External Debt, Foreign Direct Investment, and Economic Growth in Nigeria

Jolly Markus, Prof. Emmanuel Ani
Department of Economics
Federal University Wukari, Taraba State, Nigeria
Corresponding author email [jollykatan@gmail.com]
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Abstract
This study examines how external debt and foreign direct investment (FDI) affect economic growth in Nigeria, using annual data for 1995–2024 from the World Bank's World Development Indicators and the Central Bank of Nigeria. Autoregressive distributed lag (ARDL) Bound testing suggests is relevant due to augmented Dickey-Fuller tests showing that the variables are a mix of I(0) and I(1) processes. Results from the bounds test suggest the existence of a long run relationship between real output, external debt, FDI, inflation, and exchange rate. The FDI coefficient is positive and statistically significant as is the coefficient on inflation in the long run, while the coefficient on external debt is negative and statistically insignificant and the coefficient on the exchange rate is insignificant. In the short run, growth in external debt is significantly and negatively associated with output growth, while exchange-rate depreciation and inflation are positively associated with it. The error-correction term (−0.81, p <.001), suggests rapid error correction: deviations from the long run equilibrium are corrected by 81% within one year. The reliability of the estimates is backed by both residual diagnostics and CUSUM-based tests of the stability of the parameters. The results indicate that external borrowing has not been able to produce any real growth dividend yet FDI is the more reliable source of external capital. The study suggests lowering of the reliance on external borrowing, dedicated borrowing of resources for productive infrastructure, improvement of investment climate, diversification of exports and the maintenance of price stability.

Keywords: *external debt; foreign direct investment; economic growth; ARDL; bounds test; Nigeria*

1. Introduction

Countries with low domestic saving have always resorted to foreign saving. The two primary sources are external borrowing and foreign direct investment (FDI). Nigeria's strategy for development has included both and both have played a prominent role in relieving growth from the constraint of savings and foreign exchange (Chenery & Strout, 1966). They are, however, different in an important respect. In contrast, debt imposes a claim on future foreign exchange flows, whatever their object, while FDI has an asset component, consisting of capital to be employed in the production and accumulation of foreign exchange flows (that may be in place even if no foreign exchange flows are received as a reward for the capital invested. Debt also generates a fixed claim on future foreign exchange flows, no matter their uses, while FDI has an asset component, that consists of capital to be used to generate foreign exchange flows—in either form or material—that might be obtained as dividends or interest. Nigeria offers a demanding test case. The economy is vulnerable to oil prices and foreign exchange shocks, domestic savings are not high, and the needs for infrastructure investment are high, thereby

placing pressure on the policymakers to take foreign loans. Meanwhile, there is also the problem that borrowers will be unwilling to borrow because they are afraid creditors will not be able to collect the money or that the debt stock will be so large that investors are unwilling to invest (Eaton and Gersovitz, 1981; Krugman, 1988). The debt-service requirements consume foreign exchange which is needed for productive imports. So, the role that external capital plays in affecting the growth of a country such as Nigeria is therefore a matter for empirical judgment with direct policy implications.

The conclusive studies carried out in Nigeria are limited, which leads to ambiguities regarding their results. While some scholars see positive role of external debt on growth (Sulaiman and Azeez, 2012), there are those who see negative role of external debt on growth (Audu, 2004; Ayadi and Ayadi, 2008), and those that don't observe any role of external debt on growth (Ogunmuyiwa, 2011). Finance: Evidence on FDI is less encouraging, but mostly short samples and short-term static regressions (Adeleke et al., 2014; Agbo et al, 2018). Most studies also separate internal and external debt in their analysis and others separate external debt from FDI, thus rarely conducting one model that could include the combined effect of these two sources of external finance. The gaps are addressed in this paper. In this model, output is estimated by employing an ARDL model for 1995-2024 allowing for the joint effects of external debt, FDI, exchange rate, and inflation. The ARDL methodology is appropriate for the data in hand since it allows for the presence of some I(0) regressors and some I(1) regressors, provides both the long run and short run estimates of the variables in one model and works well with small samples (Pesaran & Shin, 1999; Pesaran et al., 2001). How does external debt affect economic growth in Nigeria? (b) What are the opportunities for utilizing external debt to drive Nigeria's economic growth? (c) What will be the potential constraints of external debt on Nigeria's economic growth? (b) Discuss the role of FDI on Nigeria's economic growth. (c) Is there a long run relationship between external debt and FDI and growth? Similarly, it examines the three null hypotheses: H001: external debt has no significant effect on economic growth, H002: FDI has no significant impact on economic growth and H003: external debt and FDI do not have significant joint long-run relationship with economic growth.

The study has three contributions: It is integrated debt and FDI in one ARDL and covers the 30-year period incorporating the recent debt build-up and currency depreciation; it reports on the long-run effects as well as the short-run effects, and on the speed of adjustment; and it performs residual diagnostics and stability tests on the estimates. The rest of the paper is organized as follows: Section 2 covers the literature, Section 3 outlines the data and methodology, Section 4 outlines and discusses the results, and Section 5 offers policy recommendations.

2. Literature Review

2.1 Conceptual Issues

External debt is that portion of the total debt of a country which is serviced in foreign currency and is owed to non-residents such as international commercial lenders, bilateral and multilateral lenders. The two-gap framework of Chenery & Strout (1966) recognises that governments borrow internationally for three purposes: balance-of-payment purposes, in order to smooth consumption and due to a lack of domestic saving for investment. The same borrowing will lead to problems if the volume of debt increases at a rate of faster than the capacity to service it, as there are increasing costs to repayment, particularly on ‘foreign exchange' and financial liabilities. FDI is an investment that involves a resident of one economy in an enterprise in another economy by acquiring an enterprise through a lasting interest and some degree of control. It could be in the shape of share capital, re-reinvested earnings or loaned capital within the agency. The repaid amount does not have to be fixed as in a loan, and FDI might provide access to export markets, management techniques and technology. The growth effect is still

contingent on the absorptive capacity of the host country, however (Borensztein et al., 1998). Economic growth is a process of sustained expansion in the production of an economy's goods and services, or, measured here, the sustained increase of an economy's proxy of its production of goods and services, real gross domestic product (GDP).

2.2 Theoretical Framework

The analysis is based on three theoretical perspectives. According to the neoclassical growth model (Solow, 1956; Swan, 1956), there are negative returns to capital and capital-poor economies provide large gains in output of capital resources per worker through additions from foreign capital to home saving. This increase is a temporary one – unless there is a technological advance – and is null and void if the funds are borrowed to support consumption or for the implementation of projects with low return on investment.

The debt-overhang hypothesis (Krugman, 1988; Sachs, 1989) suggest that if the expected value of the debt is greater than the country's repayment capacity, expected taxation and overseas transfers disincentive investment leading to reduced growth with an increase in debt. Another crowding out effect occurs because of an alternative use of the resources that go toward paying debt service for public investment. Both suggest an adverse impact of external debt that occurs past a certain threshold. The dependency theory (Prebisch, 1950; Amin, 1976) posits that peripheral economies are attached to the world system under less-than-optimal conditions with their primary commodity exports being bought by the core, and their manufactured goods exports sold to the periphery for primary commodities. In such a perspective, foreign capital, whether in the form of debt or domestic direct investment (DDI), can further increase the outside dependence without altering the productive potential of the country. Combined, the three views indicate that external debt is negative, FDI is positive but context dependent and macroeconomic stability variables like inflation and exchange rate are positive.

2.3 Empirical Review

Studies of external debt and growth in Nigeria reach divergent conclusions. The external debt had a positive influence on the growth rate, based on data of 1970-2010 and error-correction model, concluded by Sulaiman and Azeez 2012. The debt service burden negatively influenced the growth and public investment during 1970-2002 (Audu, 2004) while negative effect of debt and debt service has been reported in Nigeria and South Africa (Ayadi and Ayadi, 2008). In contrast, Ogunmuyiwa (2011) did not get any causes effect link between external debt and growth in 1970 to 2007. However, beyond Nigeria, Al Kharusi and Ada (2018) observed a negative debt–growth relationship in a typical emerging economy and Eberhardt and Presbitero (2015) concluded that the debt–growth long-run relationship differs from country to country, with each economy having its own level of optimal public debt. The differing results suggest how crucial it is to take different samples, use different estimation techniques, and measure debt in various ways. There is greater consensus around FDI. The results of Adeleke et al. (2014) further supported this finding by showing that the growth of Nigeria for the period 1999-2013 was, on average, statistically significant and positively related with FDI inflow for the period. While Agbo et al. (2018) was able to identify a positive relationship between the flow of FDI inflows into Nigeria for 1980-2012. However, Borensztein et al. (1998) warn that FDI increases growth primarily in the presence of human capital in the host nation to absorb new technology. Research on inflation also found that this issue of inflation and growth follows a nonlinear pattern, meaning that the inflation above certain point starts to have a negative effect (Khan & Senhadji, 2001).

2.4 Gaps in the Literature

Three gaps emerge. First, debt and FDI are usually examined separately, which prevents an assessment of their joint influence. Second, the Nigerian studies reviewed here all end before 2017 and therefore omit the recent period of rapid debt accumulation and sharp currency depreciation. Third, estimation methods vary widely, and static regressions and simple correlations are common even though macroeconomic series are often non-stationary. This study responds by modelling both forms of external finance together in an ARDL framework that is robust to mixed orders of integration and that covers 1995–2024.

3. Data and Methodology

3.1 Research Design and Data

The study applies an ex post facto design with time series secondary data collected over three decades spanning 1995 to 2024 (30 observations) from the World Bank, 2024 (World Development Indicators (WDI)) and the Central Bank of Nigeria Statistical Bulletin of 2024 (Central Bank of Nigeria Statistical Bulletin 2024). The proxy for growth in economy is real GDP. The variables to be explained are external debt stock, FDI inflows, exchange rate and inflation rate. Table 1 is an explanation of the variables and what are expected signs.

Table 1: **Variables, Measurement, and Expected Signs**

Variable	Measurement	Transformation	Expected sign
GDP	Real gross domestic product (index, 2010 = 100)	Natural log	Dependent
EXD	Total external debt stock (US$ million)	Natural log	Negative
FDI	Foreign direct investment inflows (current US$)	Natural log	Positive
EXR	Official exchange rate (naira per US$)	Level	Positive
INF	Consumer price inflation (annual %)	Level	Negative

Note. Data are from World Bank (2024) and Central Bank of Nigeria (2024). The expected sign for the exchange rate reflects the view that depreciation improves export competitiveness and attracts investment.

External debt and FDI flows are logged to ensure that the coefficients can be interpreted as elasticities, and to ensure that the overall cross-sectional differences between the two series do not overwhelm the estimation. Because the exchange rate and inflation are already ratios/rates they are not maintained at levels. The specification is purposefully parsimonious with only 30 observations per year and introducing extra regressors would result in loss of degrees of freedom required for the ARDL Lag Structure.

3.2 Model Specification

Following Adeleke et al. (2014), growth is modelled as a function of external debt, FDI, the exchange rate, and inflation:

$$\ln GDP_t = \beta_0 + \beta_1 \ln EXD_t + \beta_2 \ln FDI_t + \beta_3 EXR_t + \beta_4 INF_t + \varepsilon_t \quad (1)$$

The a priori expectations are $\beta 1 < 0$, $\beta 2 > 0$, $\beta 3 > 0$, and $\beta 4 < 0$. Debt is expected to depress growth, either via overhang or crowding out, while FDI is expected to increase it through capital and technology transfer, depreciation through export competitiveness, and inflation through reducing real returns and increasing uncertainty. Given that the variables are a combination of I(0) and I(1) series variables (Section 4.2), the model in Equation 1 is estimated in ARDL format:

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \varphi_i \Delta \ln GDP_{t-i} + \sum_{j=0}^{q} \theta_j' \Delta X_{t-j} + \delta_1 \ln GDP_{t-1} + \delta_2 \ln EXD_{t-1} + \delta_3 \ln FDI_{t-1} + \delta_4 EXR_{t-1} + \delta_5 INF_{t-1} + \varepsilon_t \quad (2)$$

where Δ is the first-difference operator and **X** is the vector of regressors. The null hypothesis of no long-run (levels) relationship is H_0: $\delta_1 = \delta_2 = \delta_3 = \delta_4 = \delta_5 = 0$. Once cointegration is established, the short-run dynamics are estimated through the error-correction representation:

$$\Delta \ln GDP_t = \alpha_0 + \sum_{i=1}^{p} \varphi_i \Delta \ln GDP_{t-i} + \sum_{j=0}^{q} \theta_j' \Delta X_{t-j} + \lambda ECT_{t-1} + u_t \quad (3)$$

where ECT_{t-1} is the lagged error-correction term and λ, expected to be negative and significant, measures the speed with which output returns to its long-run path after a shock.

3.3 Estimation Procedure

There are five steps to estimation. First of all, descriptive statistics and the Jarque–Bera test (Jarque & Bera, 1987) are used to summarise the data. Second, the order of integration has been determined using augmented Dickey–Fuller (ADF) tests as this magnitude needs to be the same for the bounds approach, and cannot be I(2) (Dickey & Fuller, 1979). Thirdly, based on the following criteria, namely likelihood ratio, final prediction error, Akaike, Schwarz and Hannan–Quinn, the optimal length of lags is chosen using a vector autoregression. Fourthly, the F-test of the bound's procedure (Pesaran et al., 2001) is employed for testing for long-run relationship and the long-run coefficients are estimated followed by the estimation of the error-correction model. Fifth, the model is tested for normality using the Jarque-Bera normality test, heteroskedasticity test and CUSUM and CUSUM-of-squares stability tests (Brown et al., 1975). These all were estimated within EViews 10.

4. Results and Discussion

4.1 Descriptive Statistics

The data was summarized in Tabulated 2. The inflation rate averaged 19.89% but the median was a much lower 12.94% and the highest rate was 72.84%, suggesting that the measured distribution of inflation rates was strongly right-skewed. Over the sample the exchange rate increased from N1544.19 to N21.89 per US dollar, that is, successive depreciations took place. The Jarque–Bera statistics show that the log-transformed series of GDP, external debt and FDI are normally distributed, while the series of inflation and exchange rate are not ($p < .001$) and this is due to episodes of extreme inflation and exchange rate devaluation. Normality of the regressors is not required by the ARDL approach; what matters is the normality of the residuals, which is tested in Section 4.7.

Table 2: **Descriptive Statistics, 1995–2024**

Statistic	lnGDP	lnEXD	lnFDI	INF	EXR
Mean	4.403	7.846	19.904	19.892	231.657
Median	4.529	7.877	19.892	12.942	149.589
Maximum	6.344	10.732	21.354	72.836	1,544.194
Minimum	2.651	6.084	16.499	5.382	21.886
Std. dev.	0.966	1.350	1.165	17.219	283.692
Skewness	−0.175	0.475	−0.711	1.721	3.522
Kurtosis	2.131	2.264	3.394	5.026	16.574
Jarque–Bera	1.096	1.808	2.722	19.940	292.331
p (Jarque–Bera)	.578	.405	.256	< .001	< .001
n	30	30	30	30	30

Note. Authors' estimates. ln = natural logarithm.

4.2 Unit Root Tests

Table 3 reports the ADF results. Log GDP, log external debt, and log FDI are non-stationary in levels and become stationary after first differencing, so they are I(1). Inflation and the exchange rate are stationary in levels, so they are I(0). No variable is I(2). The mixture of I(0) and I(1) series rules out a conventional Johansen cointegration test and supports the ARDL bounds approach.

Table 3: **Augmented Dickey–Fuller Unit Root Tests**

Variable	ADF *t*-statistic	5% critical value	*p*	Stationary at	Order
lnGDP	−4.449	−2.976	.0016	First difference	I(1)
lnEXD	−3.737	−2.972	.0089	First difference	I(1)
lnFDI	−7.616	−2.972	< .001	First difference	I(1)
INF	−4.262	−2.972	.0025	Level	I(0)
EXR	−4.200	−2.981	.0072	Level	I(0)

Note. Authors' estimates using EViews 10. The null hypothesis is that the series has a unit root.

4.3 Lag Selection and Bounds Test

With 28 usable observations in the VAR, the likelihood-ratio, final prediction error, Akaike, and Hannan–Quinn criteria all select two lags, whereas the Schwarz criterion selects one. A maximum of two lags was adopted, which preserves degrees of freedom in a short sample. Table 4 presents the bounds test. The *F*-statistic of 4.251 exceeds the upper critical bound at the 10% (3.52) and 5% (4.01) levels but falls short of the upper bound at the 2.5% (4.49) and 1% (5.06) levels. The null hypothesis of no levels relationship is therefore rejected at the 5% level, indicating a long-run relationship among real output, external debt, FDI, the exchange rate, and inflation. The evidence is significant but not overwhelming, and it should be read with the caveats in Section 5.3.

Table 4: **ARDL Bounds Test for a Long-Run Relationship**

Test statistic	Value	Significance level	I(0) bound	I(1) bound
F-statistic	4.251	10%	2.45	3.52
k	4	5%	2.86	4.01
		2.5%	3.25	4.49
		1%	3.74	5.06

Note. H_0: no levels relationship. Critical values are the asymptotic bounds of Pesaran et al. (2001).

4.4 Long-Run Estimates

Table 5 reports the long-run coefficients. External debt has the expected negative sign but is statistically insignificant (β = −0.064, *p* = .802): there is no reliable long-run effect of the external debt stock on output. FDI has a positive and statistically significant coefficient (β = 0.006, *p* = .017), in line with the a priori expectation, although the elasticity is economically small. Inflation has a positive and significant coefficient (β = 0.016, *p* = .037), contrary to expectation, and the exchange rate is positive but insignificant (*p* = .390).

Table 5: **ARDL Long-Run Estimates (Dependent Variable: lnGDP)**

Variable	Coefficient	Std. error	*t*-statistic	*p*
lnEXD	−0.0644	0.2530	−0.255	.802
lnFDI	0.0057	0.1374	4.041	.017**
INF	0.0165	0.0073	2.255	.037**
EXR	0.0033	0.0037	0.881	.390

Note. Authors' estimates. *$p < .10$, **$p < .05$, ***$p < .01$.

4.5 Short-Run Dynamics and Error Correction

Table 6 presents the error-correction model. In the short run, growth in external debt is significantly and negatively associated with output growth (β = −0.057, $p = .013$), so a 1% faster rise in the debt stock is associated with output growth that is about 0.06 percentage points lower. Exchange-rate depreciation has a positive and significant short-run effect, both contemporaneously ($p = .003$) and at one lag ($p = .006$), and inflation is positive and significant ($p < .001$). Lagged output growth is positive and weakly significant ($p = .080$), which suggests some persistence. The error-correction term is −0.810 and significant at the 1% level, with the expected negative sign. About 81% of any deviation from the long-run path is therefore corrected within a year, which implies rapid adjustment; at that rate, roughly half of a disequilibrium is eliminated within about five months. The model fits the data well ($R^2 = .912$; adjusted $R^2 = .891$), and the overall *F*-statistic of 45.37 ($p < .001$) shows that the regressors are jointly significant.

Table 6: **ARDL Short-Run Estimates and Error-Correction Term**

Variable	Coefficient	Std. error	*t*-statistic	*p*
$\Delta \ln GDP_{t-1}$	0.2948	0.1591	1.853	.080*
ΔlnEXD	−0.0573	0.0167	−2.732	.013**
ΔEXR	0.0004	0.0001	4.194	.003***
ΔEXR_{t-1}	0.0010	0.0003	3.099	.006***
INF	0.0290	0.0060	4.873	< .001***
Constant	0.4563	0.0855	5.337	< .001***
ECT_{t-1}	−0.8100	0.0202	−4.457	< .001***
R^2 / adjusted R^2	.912 / .891			
F-statistic (*p*)	45.367 (< .001)			

Note. Authors' estimates. *$p < .10$, **$p < .05$, ***$p < .01$. ECT = error-correction term.

4.6 Evaluation of Hypotheses

H_{01} (external debt has no significant effect on growth) is rejected for the short run ($p = .013$) but not for the long run ($p = .802$), so it receives only partial support. H_{02} (FDI has no significant effect on growth) is rejected in the long run ($p = .017$). H_{03} (no joint long-run relationship) is rejected at the 5% level because the bounds *F*-statistic of 4.251 exceeds the upper critical value of 4.01.

4.7 Diagnostic and Stability Tests

Table 7 shows that the residuals are normally distributed, free of serial correlation, and homoskedastic: none of the three tests rejects its null hypothesis at conventional levels. Figure 1 plots the CUSUM and CUSUM-of-squares statistics. The CUSUM statistic stays within the

5% bounds throughout the sample. The CUSUM-of-squares statistic also remains inside the bounds, although it approaches the upper bound around 2009, which hints at some parameter instability in the wake of the global financial crisis. Overall, the estimated coefficients appear stable.

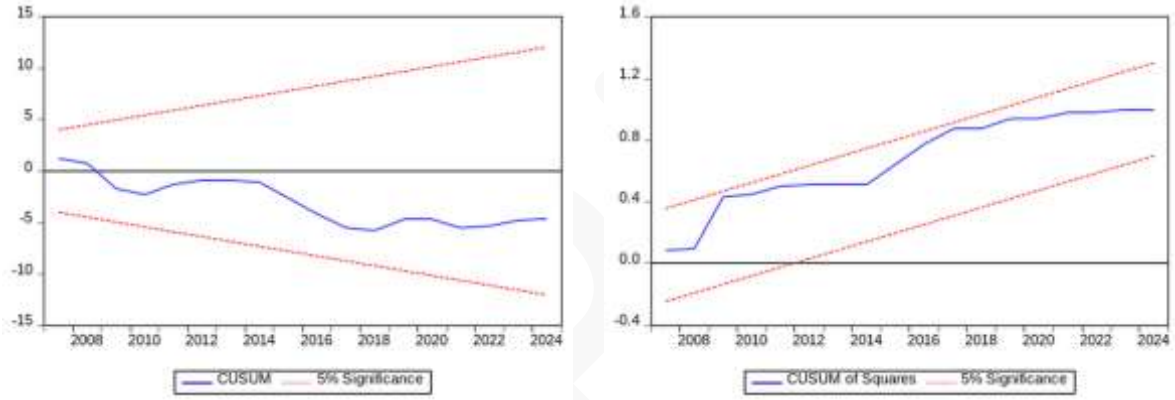
Table 7: **Residual Diagnostic Tests**

Test	Statistic	*p*	Conclusion
Jarque–Bera (normality)	1.192	.551	Residuals normal
Breusch–Godfrey LM (serial correlation)	1.285	.304	No serial correlation
Heteroskedasticity	2.503	.147	Homoskedastic

Note. Authors' estimates. All null hypotheses are not rejected at the 5% level.

Figure 1

Stability Tests of the ARDL Model



(a) CUSUM (b) CUSUM of squares

Note. Dashed lines are the 5% significance bounds. Authors' estimates.

4.8 Discussion

External debt. The negative short-run effect of external debt is consistent with the debt-overhang and crowding-out arguments (Krugman, 1988; Sachs, 1989) and with earlier Nigerian evidence of adverse debt and debt-service effects (Audu, 2004; Ayadi & Ayadi, 2008). The insignificant long-run coefficient accords with Ogunmuyiwa's (2011) finding of no causal link and implies that borrowing has not translated into a durable growth dividend. It differs from the positive effect reported by Sulaiman and Azeez (2012), which may reflect their earlier sample period and different measure of debt. A plausible reading is that borrowed funds have not been channelled into sufficiently productive projects, so that any initial stimulus is offset by servicing costs and the foreign-exchange pressure they create.

Foreign direct investment. The positive long-run coefficient on FDI supports the neoclassical expectation that foreign capital supplements scarce domestic resources, and it agrees with Adeleke et al. (2014) and Agbo et al. (2018). The small magnitude is consistent with the caution of Borensztein et al. (1998) that gains depend on absorptive capacity, and with the view that FDI in Nigeria has been concentrated in sectors with limited linkages to the wider economy. Compared with external debt, FDI appears the more dependable source of external capital.

Inflation and the exchange rate. The positive inflation coefficients contradict the a priori expectation and should be interpreted cautiously. They may reflect the co-movement of output and prices over the sample, particularly in recent years when both rose sharply, or a nonlinear

relationship in which only high inflation is harmful (Khan & Senhadji, 2001). The significant positive short-run effect of depreciation is consistent with improved export competitiveness, although the insignificant long-run coefficient suggests that the benefit is not sustained.

Implications. The results do not show that every unit of external borrowing is harmful. They suggest instead that the volume of borrowing is a poor guide to its growth effect, and that what matters is how the proceeds are used and whether the resulting debt service remains manageable relative to foreign-exchange earnings. The contrast between debt and FDI also points to the value of financing choices that share risk with investors rather than creating fixed external claims.

5. Conclusion and Policy Recommendations

5.1 Conclusion

This study examined the effects of external debt and FDI on economic growth in Nigeria over 1995–2024 using an ARDL bounds-testing approach. The variables share a long-run relationship. FDI has a positive and significant long-run effect on growth. External debt has no statistically significant long-run effect and a significant negative short-run effect, which suggests that external borrowing has not delivered a measurable growth dividend. Adjustment to long-run equilibrium is fast, with about 81% of any deviation corrected within a year, and the diagnostic and stability tests support the reliability of the estimates.

5.2 Policy Recommendations

The study provided the following recommendations from the findings.

1. Government should pursue alternative sources of development finance, including stronger domestic revenue mobilisation, and should borrow externally only on terms that match the expected returns of the projects financed.
2. External loans should be used for the purposes for which they were contracted, particularly infrastructure that raises productivity and export capacity, supported by transparent monitoring and by debt-service limits that protect foreign-exchange availability.
3. Policymakers should attract FDI by improving infrastructure, security, and the predictability of the regulatory and exchange-rate regime, and by promoting linkages between foreign investors and domestic firms.
4. Broadening the export base would reduce vulnerability to exchange-rate swings, and credible monetary and fiscal policy is needed to keep inflation low and predictable.

5.3 Limitations and Directions for Future Research

Several limitations qualify the findings. First, the sample contains only 30 annual observations, and the bounds test used asymptotic critical values; in samples of this size, the appropriate critical values are higher (Narayan, 2005), so the evidence of cointegration should be treated with caution. Second, total external debt is not disaggregated by creditor, maturity, or currency, and debt service is not modelled directly, although these features may matter for the debt–growth link. Third, structural events such as the 2016 recession, the COVID-19 shock, and the recent exchange-rate reforms may have shifted the relationships. Future research could use longer or quarterly samples, disaggregate debt, test for thresholds and asymmetries (for example, with nonlinear ARDL models), and examine how institutional quality conditions the growth effects of external finance.

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