PUBLIC DEBT, INSTITUTIONAL QUALITY AND ECONOMIC GROWTH: EVIDENCE FROM NIGERIA

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ABSTRACT
The rising stock of public and lack of steady improvement in macroeconomic indicators continued to generate disagreement among academics, policy makers and public analysts. This study examined the effects of public debt and institutional quality on the growth of Nigerian economy. Secondary data spanning 1981 to 2021 sourced from World Development Indicators, World Governance Indicators, Debt Management Office and Central Bank of Nigeria statistical bulletin. Autoregressive distributed lag was employed with real gross domestic product as the dependent variable while public debt, gross capital formation, labour force, exchange rate and institutional quality were the independent variables. The results showed evidence of long run equilibrium relationship among the variables. Also, findings revealed that in the long run domestic public debt established a positive significant influence on economic growth whereas external public debt had a negative significant impact on economic growth. Furthermore, institutional quality had significant negative effect on economic growth in the long run with no such evidence shown in the short run. Therefore, the study recommends that government should consider alternative sources of funding to external debt while institutional quality should be strengthened.

Keywords: Economic growth, Institutional quality, Public debt.
JEL Codes: E62, H63

1. INTRODUCTION
Achieving steady improvement in the growth rate of an economy is at the centre of economic policy of every government in both developed and developing countries. While developed countries have made significant progress in different facets of growth and development,

developing countries are finding it increasingly challenging no thanks to inadequate capital stock (Zouhaier & Fatma, 2014) that emanates from poor revenue generating capacity. Nigeria, like most developing countries is blessed with abundant resources in both human and natural but could not generate adequate financial resources to finance physical and human capital that would facilitate steady growth and development (Ayadi & Ayadi, 2008; Mbah et al., 2016). Consequently, public debt becomes an alternative source of financing social and developmental infrastructures in Nigeria as it is with other developing countries. According to Nwala and Saleh (2021), public debt especially in developing countries serves as a means of financing projects that would positively influence economic growth. The quest for economic development usually compelled government to seek for foreign loan to augment inadequate domestic resource (Bashir, 2019). Furthermore, Ebhotemhen (2020) averred that the need to finance developmental projects coupled with the gap between foreign exchange earnings and domestic saving-investment gap usually serves as the rationale for foreign borrowing.

However, Nigeria's experience with public debt is nothing to be celebrated as the economic indicators did not reflect significant improvement even in the face of rising public debt. The Nigeria debt burden was severe between 1984 and 1986 to such extent that foreign correspondent banks were not willing to honour any letter of credit from Nigeria even though public debt to gross domestic product ratios were 0.25% and 0.41% in 1984 and 1986 respectively, according to Central Bank of Nigeria (CBN, 2022). Similarly, the debt to GDP ratio rose from 4.96% in 1998 to 13.93%, 15.71% and 17.42% in 1999, 2000 and 2003 respectively before declining to 5.36% in 2006 because of debt rescheduling agreement with the Paris Club of Creditors (CBN Statistical Bulletin, 2022). The agreement through a buy-back arrangement led to payment of the sum of USD 18 billion to liquidate USD 30 billion. Meanwhile as of December 2021, total public debt stock (domestic and external) has risen to USD 84.98 billion which is about ₦35.10 trillion which translates to debt to GDP ratio of 47.83% and expected to rise ₦77 trillion in May 2023 according to Debt Management Office (DMO, 2022). Obviously, it means there is no positive manifestation of the rise in the stock of public debt on the growth rate of the economy while deterioration in the stock of physical infrastructure continues unabated. Given the rising public debt stock, Bashir (2019) queried the rationale for government to seek for foreign loans amid contracting growth.

The ineffectiveness or low impact of public debt on economic growth in Nigeria might not be unrelated to the absence of virile, strong and independent institutions that could have prevented the inordinate accumulation and poor deployment of borrowed funds into non-productive investment. According to Yildirim and Gokalp (2016), the differences in macroeconomic performance among countries cannot be separated from the formation, functioning and development of institutions which relates to habits that bring limitations to human actions through rules and organisations settled in social life, direct people on how they should behave, and lead social life. Similarly, (Keghter, et al. 2020) opined that the diversity in the institutional condition is related to differences in economic performance across nations. Thus, existence of a virile, strong and independent institution would limit excessive borrowing, ensure deployment of funds into productive activities and make government accountable to the people. However, Nigeria is bedevilled by poor institutions that has caused it to be consistently ranked among the worst countries in the world based on institutional indicators, Iyoboyi (2020). According to worldwide governance indicators (WGI, 2021) report, the average index of the six governance indicators of control of corruption, government effectiveness, political stability, regulatory quality, rule of law and voice and accountability for Nigeria were -2.19 in 1996, -1.24, -1.26, -1.14 and -1.17 in 2002, 2004, 2007 respectively 2009. The index was -1.18 in 2014 and oscillated between -1.04 and -1.05

in 2017 and 2021 respectively. Nigeria had not recorded positive estimates since the development of the indicators in 1996.

Emanating from the above are these questions: what effect does public debt decomposed into domestic and external has on economic growth; and what is the effect of institutions on economic growth? Therefore, empirical investigation to provide answers to these questions of the effect of domestic and external public debt as well as the role of institutional quality on economic growth is considered imperative. Although, both theoretical and empirical literature lacked consensus on the effects of public debt on economic growth, Nigeria's economic growth in the face of rising public debt has continued to generate divergent opinions from academics, policy makers and public analysts. Therefore, this paper investigates the effect of public debt and institutional quality on Nigeria's economic growth.

2. LITERATURE REVIEW

2.1 Conceptual Review

Organisation for Economic Cooperation and Development (OECD, 2009) define gross domestic product as the standard measure of the value of final goods and services produced by a country during a given year. The Bureau of Economic Analysis (BEA, 2015) defined GDP as the measure of the marker value of goods, services and structures produced by the nation's economy during a given period. It comprises goods and services that are produced for sale in the market and those of nonmarket goods and services. The real gross domestic product (RGDP) growth rate measures how fast an economy is growing in output production, that is, the rate at which a nation's gross domestic product (GDP) changes/grows from one year to another after accounting for the effect inflation (OECD, 2009).

According to Bhatia (2002), public debt can be defined in different ways to indicate their alternative combinations and to suit the purpose of the definition. It may include all financial obligations of a government including its currency. Owusu-Nantwi and Erickson (2016) describe public debt as borrowing by the government from both local and international financial markets to finance development projects and that public debt enables fiscal authorities to play their role in stabilizing their economies and stimulate aggregate growth. External public debt is composed of bilateral, as in the case of government to government, multilateral from international financial institutions and private creditors from international capital markets.

Institutional Quality relates to the entire governance structure of the societies that comprises rules, regulations and organisations that shape human interactions thereby determine the outcome of every activity. Differences in macroeconomic performance among countries cannot be separated from the formation, functioning and development of institutions which varies across societies (Yildirim & Gokalp, 2016). According to Yildirim and Gokalp (2016), institutions can be defined as habits that bring limitations to human actions through rules and organisations settled in social life, direct people on how they should behave, and lead social life.

2.2 Theoretical Review

Evidence from theoretical literature did not indicate that countries can exist without some element of debt. The debt overhang hypothesis is more concerned with the effect of accumulated debt on investment and output growth since servicing of debt would lead to decline in functional expenditure (Lamont, 1995; Pattilo et al., 2002; Kobayashi, 2015; Krugman, 1988; Panizza &

Presbitero, 2014) which would constrain economic growth. The conventional theory affirms the inevitability of deficit financing (debt) that has the tendency to raise household disposable income due to tax cut with rising government spending and could boost consumption spending thereby shifting aggregate demand that would result in factors utilisation and increased output, other things being equal. Chudik et al., (2015) espoused the conventional view, that having higher debt to GDP ratio can stimulate aggregate demand and output in the short run due to increased liquidity but crowds out private capital spending and reduces output in the long run because of debt servicing requirements. The Keynesian multiplier hypothesis argue in favour of government fiscal deficit (debt) to grow the economy. In support of the Keynesian multiplier hypothesis, DeLong and Summers (2012) argued that in the short run and in the absence of supply constraints, external debt and hysteresis would influence the economy positively.

2.2 Empirical Review

There exists vast empirical literature on the nexus between public debt and economic growth howbeit, with divergent conclusions. Gómez-Puig and Sosvilla-Rivero (2018) investigated the long-run nexus between public debt and GDP growth rates in both central and peripheral countries of the Euro Area for the period covering 1961 to 2013. The study explored the potential heterogeneity in the debt growth nexus both across different countries and time horizons of Austria, Belgium, Finland, France, Germany, Netherlands, Greece, Ireland, Italy, Portugal and Spain. The autoregressive distributed lag bounds testing approach employed approximates the relationship between the variables under each country and as well assess both short run and long run effects of public debt on economic growth. The findings showed that positive effect of public debt is possible in the short run whereas negative effect is evident in the long run.

The study by Juergen (2019) using data from 25 European Union member states over the 1996 to 2017 period examined debt and economic growth nexus. Findings indicated that debt has negative long-term influence on economic growth on both high debt and low debt countries with the impact being substantial in countries with high levels of debt. The results aligned with the position of Gómez-Puig and Sosvilla-Rivero (2018).

Eberhardt and Presbitero (2015) investigated the long-run relationship between public debt and economic growth in a panel consisting of 118 countries with annual data for the period spanning 1961-2012. Findings presented support for the existence of negative relationship between public debt and long run growth across the countries but there was no evidence of common threshold within the countries. Also, Ahlborn and Schweickert (2018), while testing the relationship between public debt and GDP growth using a worldwide panel of 111 developed and developing countries for the periods 1970 to 2010 found that public debt had a strong negative impact on GDP growth in continental countries than in liberal countries.

Ewaida (2017)'s study on the relationship between public debt as a percentage to gross domestic product, and gross domestic product per capita growth for 5-year average annual growth rate in two groups of countries also established the existence of negative effect of debt on growth which was also corroborated by Alzoubi et al., (2020) study on the relationship between public debt and economic growth in Jordan between 1990 and 2018. The authors used both descriptive and simple linear regression techniques for data analysis. The findings revealed a clear negative relationship between the ratio of net public debt (NPD) and gross domestic product (GDP). According to the authors, the negative relationship became stronger when the ratio of public debt to GDP exceeded 80%. While the findings were in consonance with the results of some earlier reviewed studies, the empirical analysis might suffer from spurious defects.

Emanating from inconclusive evidence in literature on debt and growth nexus, Mensah *et al.,* (2018) considered quality governance or institution as a factor that moderates the negative impact of debt on economic growth. The study covers 36 sub-Saharan African countries with annual data covering 1996 to 2013 using econometric tool of system generalised method of moments (SYS-GMM). Authors found that external debt beyond reasonable levels has negative and significant impact on economic growth. Furthermore, institutional quality can moderate the nonlinear nexus between external debt and economic growth. In an earlier study, Calderon and Fuentes (2013) analysed the relationship between public debt and economic growth in a large panel data of countries for 1970–2010 and presented evidence of a negative effect of public debt on growth. In addition, authors averred that strong institutions, high quality domestic policies, and outward-oriented policies partly limit the negative influence of public debt on economic growth. Furthermore, in a study spanning 1984-2019, Keghter, et al., (2020) examined the role of institutional quality in economic growth through the channel of health expenditure in Nigeria. Autoregressive distributed lag technique was applied to data on real gross domestic product as dependent variable with health expenditure and institutional quality proxied by control of corruption as independent variables. The authors presented evidence of long run relationship among the variables while findings showed that institutional quality has negative and significant effect on economic growth in both long run and short run.

In corroborative findings of negative relationship between public debt and economic growth, Asteriou et al., (2020) used data from fourteen Asian countries, over a period of 33 years (1980 to 2012) based on the technique of panel autoregressive distributed lag (ARDL) of pooled mean group (PMG), mean group (MG) and dynamic fixed effect (DFE). The variables used in the study are real gross domestic product, public debt, average years of schooling as proxy for human capital, trade openness, and investment ratio where all the variables are in their logarithmic form. In contrast, Owusu-Nantwi and Erickson (2016) used Johansen and VECM to investigate the long-run and causal relationship between public debt and economic growth in Ghana and found a positive and statistically significant long run relationship between the public debt and real GDP growth rate in Ghana.

Also, in a similar study by Ndubuisi (2017) on Nigeria for the period of 1985 to 2015 external debt established a positive and significant effect on economic growth while external debt service payment has negative effect on economic growth. The study used ordinary least square, augmented dickey-fuller unit root test, Johansen cointegration and error correction mechanism to analyse the impact of external debt on economic growth. On the contrary and using the autoregressive distributed lag (ARDL) Bound testing approach to cointegration and error correction model (ECM), Mbah et al., (2016) investigated the existence of long run equilibrium relationship between external debt and economic growth in Nigeria for the period 1970 and 2013. Findings revealed that external debt has negative and significant impact on economic growth.

In consonance with Mbah et al., (2016) findings but using different method of structural vector autoregression (SVAR) framework, Onafowora and Owoye (2017) found that external debt shocks have negative impact on growth. Also, Onakoya and Ogunade (2017) found that external debt impacts negatively on economic growth in Nigeria while export has positive and significant impact on economic growth. The authors adopted autoregressive distributed lag (ARDL) Bounds testing technique to cointegration and an error correction mechanism (ECM) to examine the impact of external debt on economic growth in Nigeria over a period of thirty (30) years covering 1981 to 2014. The error correction mechanism (ECM) indicated 45 percent adjustment to long run equilibrium in the event of shock in the short run. Seeking further evidence on the effects of

external debt on economic growth in Nigeria, Festus and Saibu (2019) used annual time series data on external debt, real gross domestic product, trade openness, gross fixed capital formation as a percentage of gross domestic product, inflation as well as exchange rate for the period spanning 1981 to 2016. The study adopted autoregressive distributed lag (ARDL) econometrics techniques with the results providing support for a negative impact of external debt on economic growth.

Appraisal of reviewed literature revealed that the role of institutional quality in the relationship between public debt and economic growth in Nigeria is scantly studied. Therefore, this paper intends to fill this gap by investigation the nexus between public debt, institutional quality and economic growth in Nigeria.

3. METHODOLOGY

3.1 Theoretical Framework

The debt overhang hypothesis was employed as a theoretical framework to investigate the relationship between public debt, institutional quality and economic growth in Nigeria. Debt overhang hypothesis relates to existence of large debt that has negative implications for investment and growth since investors expect that the current and future taxes will be raised to bring about the transfer of resources Elbadawi, Benno & Njuguna (1997). Fosu (1999) averred that due to the future tax associated with outstanding debt burden, debt overhang may raise the discount rate of potential investors. Consequently, short term investment projects will be given priority over long term projects which otherwise might be more productive in terms of higher net present discount value.

3.2 Model Specification

The empirical specification is derived from the aggregate production function used by Fosu (1999), Eberhardt and Presbitero (2015) and Gomez-Puig and Sosvilla-Rivero (2017) with modification through the inclusion of debt and institution's quality as separate factor inputs is:

$$Y_t = AF(K, L, D, Q) \quad (3.1)$$

where Y denotes the level of output growth, A is the index of technological progress, K depicts the stock of physical capital, labour input is represented by L, D is the stock of external debt and Q represents institutional quality. Since the production function is of degree one and Cobb-Douglas type, then equation 3.2 is expressed as follows:

$$Y_t = AK^{\beta} + L^{\beta} + D^{\beta} + Q^{\beta} \quad (3.2)$$

Taking the natural logarithm of equation (3.3) and representing the logarithmic terms by small letters, we obtain:

$$y_t = a + \beta_1 k_t + \beta_2 l_t + \beta_3 d_t + \beta_4 q_t \quad (3.3)$$

Emanating from the above, the model specifications for the empirical analysis of this study are stated as follows:

$$RGDP = f(GCF, LAB, TDD, TED, EXR, ISQ,) \quad (3.4)$$

Equation 3.5 expressed in econometric form as:

$$RGDP_t = \beta_0 + \beta_1 GCF_t + \beta_2 LAB_t + \beta_3 TDD_t + \beta_4 TED_t + \beta_5 EXR_t + \beta_6 ISQ_t + \varepsilon_t \quad (3.5)$$

where:

GCF represent gross capital formation, LAB stands for labour force, TDD is total domestic public debt, TED depicts total external public debt, EXR is exchange rate and ISQ is Institutional quality, being the mean of the control of corruption, government effectiveness, political stability,

regulatory quality, rule of law and voice and accountability. All variables except labour force and institutional quality are in real natural logarithm.

3.3 Data Sources

Secondary time series data are obtained from Central Bank of Nigeria (CBN) statistical bulletin (2021), Debt Management Office (DMO, 2021) Worldwide Governance Indicators (2021) and World Development Indicators (2021) for the period spanning 1981 to 2021.

3.4 Estimation Method

Thus, the Autoregressive Distributed Lag (ARDL) is considered as appropriate technique because of the advantages over other cointegration methods. The ARDL method has three main advantages; firstly, compared to other multivariate co-integration methods, the bound test is a simple technique because it allows the co-integration relationship to be estimated by OLS once the lag order of the model is identified. Secondly, the unit root test is not a pre-condition of this model. It is only necessary to ensure that none of the variables being examined is integrated of order two that is, I (2). Thirdly, the long-run and short-run parameters of the model can be estimated concurrently.

Therefore, the specific ARDL model for this study is expressed as follows:

$$\Delta lnRGDP_t = \alpha + \sum_{t=1}^{p} \beta_{0i} \Delta lnRGDP_{t-1} + \sum_{i=0}^{q_1} \beta_{1i} \Delta lnGCF_{t-1} + \sum_{i=0}^{q_2} \beta_{2i} \Delta LAB_{t-1} + \sum_{i=0}^{q_3} \beta_{3i} \Delta lnTDD_{t-1} + \sum_{i=0}^{q_4} \beta_{4i} \Delta lnTED_{t-1} + \sum_{i=0}^{q_5} \beta_{5i} \Delta lnEXR + \sum_{i=0}^{q_6} \beta_{6i} \Delta ISQ_{t-1} + \delta_0 lnRGDP_{t-1} + \delta_1 lnGCF_{t-1} + \delta_2 LAB_{t-1} + \delta_3 lnTDD_{t-1} + \delta_4 lnTED_{t-1} + \delta_5 lnEXR_{t-1} + \delta_6 ISQ_{t-1} + \varepsilon_t \quad (3.6)$$

$\varepsilon, \beta s \; and \; \delta s$ represent white noise error term, the short run coefficients, and long run coefficients respectively, while Δ is the first difference operator and t denotes time. As stated earlier, *p*, q_1, q_2, q_3, q_4, q_5 and q_6 are the respective numbers of lags of the dependent variable (*LNRGDP*) and the lags of the six (6) explanatory variables (*LNGCF, LAB, LNTDD, LNTED, LNEXR and ISQ*). Similarly, β_{0i}, β_{1i}, β_{2i}, β_{3i}, β_{4i}, β_{5i} and β_{6i} are respectively the coefficients associated with the lags of the dependent variable (*LNRGDP*) and lags of the six (6) explanatory variables.

If the variables are cointegrated, the short-run component of equation (3.6) and error correction term is estimated in the following form:

$$\Delta lnRGDP_t = \alpha + \sum_{t=1}^{p} \beta_{0i} \Delta lnRGDP_{t-1} + \sum_{i=0}^{q_1} \beta_{1i} \Delta lnGCF_{t-1} + \sum_{i=0}^{q_2} \beta_{2i} \Delta LAB_{t-1} + \sum_{i=0}^{q_3} \beta_{3i} \Delta lnTDD_{t-1} + \sum_{i=0}^{q_4} \beta_{4i} \Delta lnTED_{t-1} + \sum_{i=0}^{q_5} \beta_{5i} \Delta lnEXR + \sum_{i=0}^{q_6} \beta_{6i} \Delta ISQ_{t-1} + \varphi_1 ECM_{t-1} + \varepsilon_t \quad (3.7)$$

where φ is the coefficient of the error-correction term, ECM_{t-1}. φ is expected to have a negative sign which indicates that the variables revert to their equilibrium levels if they deviate from their equilibrium levels in the short run.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Statistics

The characteristics of the data series as revealed through descriptive statistics that encompasses measures of central tendency, variability, and probability distribution is presented in Table 4.1

Table 4.1: Descriptive Statistics

	GDP	GCF	LAB	TDD	TED	EXR	ISQ
Mean	37550.91	8248.122	45.841	3594.826	2311.985	108.058	-0.628
Median	8234.494	2546.590	60.261	1016.974	648.813	111.231	-1.035
Maximum	176075.5	59574.61	60.673	19242.56	15855.23	399.964	0.000
Minimum	139.311	87.136	0.000	11.193	2.331	0.618	-1.268
Std. Dev.	50434.86	12674.42	24.718	5162.039	3497.686	109.891	0.565
Skewness	1.284	2.445	-1.326	1.537	2.343	0.976	0.218
Kurtosis	3.459	9.099	2.802	4.247	8.359	3.179	1.085
Jarque-Bera	11.632	104.412	12.074	18.789	86.563	6.564	6.588
Probability	0.003	0.000	0.002	0.000	0.000	0.038	0.037
Observations	41	41	41	41	41	41	41

From Table 1, institutional quality has the least standard deviation meaning that data series clusters around the mean. Labour force is the only one that exhibits negative skewness, which implies that it has left long tail probability distribution whereas gross domestic product, gross capital formation, total domestic public debt, total public external debt, exchange rate and institutional quality exhibit positive skewness reflecting right long tail.

Furthermore, gross domestic product, gross capital formation, total domestic public debt, total public external debt and exchange rate have kurtosis values above 3 for normal distribution. It means that they have more higher values above the mean and therefore leptokurtic. In contrast, labour force and institutional quality have their kurtosis values below 3 which implies that there more lower values than the mean and therefore platykurtic.

The Jarque-Bera statistics and the associated probabilities show that none of the data series exhibits normal distribution as the probability values are less than 0.00 indicating statistical significance. Thus, the null hypothesis of normal distribution is rejected in favour of the alternative that data series are not normally distributed.

4.2 Unit Root Test

Testing for the stationarity or unit root to ascertain the time series properties of the data series is essential since economic and financial events are not static but vary overtime. Stationarity of series implies that the means, variance and covariance are constant overtime, that is, they are time invariant. Therefore, both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) were employed to ascertain the order of integration of the variables.

Table 4.2 Unit Root Test Result (Trend & Intercept)

Augmented Dickey Fuller (ADF)				**Phillips-Perron (PP)**		
Variables	**Level**	**1st Difference**	**Status**	**Level**	**1st Difference**	**Status**
ISQ	-1.696 (0.734)	-19.686*** (0.000)	I (1)	-6.324*** (0.000)	NA	I (0)
LAB	-1.599	-6.351***	I (1)	-1.604	-6.403***	I (1)

	(0.776)	(0.000)		(0.774)	(0.000)	
LNEXR	-2.670 (0.254)	-6.757*** (0.000)	I (1)	-2.558 (0.300)	-14.158*** (0.000)	I (1)
LNGCF	-3.141 (0.111)	-7.201*** (0.000)	I (1)	-3.015 (0.141)	-10.337*** (0.000))	I (1)
LNTDD	-3.588** (0.044)	NA	I (0)	-3.516* (0.051)	NA	I (0)
LNTED	-3.159 (0.107)	-7.114*** (0.000)	I ((1)	-3.159 (0.107)	-7.302*** (0.000)	I (1)
LNGDP	-2.652 (0.261)	-6.881*** (0.000)	I (1)	-2.568 (0.290)	-9.842*** (0.000)	I (1)

Note: ***, **, * denote rejection of the null of unit root at 1%; 5% and 10% levels respectively

Author's compilation (2023)

Since all the variables in the model are integrated of different order, that is, I (0) and one I (1) performing cointegration test is necessary according to Pesaran et al., (2001).

Table 4.3 Results of Bound Test Statistics for Cointegrating Relationship

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significance	I(0)	I(1)
F-statistic	10.2565	10%	2.12	3.23
k	6	5%	2.45	3.61
		2.5%	2.75	3.99
		1%	3.15	4.43

The results of ARDL Bound test statistics for cointegrating relationship as shown in Table 3 suggest existence of long-run relationships among the variables since the null hypothesis of no levels relationship between variables is rejected based on the value of F-statistics (10.2565) that is greater than Pesaran critical value of upper bound limit (4.43) at 1% significance level thus, the test indicates existence of cointegrating relationship between variables. Upon confirmation of the cointegrating relationship, the long-run effect of public debt and institutional quality on economic growth is estimated using the ARDL model. The results of the estimation are reported in Table 4 below.

Table 4.4 Result of Long Run Relationship of ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGCF	0.227	0.092	2.477	0.020
LAB	-0.001	0.001	-0.721	0.477
LNTDD	0.657	0.072	9.081	0.000
LNTED	-0.162	0.040	-4.074	0.000
LNEXR	0.236	0.067	3.537	0.001
ISQ	-0.720	0.138	-5.204	0.000

Note: ***, **, * denote 1%; 5% and 10% levels respectively

Author's compilation (2023)

The result of long run estimation is as shown in Table 4 indicates evidence of negative relationship between economic growth and labour, external public debt and institutional quality. This implies that increases in labour force, external public debt and institutional quality would lead to decrease in economic growth other things being equal. In terms of magnitude, a unit increase in labour force would cause a decline of 0.10 percent in economic growth while a one percent increase in external public debt would lead to 0.16 percent decrease in economic growth, *ceteris paribus*. Similarly, a unit increase in institutional quality would lead to 72 percent decrease in economic growth. Conversely, there is evidence that gross capital formation, domestic public debt and exchange rate have positive relationship with economic growth. This means that economic growth would increase because of increases in gross capital formation, domestic public debt and exchange rate. Concerning the magnitude, economic growth would increase by 0.23 percent, 0.66 percent and 0.24 percent respectively because of a 1 percent increase each in gross capital formation, domestic public debt and exchange rate. While gross capital formation is statistically significant at 5%, domestic public debt, external public debt, exchange rate and institutional quality are statistically significant at 1% whereas labour force is insignificant at all. Therefore, gross capital formation, domestic public debt, external public debt, exchange rate and institutional quality are significant factors that influence economic growth in Nigeria in the long run.

Table 4.5 Result of Short Run Relationship of ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	11.278	1.205	9.363	0.000
D(LGCF)	0.533	0.047	11.382	0.000
D(ISQ)	-0.195	0.047	-4.137	0.000
D(ISQ(-1))	0.072	0.043	1.668	0.107
CointEq(-1)*	-0.611	0.066	-9.337	0.000

Note: ***, **, * denote 1%; 5% and 10% levels respectively

Author's compilation (2023)

The error correction process within the system is obtained by the means of the error correction term (ECT). The result reveals that the coefficient of the error correction term has the appropriate negative sign (-) and is statistically significant at 1%. The significance of the error correction term provides further evidence to cointegrating long run relationship among the variables. This implies that in the event of shock leading to disequilibrium of the system, there can still be convergence to its normal state at an average speed of 61% within a year. Also, the short run coefficients reveal evidence of negative and statistically significant relationship between institutional quality and economic growth but positive and statistically significant relationship between gross capital formation and economic growth. This implies that both gross capital formation and institutional quality are significant factors that influence economic growth in Nigeria in the short run. To ensure that there is no violation of the classical linear regression model assumptions and that the results of the study would be suitable for policy adoption, various diagnostic tests were conducted, and results presented in Table 6 below:

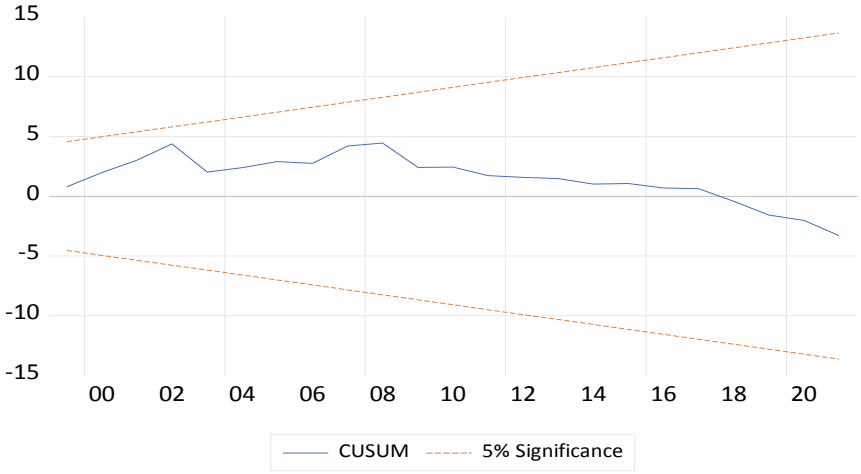
Table 4.6 Summary of Diagnostic Tests

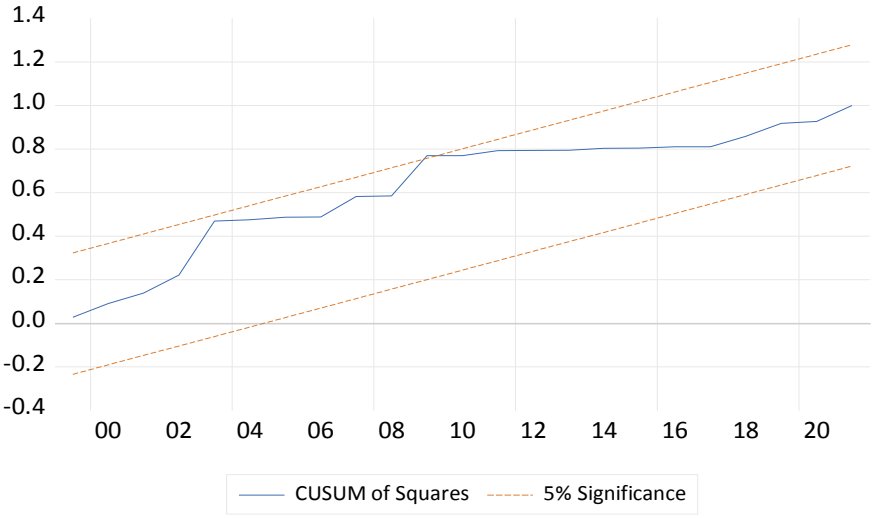
Tests	Statistics	Prob. Value	Remarks
Normality – JB	0.114	0.945	Normality
Serial correlation	1.162	0.329	No Serial correlation
Heteroskedasticity	1.073	0.414	Homoskedasticity
Ramsey RESET	1.532	0.137	Linear

Author's compilation (2023)

The post estimation test captured by Jarque-Bera, Breusch-Godfrey LM test, Breusch-Pagan-Godfrey Heteroskedasticity test and Ramsey reset test revealed not only the robustness of the estimated equation results but the desired properties of an econometric model. The diagnostic tests confirm the suitability of the estimated models. Thus, the model residual series are normally distributed as suggested by the Jarque–Bera statistics, while the Breusch–Godfrey LM test statistics indicate that the model does not have significant serial correlation problem. While the Ramsey RESET test indicates that there is no apparent non-linearity, the linear model is appropriate, the Breusch-Pagan-Godfrey test also produced the desired result as the variances of the error terms are constant overtime, hence homoskedastic. Overall, our results are satisfactory.

Table 7: Test of Stability





The tests of stability through CUSUM and CUSUM of squares indicate evidence of stability of the model as the blue line lies between the two red lines in both cases.

4.3 Discussion of Findings

The empirical findings of Mbah et al., (2016); Onakoya and Ogunade (2017); Onafowora and Owoye, 2017; provide evidence of negative and significant relationship between external public debt and economic growth which aligns with the findings of the present study. The plausible explanation can be found in debt overhang theory whereby debt servicing and repayment would result in reduced expenditure leading to decline in economic growth. In addition, debt overhang arising from debt accumulation would result in sub-optimal investment that could yield quick return but discourage investment in infrastructure that could growth the economy. However, the findings of this study conflicts with the findings of the Ndubuisi (2017) and Owusu-Nantwi and Erickson (2016) studies in which significant positive relationship between external public debt and economic growth was reported. Furthermore, significant positive relationship is found between economic growth and gross capital formation, domestic public debt and exchange rate.

A profound finding of this study is the statistical significance of institutional quality even though it comes with negative sign in contrast to a priori expectation but corroborates Keghter, et al., (2020). The relevance of institutional quality in policy effectiveness cannot be overemphasised as it places limitations on human actions through rules and organisations.

5. CONCLUSION AND RECOMMENDATIONS

Findings indicate that domestic public debt positively impact the economy while external public debt has deleterious influence on economic growth. Both cases have significant policy implications. In the case of domestic public debt raised through the financial market, it would lead to deepening of the financial market, increase the level of investment and cultivate savings orientation. In addition, its management is unlikely to be cumbersome compared with external public debt.

In the case of external public debt, there might be unwarranted intervention by foreign creditors on domestic policies besides the fact that foreign exchange earnings might be insufficient to meet debt service payments and importation of crucial raw materials for domestic production. This has implications for output growth, unemployment and standard of living. Another profound finding from the study is the statistical significance of institutional quality which has not been

prominent in previous empirical studies on the subject matter. Though, the effect is negative contrary to a priori expectation, its statistical significance is quite instructive as the policy makers are enjoined to attend to what really matters.

Therefore, emanating from the findings of this study that external debt has deleterious effect on economic growth, it is recommended that government should lessen dependence on external borrowing by embracing revenue diversification, public private partnership and domestic debt issuance through the capital market rather than engaging in ways and means advances that has continue to worsen the inflationary conditions due to excess cash not backed by production.

Also, the study recommends that strong, virile and independent institutional conditions should be entrenched that would limit the abuse of authorities by those responsible for the management of national resources.

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