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Impact of Domestic and External Debts on Income Inequality in Nigeria

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Abstract

This study investigated the impact of internal and external debts on income inequality in Nigeria through the period of 1986 to 2023. The objective of the study was to determine the source of debt financing that will reduce the income inequality in Nigeria. The annual times series data used for the were obtained for National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN). These data comprised of income inequality (INE), domestic debt (DOM), and external debt (EXT). The study conducted the pre and [post estimation analysis. The model of the study was estimated using Auto-Regressive Distributed Lag (ARDL) method and the findings showed that domestic debt reduced income inequality in Nigeria in the short run, however, in the long run, it had a positive but insignificant impact on income inequality. On the other hand, the study found that the performance of external debt in Nigeria does not significantly influence changes in income inequality. To this end, the study recommended that government should prioritize the use of domestic debt over external debt in the reduction of income inequality in Nigeria.

Keywords: *Income inequality, Domestic debt, External debt, Income distribution*

Background to the Study

Achieving equality in income distribution as a development goal is one of the biggest challenges of developing economies. Reducing inequality within nations has been the tenth sustainable development goal, as it has been seen to help curb certain issues in recent years (Osinowo et al., 2019; World Bank, 2016). Income inequality to describe the widening socioeconomic divide between the rich and the poor. Every economy experiences some degree of inequality, whether it be in labour or income. One of the fundamental characteristics of an economic system is the distributive system, in which resources and proceeds are distributed among the various social classes in the nation according to income or needs. Improved income distribution among individuals and socioeconomic groups were emphasized as major goals in Nigeria's development planning, with pertinent policies to accomplish these goals in the First to the Fourth National Development Plans. In a similar spirit, succeeding administrations have implemented a number of policies and initiatives to lessen the gap between various subgroups over time, although this eventually causes the economy to broaden. Among these are the following: N-Power, Tradermoni, Family Support Program, Agricultural Credit Guarantee Scheme, Low-Cost Housing Scheme, and Conditional Cash Transfer Programmes (Aye-Agele & Obimbua, 2024).

However, the data on Nigeria's income inequality is disturbing even with these government interventions (Aye-Agele &Obimbua 2024). The Economist, (2023), The Global World Report (2021), Oxfam (2019) mentioned that Nigeria was ranked out of 42 countries in the 2023 crony-capitalism index. Between 2000 and 2020, Nigeria's wealth disparity increased, with a wealth Gini coefficient of 85.5. In a similar spirit, Oxfam placed Nigeria at the bottom of the African list, placing it 45th out of 45 nations in terms of addressing income inequality. This suggests that Nigeria may not be able to meet Sustainable Development Goal 10 [SDG], which calls for reducing the income inequality gap.

Most developing nations have turned to borrowing as supplemental development finance to boost infrastructure spending due to limited fiscal space (Atta–Mensah & Ibrahim, 2024). There are differing views among economists regarding how to address the current degree of inequality. Theoretically, debt is one of the macroeconomic factors that contribute to income disparity. A developing nation can boost its economic growth by borrowing either internal or externally. However, this relationship is not simple. While excessive debt levels may cause income volatility and hence raise inequality, productive use of debt may result in a decrease in inequality levels (You and Duttf, 1996; Azzimonti et al., 2014; Umar et al., 2022). As a result, the direction and significance of this relationship differ from nation to nation based on their macroeconomic policies (Anselmann& Kramer, 2016).

The Nigerian government finances a portion of its expenses through public debt which can be grouped into external debt and domestic debt (Ebipre & Amaegberi, 2020). While it is theoretically possible for state and local governments to issue debt instruments, their capacity to do so is constrained by the resources available to them (Umar et al., 2022). Thus, it follows that one of the avenues through which a country's government can reduce the

income inequality gap could be through debt which economic theory has adjudged to boost economic growth when channelled in the right direction. Over the year, debt burden has been a major problem in addressing development challenges in Nigeria yet borrowing is equally necessary for economic growth in emerging economies like Nigeria. It is on this premise that the study was poised to examine the effect of domestic and external debts on income inequality in Nigeria.

Literature Review

Theoretical Framework

Keynesian theory of public debt forms the basis of the theoretical framework of this study. The development of the modern theory of public debt was partly caused by an economic downturn created by the Great Depression of the 1930s. The traditional belief that steadily imbalanced budgets and rapidly rising public debt threatened a country's financial viability gradually gave way to Keynesian thought. The traditional view that the economy tends to stabilize at full employment was challenged by Keynes in 1936. Keynes' theory of public debt states that an imbalanced budget may absorb resources that were idle and not available for use in the private sector. In his view, raising the national debt would have several advantageous effects, such as boosting the economy and raising national income. He concurred that the government should borrow money for all purposes in order to boost the economy's efficient demand, which will increase output and employment.

Empirical Review

The empirical review of this study highlights notable research works which investigate the link between debt and income inequality. These works were conducted in different locations and employed various research approaches and analytical techniques. Atta–Mensah and Ibrahim (2024) evaluated the impact of debts on income inequality in Africa. They investigated the threshold effects of debts using data from 24 African countries by relying on the sample splitting and threshold estimation approach. The results revealed that, while debts generally dampen income inequality, unbridled debt accumulation above the estimated thresholds does not decrease income inequality, indicating that the income inequality–reducing impact holds at lower levels of debt–to–GDP ratio.

Yakubu and Aladejare (2024) assessed the effect of economic growth on poverty and inequality in Nigeria between 1990 and 2022. The research applied the ARDL technique in its empirical analysis. Findings from the study indicated that economic growth does not have significant long-run impact on poverty and inequality. However, the short-run relationship showed that economic growth increases inequality in Nigeria. External debt was revealed to further aggravate poverty and inequality in the long-run. Also, while government effectiveness demonstrated an enhancing effect on poverty in the short and long-run periods, its long-run impact on inequality is significantly decelerating.

Liu and Bai (2023) analysed government debt and household wealth inequality in China. This study found that the expansion of government debt raises the price of housing, leading to faster wealth growth for wealthy households with relatively more real estate and widening the gap between rich and poor. This study argues that in economic development, government debt should be tilted towards livelihood protection and infrastructure construction, providing guaranteed housing to eligible relatively poor and narrowing the gap between rich and poor to a reasonable extent. Obiero and Topuz (2022) investigated the effect of internal and public debt on income inequality in Kenya for the period 1970–2018. The relationship was examined by using the Autoregressive Distributed Lag (ARDL) model. The findings suggested that both internal and public debt harm inequality in Kenya in the long term. Furthermore, a one-way causality from internal debt to income inequality was also obtained while no causality relationship was found to exist between public debt and income inequality.

Sayed (2020) examined the impact of domestic public debt on income inequality in Lebanon. The analysis was carried out using the Autoregressive Distributed Lag (ARDL) approach and Error Correction Model (ECM). The data used covered the period between 1990 and 2015. The result showed that the domestic share of public debt had a positive and significant effect on income inequality. Hence, the study concluded that a bigger share of domestic public debt leads to wider income inequality.

Akram and Hamid (2016) examined the consequences of public debt for income regarding selected South Asian countries such as, Bangladesh, India, Pakistan and Sri Lanka, for the period 1975-2010. The model of the study was estimated by using the standard panel data estimation methodologies. The results showed that neither public external debt nor external debt servicing had any significant relationship with income inequality, suggesting that public external debt is as good/bad for poor as it is for rich. However, domestic debt had a positive relationship with economic growth and a negative relationship with the GINI coefficient.

Methodology

Research Design and Data Source

Quasi-experimental research design was adopted as the research design for this study was used in the study. This research design became necessary because the study relied on time series data from secondary sources comprising of dependent and independent variables. The data for the study spanned from the period of 1986 to 2023 and were obtained from the National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) statistical bulletins (various issues).

Analytical Procedures and Model Specification

The study adopted Obiero and Topuz (2022) approach, but with some adjustment. This study differs from the work of Obiero and Topuz (2022) in the sense that the study was not conducted in Kenya and it specifically incorporates the effect of external debt on income

inequality. Just like the work of Obiero and Topuz (2022), this study utilized the Auto-Regressive Distributed Lag (ARDL) method in examining the short run and long run relationships between the variables however, it did not apply the Toda Yamamoto causality test.

To this end, the model specification of the study goes by the following order:

The functional forms of the model are as follows;

$$INE = f(DOM, EXT) \quad (1)$$

Stated in linear form gives;

$$INE = b_0 + b_1 DOM + b_2 EXT + u \quad (2)$$

A priori Expectations: $b_1 < 0, b_2 < 0$

Formulating the Autoregressive Distributed Lag (ARDL) long-run model gives;

$$\Delta(INE)t = b_0 + b_1(INE)t + b_2(DOM)t + b_3(EXT)t + \sum_{i=1}^{n} \Delta b_1(INE)_{-t-1} + \sum_{i=1}^{n} \Delta b_2(DOM)_{t-1} + \sum_{i=1}^{n} \Delta b_3(EXT) + \mu_{1t} \quad (3)$$

While the short-run Error Correction Model derived from the ARDL model yields;

$$\Delta(INE)t = \partial_0 + \partial_1(INE)t + \partial_2(DOM)t + \partial_3(EXT)t + \sum_{i=1}^{n} \Delta \partial_1(INE)_{t-1} + \sum_{i=1}^{n} \Delta \partial_2(DOM)_{t-1} + \left|\sum_{i=1}^{n} \Delta \partial_3(EXT)_{t-1} + \Pi ECM + \mu_{2t}\right| \quad (4)$$

Where: INE = Income inequality; DOM = Domestic debt; EXT = External debt; b_0 = $Interceptofthemodels$; $b_1 - b_2$ = $Slopesofthemodelsrespectively$; $b_1 - b_3$ = $Long - rundynamiccoefficients$; $\partial_1 - \partial_3$ = Short – run dynamic coefficients; μ_t = $Disturbanceorerrorterm$; Δ= $Firstdifferenceoperator$; n = $Maximumlaglenght$; Π = $Errorcorrectioncoefficient$; ECM = $Errorcorrectiontermwithoneperiodlag$; f = $FunctionalNotaton$

Results and Discussion

Unit Root Test

Table 1: presents the results of the unit root test which was achieved using the Augmented Dickey Fuller (ADF) method.

Table 1: Augmented Dickey Fuller (ADF) Unit Root Test Results

Variable	ADF Test Stat.	5% Critical Value	P-value	Order of Integration	Test Option	Remark
INE	-5.353572	-3.540328	0.0005	I (1)	Trend & Intercept	Integrated of order 1
DOM	-3.800650	-2.960411	0.0071	I (0)	Intercept	Integrated of order 0
EXT	-5.688323	-3.540328	0.0002	I (1)	Trend & Intercept	Integrated of order 1

Source: Author's computation from E-views software, 2024

Table 1 indicates that income inequality and external debt are integrated of order 1. This implies that these series were differenced once before attaining stationarity. This result is borne on the basis that at 5 percent level, the ADF test statistic values (-5.353572 and -5.688323) of the series are more negative than their corresponding critical values (-3.540328 and -3.540328). The result further shows that domestic debt at 5 percent level of significance had no unit root. This suggests that the time series is integrated of order 0. Stationarity within a series implies that the mean and variance of the series do not vary systematically over time. This suggests that the result emanating from the econometric analysis of these variables can be used for policymaking.

Lag Length Selection

Table 2 shows the result of the lag length criteria used in selecting the appropriate number of lags. The selection relied on the Akaike Information Criterion (AIC).

Table 2: Lag Length Selection Criteria Results

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-746.9189	NA	2.89e+15	44.11288	44.24756	44.15881
1	-627.7205	210.3503	4.43e+12	37.63062	38.16933	37.81433
2	-603.3507	38.70492	1.82e+12	36.72651	37.66926*	37.04802
3	-593.4160	14.02541	1.79e+12	36.67153	38.01832	37.13082
4	-579.6774	16.97129*	1.45e+12*	36.39279*	38.14361	36.98987*

*Indicate lag order selected by the criterion

Source: Author's computation from Eviews software, 2024

The result in Table 2 shows that the optimum lagis 4. This is on the premise that the Akaike Information Criterion (AIC) yielded the lowest value of 36.39279at lag 4compared to other lags. Therefore, in estimating the model of the study, the optimum number of lags used was 4.

Cointegration Test Result

ARDL bounds cointegration test method was used to test for the existence of long run relationship between the dependent variable and the independent variables. The result is given in Table 3.

Table 3: Result of the ARDL Bound Test

Test Statistic	Value	Signif.	I(0)	I(1)	Decision
F-statistic	4.508182	10%	2.63	3.35	
K	2	5%	3.1	3.87	Cointegrated
		2.5%	3.55	4.38	
		1%	4.13	5	

Note: K denotes number of explanatory variables
Source: Author's computation from Eviews software, 2024

The result in Table 3 points to the existence of long run relationship among the variables of the study. This is based on the fact that the computed F-statistic value of 4.508182 is greater than the upper critical bound value of 3.87 at 5 percent level. This confirms the presence of cointegration relationship between Income inequality and the independent variables (domestic debt and external debt).

Model Estimation
The result of the regression analysis using the ARDL method is presented in Table 4.

Table 4: ARDL Long and Short Run for Model

Dependent Variable: INE				
		Short run results		
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(INE(-1))	-0.035328	0.201771	-0.175091	0.8626
D(INE(-2))	0.067213	0.208642	0.322146	0.7504
D(INE(-3))	-0.697271	0.207440	-3.361314	0.0028
D(DOM)	-0.003380	0.000931	-3.630616	0.0015
D(DOM(-1))	0.000794	0.001092	0.727304	0.4747
D(DOM(-2))	-0.003928	0.000841	-4.669445	0.0001
D(DOM(-3))	-0.003244	0.001080	-3.002892	0.0066
D(EXT)	0.001049	0.000636	1.650342	0.1131
CointEq(-1)*	-0.149831	0.033099	-4.526780	0.0002
		Long run results		
DOM	0.008121	0.010819	0.750558	0.4609
EXT	-0.008767	0.012303	-0.712594	0.4836
R-squared	0.623834			
Adjusted R-squared	0.503461			
Durbin-Watson stat	1.649285			

Source: Author's computation from Eviews software, 2024

The result of the ARDL estimation in Table 4 indicates that in the short run domestic debt had a significant negative impact on income inequality at 5 percent level. Specifically, this impact was registered in the current period, second lag period, and third lag period respectively. This indicates that an increase in domestic debt in the short run leads to a decrease in income inequality. However, in the long run domestic debt had a positive but insignificant impact on income inequality at 5 percent level. This long run result is a complete departure from the short run position. Further, the result on external debt shows that at 5 percent level, EXT had a positive but statistically insignificant effect on income inequality in both the short run and long run, as the respective p-values of 0.1131 and 0.4836 are greater than 0.05. This result suggests that Nigeria's income inequality is not influenced by the performance of the nation's external debt.

Furthermore, the result in Table 4 highlights the information about the error correction term (ECT) represented as CointEq(-1). The ECT has a coefficient of -0.149831 which is appropriately signed and significant at 5 percent level. An error correction term reflects the speed at which a dependent variable adjusts to a long run equilibrium after a short run shock. In this context, the system corrects approximately 14.98 percent of the deviation from the long-run equilibrium in each period. In another light, the R-squared value of 0.623834 implies that about 62.38 percent of the variation in the dependent variable is explained by the independent variables. On the other hand, the Durbin-Watson value of 1.649285 is close to 2 and can be generally considered acceptable. Thus, it follows that the presence of autocorrelation is lacking in the model**.**

Diagnostic Tests Results

The results of the diagnostic tests comprising of the Serial Correlation LM test, Heteroskedasticity Test, Ramsey RESET, and CUSUM test are presented in Table 5 and Figure 1 respectively.

Table 5: Result of Serial Correlation, Heteroskedasticity, Ramsey RESET Tests

Breusch-Godfrey serial correlation LM test	F-statistic	1.186555	Prob. F(2,20)	0.3259
	Obs*R-squared	3.606372	Prob. Chi-Square(2)	0.1648
Breusch-Pagan-Godfrey Heteroskedasticity	F-statistic	0.905569	Prob. F(11,22)	0.5507
	Obs*R-squared	10.59666	Prob. Chi-Square(11)	0.4776
Ramsey RESET	t-statistic	0.830047	Prob. Value	0.4158
	F-statistic	0.688978	Prob. Value	0.4158

Source: Author's computation from Eviews software, 2024

The result in Table 5 indicates the evidence of the absence of serial correlation and heteroskedasticity in the model. This outcome is hinged on the premise that the Obs*R-

squared of the Breusch-Godfrey serial correlation LM test and Breusch-Pagan-Godfrey Heteroskedasticityhad respective probability values of0.1648 and 0.4776 respectively are greater than 0.05. Further, the result of the Ramsey RESET suggests that the model was well-specified since the probability value of 0.4158 associated with the F-statistic is greater than 0.05.

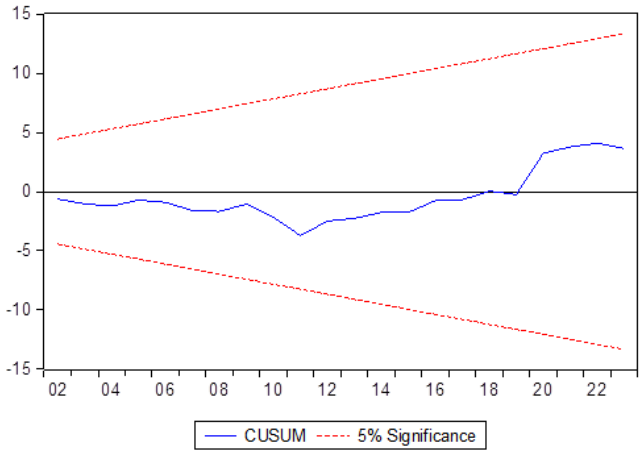

Figure 1: The Cumulative Sum Recursive Plot
Source: Authors estimation, 2024

The result in Figure 1 shows that the plotted CUSUM line, throughout the sample period does not deviate from the confidence bounds which is at 5% level. It indicates that the coefficients of the model are stable over time.

Discussion of Findings

This study finds that domestic debt significantly decreases inequality in the distribution of income in Nigeria in the short run. This result conforms to the a priori expectations and theoretical standpoint. The justification is that when domestic debt is used to finance social programmes, infrastructure, or public services that improve access for lower-income groups, it could reduce income inequality. Further, domestic debt may be associated with government spending in a way that redistributes wealth or supports poverty alleviation programs, thus reducing inequality. The long run result however suggests that domestic debt had no long run effect on income inequality; the insignificance of domestic debt in the long run might indicate that the short run effects of domestic debt on inequality fade over time, or that other factors may become more influential in determining income inequality in the long run. The findings of this study disagree with the work of Sayed (2020) in which domestic debt had no significant short run effect on inequality but had a significant positive effect on the latter in the long run.

On the other hand, the result also showed that there was no evidence of significant impact of external debt on income inequality in both the short run and the long run. Specifically, the short run result showed that external debt had a positive but insignificant effect on income

inequality suggesting that higher sovereign borrowings in this context may have the potential to increase income inequality in the short run. In contrast, the long run result showed that external debt had a negative but insignificant impact on income inequality which suggests that external debt does not play a meaningful role in shaping income inequality over the long term. It can be added that although external debt has the potential to reduce inequality in the long run, it has not been effective in achieving this purpose in the country. This could be due to factors like how external debt is utilized (e.g., if it is invested in infrastructure or other projects that do not directly benefit the lower-income segments of the population) or the possibility that external debt servicing becomes a burden, diverting resources away from poverty-reducing investments. Overall, this result disagrees with the work of Yakubu & Aladejare (2024) who found that external debt had a significant negative impact on income inequality in the long run however, it agrees with Akram and Hamid (2016) who concluded that external debt has no impact on inequality.

Conclusion and Recommendations

Nations around the world have resorted to borrowing in recent times to make up for deficit in their budgets. The utilization of these borrowed funds can either widen the divide between the poor and the rich or it can close the gulf on both ends. Nigeria for many decades has had to utilize both domestic and external debt to facilitate its development programmes, bridge fiscal gaps, stimulate economic growth, and invest in strategic sectors. However, as it is already established in many literatures, economies that fail to channel borrowed funds to productive sectors of the economy will be unsuccessful in closing the income inequality gap in the country. Therefore, this study examined the impact of domestic and external debts on income inequality in Nigeria through the period of 1986 to 2023. The study relied on the ARDL estimation in arriving at short run and long run empirical results. It follows that domestic debt significantly reduced income inequality in Nigeria in the short run however, in the long run, it had no significant impact on income inequality. Further, in the short run, external debt had a positive but insignificant effect on income inequality however, in the long run the effect was negative but insignificant. The findings lead to the conclusion that domestic debt have stronger redistributive impact on income inequality compared to external debt in Nigeria. Following these findings, the study recommended that government should prioritize the use of domestic debt over external debt in the reduction of income inequality in Nigeria. Policies to penalize the mismanagement of external debt should be encourage by the government and policy makers because channelling external debt to productive sectors of the economy such as the real sector and financing of infrastructural projects will reduce poverty and shrink the income inequality gap.

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