design was adopted in the study. Time-series data were obtained from the Statistical Bulletin of the Central Bank of Nigeria and the Office of Debt Management Office (DMO). The study measures of public debt employed in the study include domestic debts, cost of debt servicing and foreign debts as measures of public debts. The data were analysed using regression analysis and the results revealed that domestic debts have a positive significant effect on economic growth while foreign debts have an inverse effect [1].

Thao [35] studied the effect of public debt on the economic growth of six selected Asian countries namely, Indonesia, Malaysia, the Philippines, Singapore, Thailand and Vietnam for a period of 21 years, covering 1995 to 2015. A general method of moment estimation technique was employed for the measure and estimation of data. Results revealed that public debts, foreign direct investments and gross fixed capital formation and real executive exchange rates had a positive effect on the economic growth of these countries. Like in previous studies, Akhanolu, et. al., [36] studied the impact of public debt on the economic growth of Nigeria using time series spanning the period of 36 years, covering 1982 to 2017. The study models gross domestic product in relation to total public debts comprising the internal and external debts. The study analysis revealed that while external debts had a negative significant effect, the internal debts on the part revealed a positive significant effect.

Udeh [37] studied the possible influence of externally borrowed funds on the economy of Nigeria. Especially the fluctuating effect of the exchange rates and inflation rates in Nigeria. Based on the analysis

conducted, the study reported a negative influence on debt burden as found in a similar study by Akhanolu et al., [36] Fadayomi and Oluranti [38] examined the effect of household structure on labour force participation in Nigeria.

Primary data collected from the market survey conducted in the year 2005 from the defunct national manpower board in Nigeria was analysed in the study with the use of both descriptive statistics of the characteristics of labour force participation in Nigeria, and probability of and logit regression models in estimating the labour force participation rates. After the analysis, it was discovered that there was a positive effect and relative importance of household structure in affecting labour force participation. Other traditional economic and social-demographic variables conforming to the expectations were established in the study. It was recommended that the government should make friendly policies that encourage labour force participation, in other to contribute to the economic development of Nigeria.

Kargi [39] conducted an examination of the likely association between gross fixed capital formation in an economy and economic growth in Turkey. Based on the analysis carried out, the study found that capital formation in Turkey remained quite low implying a high unemployment rate in Turkey. It advised that the government need to invest in job creation opportunities in the country to enhance economic development in the country. Shahid [40] investigated the relationship between labour force participation and economic growth and development in Pakistan. The gross fixed capital formation as a measuring proxy of economic growth and development, using time series data for the period of 33 years from 1980 to 2012, was employed in the study. Also, Johnsen co-integration test was conducted for the data used. Results revealed that a long-run relationship did exist between the variables used in the study; and that labour force participation has a positive significant effect on the economic growth and development in Pakistan.

3 Methodology

The *ex-post facto* research design was employed in this study. Time series data on the relevance of macroeconomic variables to public debt management and economic growth were sourced from secondary

sources. The sample population was purposively chosen for this study based on data available in the Central Bank of Nigerian (CBN) Statistical Bulletin, 2020 edition was 40 years (1981-2020). The variables for the study are Real Gross Domestic Product (RGDP) as criteria variables to measure economic growth while public debt as a surrogate of public debt management employed External Debt Stock (EDTS), Domestic Debts Stock (DDTS), Defaults/Debts Service Payments (DDSP), Exchange Rates (EXR) and Effective Interest Rate (EIR) as the explanatory variables of the study. Descriptive and inferential statistics were employed for the analyses of the data collected for the study.

In differing from prior empirical studies, this current study contributes to knowledge in this manner: first, it is country-specific and the Nigerian macroeconomic variables of time series are used; whereas some prior studies had used panel-based time [2], [4]. Secondly, some Nigerian related studies had used singular-faced model estimate regression, [10], [37]. However, only one model was considered in this study, with an expanded explanatory variable of domestic debts, external debts, defaults/debts service payments, exchange rates and effective interest rate.

3.1 Econometric Specification of the Model

The model estimated in this study is generally represented as:

$$Y_t = \beta_0 + \beta_1 X_t + \mu_t \quad (1)$$

Based on the indicator of economic growth used, one model was specified in a stochastic form as indicated by the error term.

Model

$$RGDP_t = \beta_0 + \beta_1 EDTS_t + \beta_2 DDTS_t + \beta_3 DDSP_t + \beta_4 EXR_t + \beta_5 EIR_t + \mu_t \quad (2)$$

Where:

RGDP = Real Gross Domestic Product; EDTS = External Debt Stock; DDTS = Domestic Debts Stock; DDSP Defaults/Debts Service Payments; EXR = Exchange Rates; EIR = Effective Interest Rate; β =intercept; t = time series, μ = error terms.

An increase in debt (both domestic and foreign) had a potentially negative effect on economic growth. However, if the borrowed monies are used judiciously in deficit financing, the economy can experience growth, hence, the coefficients of the

parameters in the models for EDTS and DDTS (β_1 and $\beta_2 > 0$). On the other hand, an increase in debt servicing and defaults will exert negative effects on the economy of Nigeria. In the same way, an increase in the exchange rate would worsen the value of the Nigerian Naira and interest as well will have negative effects on economic growth. Therefore, the *a priori* expectation of the last three independent variables in the model is negative (β_3, β_4 , and $\beta_5 < 0$).

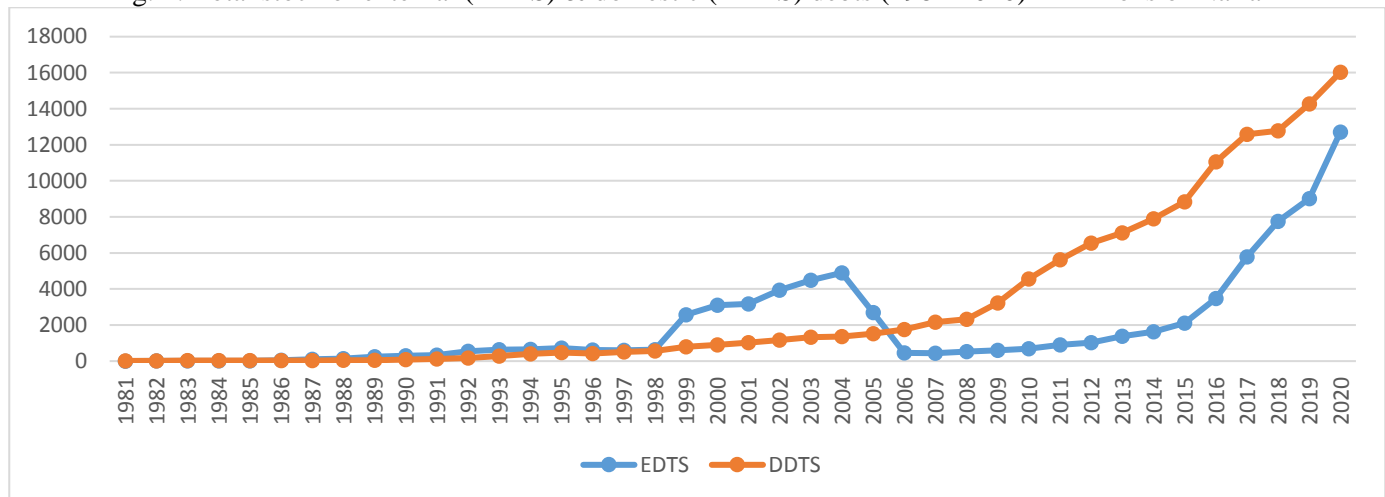
4 Data Analyses, Results and Discussions of Findings

4.1 Trend Analysis of the models' variables

Figure 1 shows the interaction of external debt and the internal debt profile of Nigeria. As shown in the figure, in the era of pre-SAP to 1998 before the military hand-over to democratically elected governments, the trends of external and internal borrowing were similar.

However, between the years 2000 and 2005, the external debt profile was slightly above domestic debt. The trend however changed from 2006 to date. Hence, the stock of domestic debt profile of Nigeria had soared higher than external debt.

Fig. 1: Total stock of external (EDTS) & domestic (DDTS) debts (1981-2020) in Billions of Naira

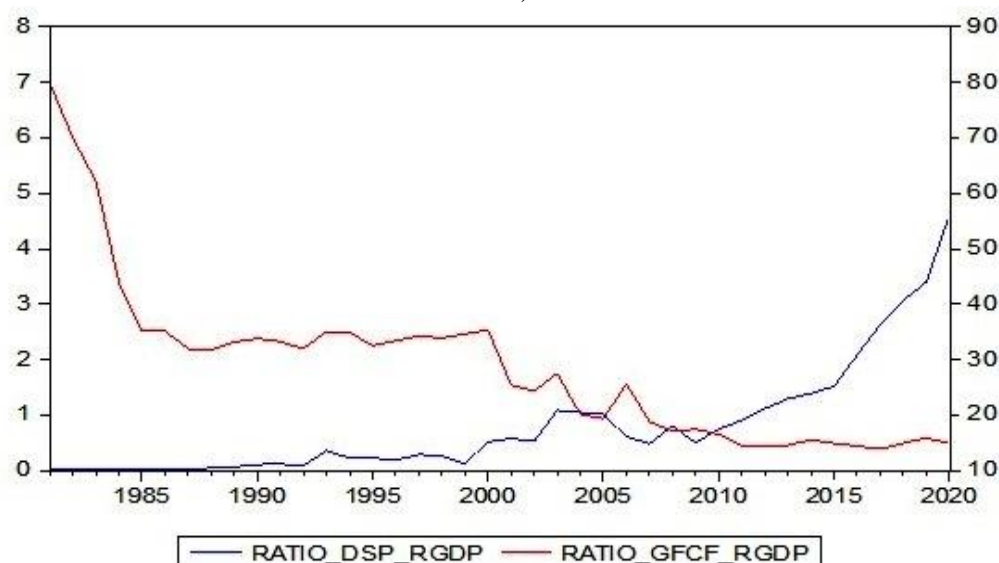


Source: Author's computation using the underlying data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

The trend in Figure 2 compares the share of debt servicing and gross fixed capital formation in RGDP. It is evidenced that from the left-hand side of the plot, the level of debt servicing using the resources of the economy gradually increased to 4.6% in 2020.

However, the share of fixed capital formation declined in recent times.

Fig. 2: Trend of percentage shares of Debt servicing and Fixed Capital formation in Real GDP in Nigeria (1981-2020)



Source: Author's computation using the underlying data from the Central Bank of Nigeria's (CBN) Statistical Bulletin.

The exchange rate and interest rate (prime lending rate) trend is displayed in Figures 3 and 4. Based on

the results, it was observed that the exchange rate has worsened (currency depreciation) from 1999 to date.

More volatile spikes are recorded in Figure 4 for interest rate. It is usually a market-determined with discretionary control by the monetary policy authorities. The trend in Fig. 2, tends to reveal the

negative effects of the prime lending rate in Nigeria for the period 1981 to 2020. It revealed that the Nigerian Naira (NGN) current value had suffered greatly.

Fig. 3: Trend of Naira-US Dollar Exchange rate(1981-2020)

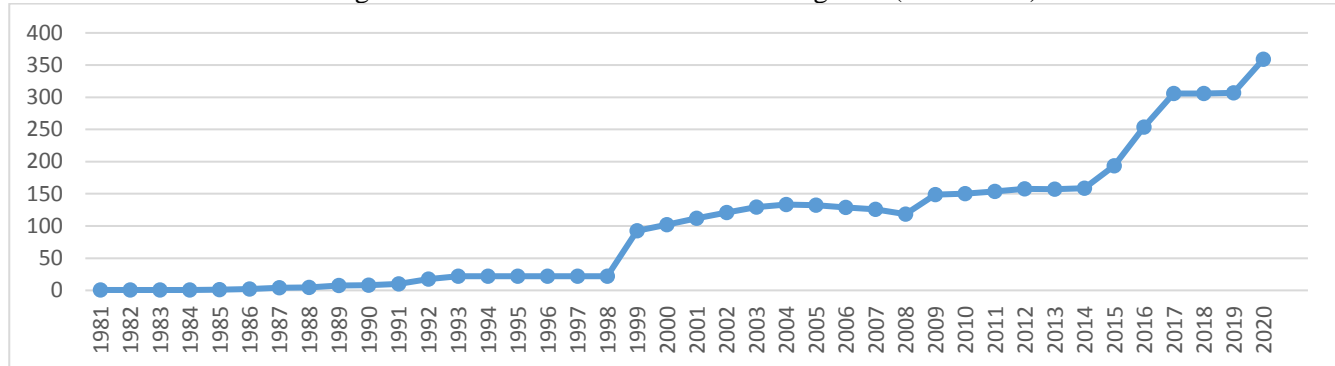
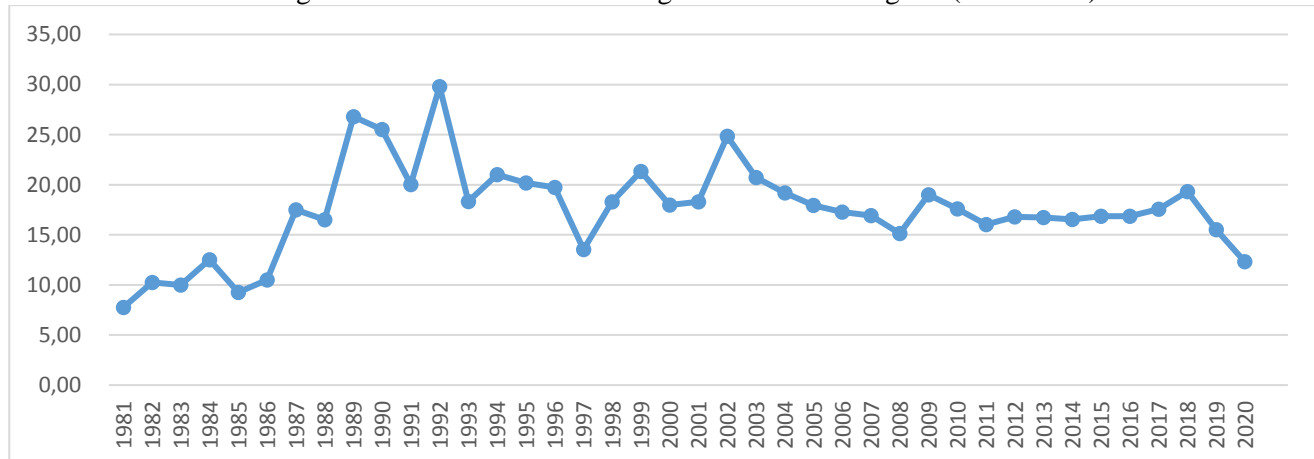


Fig. 4: Trend of % Prime Lending Interest rate in Nigeria (1981-2020)



4.2 Descriptive Statistics of the Variables

Based on the level of average values of the variables, the summary statistics in Table 1 showed that the Real GDP displayed higher values and this was followed by domestic debt. The level of deviation in RGDP is also the highest while the least is external debt apart from the effective interest rate. From the P-

values of Jarque-Bera, all the variables are characterized by a normal distribution except default/debt servicing.

Table 1. Summary Statistics of the variables

	RGDP	EDTS	DDTS	DDSP	EXR	EIR	GFCF
Mean	37726.48	2.81502	3285.393	1.976586	103.4418	7.72E+10	8509.113
Median	26935.32	2.812120	1016.974	2.191496	111.9433	27949879	8167.453
Maximum	72094.09	4.103996	16023.89	3.513946	358.8108	2.76E+12	15789.67
Minimum	16211.49	0.367580	11.19260	0.003063	0.610025	2139.659	5668.868
Std. Dev.	20039.75	0.847342	4601.101	1.011802	100.7407	4.42E+11	1905.268
Jarque-Bera	4.843204	7.150917	14.88361	2.485265	4.790372	2078.960	33.67159

Probability	0.088779	0.028003	0.000586	0.288623	0.091156	0.000000	0.000000
Sum	1471333.	109.7851	128130.3	77.08684	4034.231	3.01E+12	331855.4
Observations	40	40	40	40	40	40	40

Source: Author's computation 2022 using the underlying data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

4.3 Correlation Matrix

Table 2. Correlation matrix of the variables

	RGDP	GFCF	EDTS	DDTS	DDSP	EXR	EIR
RGDP	1						
GFCF	0.50	1					
EDTS	0.59	0.35	1				
DDTS	0.92	0.51	0.77	1			
DDSP	0.82	0.48	0.88	0.97	1		
EXR	0.92	0.48	0.82	0.93	0.91	1	
EIR	-0.14	-0.12	-0.09	-0.12	-0.11	-0.15	1

Source: Author's computation 2022 using the underlying data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

The values of the correlation coefficient from the result in Table 2 indicate that domestic debt was correlated at 92% with RGDP, followed by debt servicing at 82%. Both domestic and external debts exhibit a high correlation with debt servicing at 97% and 88%. Effective interest rate (which is the real cost of borrowed loan) shows a negative correlation with all the variables. This revealed -0.14, -0.12, -0.09, -0.12, -0.11 and -0.15 respectively. This further could imply the negative effect of effective interest rates on Nigeria's borrowing in successive and preceding years. The result further revealed that the burden has been passed over the macroeconomic activities in the economy as revealed

4.4 Unit root Test

As a precondition for ascertaining the type of estimation technique(s) suitable for the study, the results of the unit root using Augmented Dickey-Fuller and Phillips-Perron are shown in Table 3. The

unit root test, which is also known as the stationarity test is a necessary prerequisite in determining the nature and characteristics of the time-series properties of the data. If the data generating process of each variable is stable, the unit root test using the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) will show level stationery expressed as the integration of order zero, I (0) and if otherwise, the variable may require being differentiated at least once to achieve stationarity denoted as the integration of order one, I (1). From the results, Both ADF and PP exhibit similar results. While only Gross fixed capital formation (GFCF) and effective interest rate (EIR) were stationary at levels, I (0), all other variables achieved stationarity at order one, I (1). Since the selected variables exhibited mixed order of unit results for the bound test method to cointegration Pesaran et al., [41] known as the autoregressive distributed lagged (ARDL) model was used.

Table 3. Unit Root test results

Variables	Augmented Dickey Fuller (ADF)			Philips-Perron (PP)		
	T-statistics	P-value	Remark	T-statistics	P-value	Remark
RGDP	-2.772186	0.0718***	I (1)	-2.035210	0.0415**	I (1)
GFCF	-7.476238	0.0000*	I (0)	-7.747362	0.0000*	I (0)
EDTS	-4.688461	0.0000*	I (1)	-4.688461	0.0030*	I (1)
DDTS	-4.026357	0.0163**	I (1)	-3.884849	0.0225**	I (1)

DDSP	-8.045074	0.0000*	I (1)	-8.209656	0.0000*	I (1)
EXR	-4.719425	0.0027*	I (1)	-4.523536	0.0046*	I (1)
EIR	-6.316240	0.0000*	I (0)	-6.316587	0.0000*	I (0)

Note: *, **, and *** represent 1%, 5%, and 10% level of statistical significance.

Source: Author's computation 2022 using the underlying time series data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

4.5 ARDL Bound Test for Model One

$$RGDP_t = \beta_0 + \beta_1 EDTS_t + \beta_2 DDTS_t + \beta_3 DDSP_t + \beta_4 EXR_t + \beta_5 EIR_t + \mu_t$$

To achieve this objective and to test for the hypothesis, the result for the bound test for model one is presented in Table 4. From the result, the value of the F-test (8.348) in Table 4 for the bound testing of co-integration among the variables shows that there is a long-run relationship among the variables. This is

because the value is greater than the critical values for the lower and upper bounds of the order of integration of the variables.

Table 4. ARDL Bound test for model one

ARDL Bounds Test		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	8.347893	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Author's computation 2022 using the underlying time series data from Central Bank of Nigeria's (CBN) Statistical Bulletin,

4.6 ARDL Regression Results for Model One

Having found that there is co-integration among the variables, the impact of public debt management can be tested through the regression results in Table 5. The results show that an increase in the lag value of RDGP will increase economic growth in the current period by 1.32%. By implication, the level of real gross domestic product (RGDP) in the immediate preceding year significantly influences the current level of RGDP by 1.32%. It is also observed glaringly from the results in Table 5 that the value of RGDP in the immediate past 2 years significantly showed a negative effect of about 0.51% on the current level of RGDP. This seems to show an issue of growth-decay if past strides achieved in economic growth are not consolidated with appropriate fiscal policies like debt management.

Furthermore, it is also important to note that debt management is relevance for economic growth. In comparing the differential impacts of external and domestic debt on the level of economic growth, the result in Table 5 further shows that external debt acquired over time shows an insignificant effect on economic growth but an increase in domestic debt would likely stimulate economic growth positively by 0.04%. This implies that it is much more beneficial for an economy to borrow from domestic sources for deficit financing. In terms of interest rate effect on the economy, an increase in real interest rates impacted economic growth positively. This is however contrary to *a priori* expectations. The exchange shows a sign of negative effect on economic growth as expected theoretically even though the coefficient is not significant. The model goodness of fit through its F-

test value (995.56; P-value of 0.000) as well as the high value of the coefficient of the determination of the model (R^2 0.996 and $\text{Adj.}R^2 = 0.995$), showed that public debt management had a significant effect on economic growth in Nigeria for the sampled years.

Table 5. ARDL Result for model one

Dependent Variable: Log_RGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG_RGDP(-1)	1.328335	0.167629	7.924239	0.0000*
LOG_RGDP(-2)	-0.507585	0.168382	-3.014480	0.0053*
LOG_EDTS	-0.028701	0.018222	-1.575031	0.1261
LOG_DDTS	0.041311	0.020038	2.061669	0.0483**
LOG_DDSP	0.002358	0.021180	0.111337	0.9121
EXR	-0.000104	0.000212	-0.489027	0.6285
EXR(-1)	0.000319	0.000194	1.649187	0.1099
LOG_EIR	0.005575	0.002183	2.553844	0.0162**
C	0.711106	0.368992	1.927156	0.0638
$R^2 = 0.996$		$\text{Adj.}R^2 = 0.995$	F-test = 995.5627 (0.000) *	

Note: *, **, and *** represent 1%, 5%, and 10% level of statistical significance.

Source: Author's computation 2022 using the underlying time series data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

4.6.1 Residual Diagnostic Checks for Model One

Statistical tools for residual diagnostic tests applied here are the Breusch-Godfrey Serial Correlation Test and Heteroscedasticity Test as well as the Model Stability Test with Parameter Normality test. From Table 6, the results showed that the estimated model is robust as there are no issues of autocorrelation and

the assumption of the residual error of constant variance with normal distributions is not violated.

Table 6. Some Diagnostic tests for model one

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.901626	Prob. F (2,27)	0.4178
Obs*R-squared	2.379023	Prob. Chi-Square (2)	0.3044
Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	2.510552	Prob. F (8,29)	0.0331
Obs*R-squared	15.54888	Prob. Chi-Square (8)	0.0493
Scaled explained SS	7.500080	Prob. Chi-Square (8)	0.4838

Source: Author's computation 2022 using the underlying time series data from Central Bank of Nigerian (CBN) Statistical Bulletin

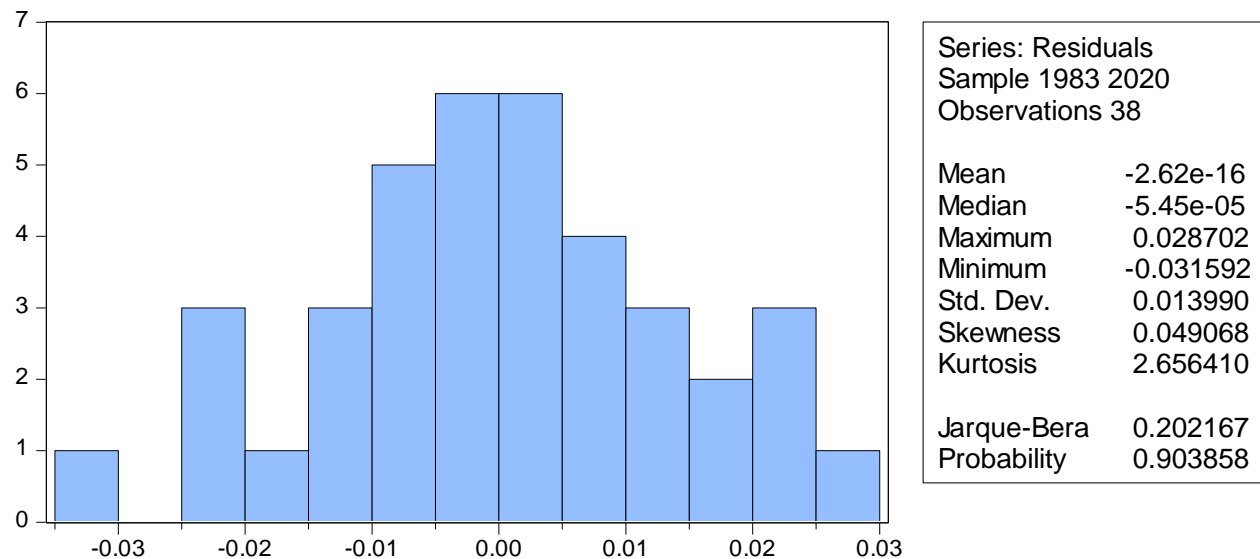


Fig. 5: Jarque-Bera normality Plot for model one

Source: Author's computation 2022 using the underlying time series data from Central Bank of Nigeria's (CBN) Statistical Bulletin.

The plot in Figure 6 also validates the fact that the estimations were robust as the parameters are stable with the indication that the residual estimates fall

within the 5% upper and lower bound of the CUSUM and CUSUM Square plot.

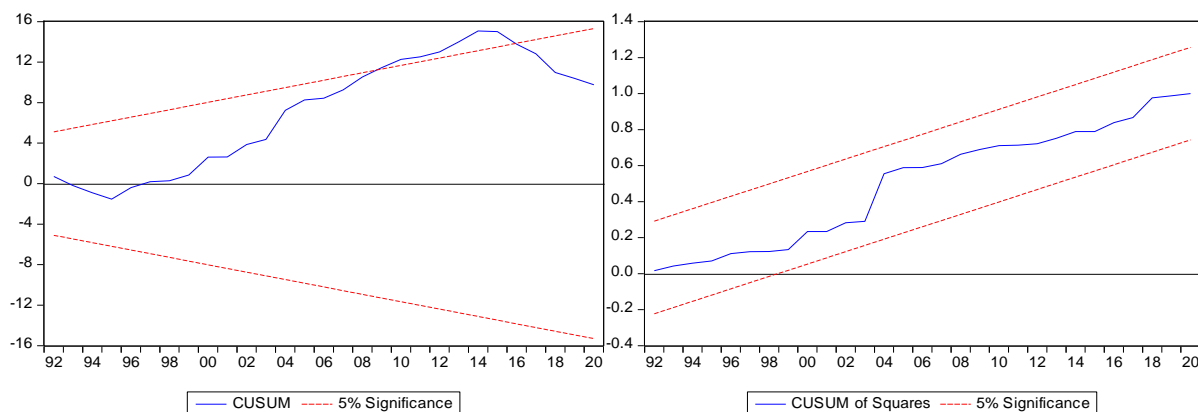


Fig. 6: CUSUM and CUSUM Square Plots for model one

Source: Author's computation 2022 using the underlying time series from Central Bank of Nigeria's (CBN) Statistical Bulletin.

4.6.2 Decision on Hypothesis

The null hypothesis of there being no significant effect on public debt management on economic growth in Nigeria was rejected because of the value of R^2 (99.6%) and its adjusted rate (99.5%), as well as the overall significant value of the F-test (995.56), support the fact that alternative hypothesis should be accepted. Therefore, it was concluded that public debt and the extent of its management have effects on economic growth measured by Real GDP. The

findings of other authors such as Fadayomi and Oluranti, [38]; Shahid [40]; Thao [35]; Udeh [37] are all consistent with the results of this study. However, our study was found to be inconsistent with some prior studies that found negative effects results of [10], [1], [33]. Based on the results of the study: the trend analyses result in Fig. 1 to Fig 6, and the regression analysis results in Table 1 to Table6 reported, they had further validated the underlying economic realities in Nigeria, Poor living standards

of the citizens, economic backwardness and infrastructural deficits and terrible security challenges. The successive government borrowings had failed to make a much-expected impact on the economic growth, due to bad economic policies, failure to optimize external and domestic borrowings over the years, and poor management and implementation of effective macroeconomics indexes, making Nigeria one among the poor developing economies of the world, with unprecedented debt profit.

5 Conclusion and Recommendations

In all respects, it is reasonable and economically normal for countries to borrow loans in order to finance productive investments and to finance public infrastructural development which are key drivers of the economic development of the country that are necessary for enhancing productivity. Consequent to this, the possible effect of public debt management on economic growth in Nigeria was investigated in this study. Results revealed that using (RGDP), public debt management had a positive significant effect on economic growth in Nigeria. Consequent to the results, it is recommended that adequate measures be put in place to invest the borrowed funds into productive ventures and service the loans when due to avoid default sanctions and default charges. Our results had shown a lack of optimal public debts management and poorly utilized borrowed funds. In some extreme cases, borrowed funds were either mismanaged or looted by a few unscrupulous government officials instead of investing them in economic yielding infrastructures, enhancement of quality education, power generations and other areas in the economy that could have stimulated economic activities. Consequently, the study advised that adequate infrastructural development investments should be considered a priority to stimulate economic activities that will in turn enhance economic growth in Nigeria.

6 Suggestions for Future Research

It was observed that there is a dearth of research in the area of public debt management and economic growth. Also, the various diverse options considered in this study had only been considered in a few research works. The various untapped resources from

where the government can derive various revenue were revealed. These resources can be accessible to the government if it ensures that effective debt management includes pragmatically harnessing all the potential sources as highlighted in this study. Thus, this study could serve as a rare resource base for future studies in the accounting and finance fields in relation to public debt management and economic growth in Nigeria. Also, researchers, analysts, and financial consultants will find this study a veritable reference point and another pool from which future research endeavours can be drawn.

References:

- [1] Eke, C. K., & Akujuobi, C. K. "Public debt and economic growth in Nigeria: Empirical investigation." *International Journal of Development and Management Review*, Vol. 16, No. 1, 2021, p.178-192.
- [2] Hayati, N, A. R., & Shafinar, I., & Ridzual, R. A. "How does public debt affect economic growth?" *A systematic review. Cogent Business & Management*, Vol.6, No. 3, 2019, p. 234-245
- [3] Elom-Obed, O. F., Odo, S. I., Elom, O. O., & Anoke, C. I. "Public debt and economic growth in Nigeria." *Asian Research Journal of Arts & Social Sciences*, Vol. 4, No. 3, 2017, p.1-16.
- [4] Picarelli, M. O; Vanlaer, W., & Marneffe, W. "Does public debt produce a crowding-out effect for public investment in the EU?" *European Stability Mechanism*, Vol. 12, No. 5, 2017, p. 1-15.
- [5] Aguguom, T. A. (2020). "Cash Flow Optimality and Investment Returns: Investors Expectations in listed Manufacturing Firms in Nigeria." *Asian Journal of Economics, Business, and Accounting*. Vol. 16, No. 4, 2020, pp. 39-50, Article no. AJEBA.59499. ISSN: 2456-639X. DOI: 10.9734/AJEBA/2020/v16i430247
- [6] Nur, H. R., Shafinar, S., & Abdul, R. R. "How does public debt affect economic growth? A systemic review." *Cogent Business and Management*, Vol. 6, No. 1, p. 1-16
- [7] Isaac, S., & Rosa, G. "Public debt, public investment, and economic growth in

- Mexico.” *International Journal of Financial Studies*, Vol. 4, No. 6, 2016, p.1-14.
- [8] Nassir, U. H., & Wani, H. K. “An evaluation of the relationship between public debts and economic growth: A study of Afghanistan.” *Munich Personal RePEc Archive*, Vol.3, No. 3, 2016, p.1- 19.
- [9] Kobayashi, K. “Public debt overhang and economic growth. Policy Research Institute Ministry of Finance Japan.” *Public Review*, Vol. 11, No. 2, 2015, p.247 -275
- [10] Ochuko, A. S., & Idowu, E. “Effect of public debt on economic growth in Nigeria: An empirical analysis 1981 – 2018.” *International Journal of Business and Economic Development*, Vol. 7, No. 2, 2018, p.10-17.
- [11] Igbodika, M. N., Jessie, I. C., & Andabai, P.W. ”Domestic debt and the performance of Nigerian economy (1987-2014): An empirical investigation.” *European Journal of Research and Reflection in Management Sciences*, Vol. 4, no. 3, 2016, p.34-42.
- [12] Eze, O. M., Nweke, A. M &Mba, M.K. “Public Debts and Nigeria’s Economic Growth.” *Journal of Economics and Finance (IOSR-JEF)*, Vol.10, No. I, 2019, p. 24-40.
- [13] Chinanuife, E., Eze, P., & Nwodo, O. “Public debt spiral and domestic investment in Nigeria.” *American Journal of Economic Studies*, Vol. 4, No. 1, 2018, p. 153-161.
- [14] Transparency International. Available at: <https://www.transparency.org/en/countries/nigeria>. (2020) Retrieved 25 September 2021.
- [15] Aguguom, T. A. “Strategic financial intervention of donor agencies to poverty eradication postulates in Africa.” *European Journal of Accounting, Finance, and Investment*, Vol. 5, No. 6, 2019, p. 36-47.
- [16] Abula, M., & Mordecai, M. “The impact of public debt on economic development of Nigeria.” *Asian research journal of arts and social sciences*, Vol. 1, No. 1, 2016, p. 1-16.
- [17] Lucky, E. U., & Godday, O. O. “The Nigeria debt structure and its effects on economic performance.” *International Journal of Business and Management Review*, Vol. 5, No. 10, 2017, p.79-88.
- [18] Ujuju, L.E. & Oboro J. O. ”Nigeria debt structure and its effects on economic performance.” *International Journal of Business and Management Review*, Vol. 5, No. 10, p. 79-88.
- [19] Rafindadi, A. A., & Musa, A. “An empirical analysis of the impact of public debt management strategies on Nigeria’s debt profile.” *International Journal of Economics and Financial Issue*, Vol. 9, No. 2, 2016, p. 125-137.
- [20] Aguguom, T. A., & Ehiogu, C. P. “Budget padding: The Nigerian perspective.” *International Journal of Advanced Academic Research*. Vol. 2, No. 12, 2016, p.41-55.
- [21] Akinwunmi, A. A., & Adekoya, R. B. “Assessment of the impact of external Borrowing on the economic growth of the developing countries-Nigerian Experience.” *Asian Business Research*, Vol. 3, No. 1, 2018, p. 29-40
- [22] Donayre, L., & Taivan, A. “Causality between public debt and real growth in the OECD: A country-by country analysis.” *Economic Papers*, Vol. 36, No. 2, 2017, p. 156–170.doi:10.1111/1759-3441.12175
- [23] Ndieupa, H.N. ”How does public debt affect economic growth? Further evidence FromCEMAC Zone.” *Asian Research Journal of Arts & Social Sciences*. Vol. 5, No, 1, 2018, p. 1-8.
- [24] Mousa, T.A. and Shawawreh, A. “The Impact of public debt on the economic growth ofJordan: An Empirical Study (2000-2015).” *Accounting and Finance Research*, Vol. 6, No. 2, 2017, p. 114-120.
- [25] Mwaniki, G. W. “Effect of Public Debt on the Gross Domestic Product in Kenya.” *Journal of Economics and Finance*, Vol. 7, No. 6, 2016, p. 59-72.
- [26] Matandare, M. A., & Tito, J. “Public debt and economic growth nexus in Zimbabwe.” *Journal of Economics and Sustainable Development*, Vol. 9, No. 2, 2018, p. 84-89.
- [27] Attapattu, A. M. C. P., & Padmasiri, H. M. N. ”Long run effect of public debt on economic growth in Sri Lanka.” *Journal of Business and Management*, Vol. 16, No. 3, 2018, p. 66-73.
- [28] Alejandro, D. J., & Ileana, R. J. “The impact of government debt on economic growth: An overview for Latin America.” *Department of Economics, University of Perugia (IT), Working Paper*, No. 28, 2017, p.1-11

- [29] Anochie, U. C., Ude, D. K., & Osuji, C. "Evaluating the Nigeria's domestic publicdebt stock: Implications to economic growth." *Journal of empirical economics*, Vol. 4, No. 6, 2015, p. 298-312.
- [30] Ewaida, H. Y. M. "The impact of sovereign debt on growth: An empirical study on GIIPS versus JUUSD countries." *European Research Studies Journal*, Vol. 20, No. 2, 2017, p. 12-34.
- [31] Essien, S. N., Agboegbulem, N. T. I., Mba, M. K., & Onumonu, O. G. "Empirical analysis of the macroeconomic impact of public debt in Nigeria." *CBN Journal of applied statistics*, Vol. 7, No. 1, 2016, p. 1-9.
- [32] Panagiotis, P. "The effect of government debt and other determinants on economic growth: The Greek experience. *Economies*, Vol. 6, No. 10, 2018, p. 1-19.
- [33] Yusuf, A., & Saidatulakmai, M. "The impact of government debt on economic growth in Nigeria." *Cogent Economics & Finance*, Vol. 9, No. 5, 2021, p. 1-19.
- [34] Saungweme, T., Odhiambo, N. M., & Camarero, M. "Government debt, government debt service and economic growth nexus in Zambia: A multivariate analysis." *Cogent Economics & Finance*, Vol. 7, No. 1, 2019, 1622998. <https://doi.org/10.1080/23322039.2019.1622998>Saxena
- [35] Thao, P. T. P. "Impacts of public debt on economic growth in six ASEAN countries." *Retsumeikan Annual Review of International Studies*, Vol. 17, No. 1, 2018, p. 63–88.
- [36] Akhanolu, I. A., Babajide, A. A., Akinjare, V. A., Tolulope, O., & Godswill, O. "The effect of public debt on economic growth in Nigeria: An empirical investigation." *International Business Management*, Vol. 12, No. 6, 2018, p. 436–441
- [37] Udeh, S. N., Ugwu, J. I., & Onwuka, I. O. External debt and economic growth: The Nigeria experience. *European Journal of Accounting Auditing and Finance Research*, Vol. 4, No. 2, 2016, p. 33–48.
- [38] Fadayomi, T. O., & Oluriola, I. O. "Determinants of labour force participation in Nigeria." *Journal of Economics and Development Studies*, Vol. 2, No. 2, 2014, p. 169-190.
- [39] Kargi, B. "Labour force participation rate and economic growth: Observations for Turkey." *Universal Journal of Management and Social sciences*, Vol. 4, No. 4, 2014, 46-54
- [40] Shahid, M. "Impact of labour force participation on economic growth in Pakistan." *Journal of Economic and Sustainable Development*, Vol. 5, No. 11, 2014, p. 1-12,
- [41] Pesaran, M. H. and Pesaran, B. "Working with Microfit 4.0: Interactive Economic Analysis." Oxford, University Press, Oxford.
- [42] Trending Economics. Available at: <https://tradingeconomics.com/country-list/government-debt-to-gdp-2021>, Retrieved 27th September 2021.

Contribution of Individual Authors to the Creation of a Scientific Article (Ghostwriting Policy)

Festus Folajimi Adegbe carried out theoretical analysis and development of the model.

Emmanuel Dare Otitolaiye carried out the methodology and model specification.

Theophilus Anaekenwa Agugom and Ademola Ajayi carried out the data analysis and interpretations.

Source of Funding for Research Presented in a Scientific Article or Scientific Article Itself
Reported potential sources of funding if there is any. No source of funding were used for this article.

Creative Commons Attribution License 4.0 (Attribution 4.0 International, CC BY 4.0)

This article is published under the terms of the Creative Commons Attribution License 4.0

https://creativecommons.org/licenses/by/4.0/deed.en_US