DYNAMIC INTERACTION OF EXTERNAL DEBT, FOREIGN DIRECT INVESTMENT, AND POVERTY INCIDENCE ON SUSTAINABLE DEVELOPMENT IN NIGERIA

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Abstract

The study delves into the dynamic relationship between external debt, foreign direct investment (FDI), and poverty incidence in Nigeria. It aims to present empirical evidence on the influence of external debt and FDI on Nigeria's pursuit of sustainable development and poverty reduction. The research utilized annual secondary data spanning from 1981 to 2019 sourced from the World Bank's World Development Indicator (WDI), the Statistical Bulletin, and the Central Bank of Nigeria (CBN). A vector autoregressive model was employed to discern the interaction effects among the three variables (external debt, FDI, and poverty level represented by real consumption expenditure). The results revealed a significant negative impact of a one-SD shock in external debt on periods 1 through 6, with the response gradually increasing in periods 7 and 8. Furthermore, the findings established that a one per cent increase in FDI led to a sustained, positive impact on poverty levels over time. Consequently, the study concludes that FDI plays a crucial role in Nigeria's endeavors to achieve sustainable development goals and alleviate poverty.

Keywords: External Debt, Foreign Direct Investment, Poverty Level, and A Vector Autoregressive Model.

JEL: O3, E5, F2, M.

INTRODUCTION

The United Nations' Sustainable Development Goals (2017) represent a significant challenge for both developed and developing nations. Despite efforts to reduce extreme poverty and hunger by 2015, as outlined in the Millennium Development Goals, many global targets were not met (Vincent & Clem, 2013). The situation is particularly challenging in developing nations like Nigeria, where high levels of poverty persist.

According to a survey by the National Bureau of Statistics in 2018, more than two-thirds of Nigerians live in absolute poverty. Developing nations, including Nigeria, face difficulties in achieving the United Nations Sustainable Development Goals without external or foreign aid, such as through borrowing (external debt) or by promoting foreign direct investment (Ebire, Onmoya & Inim, 2018).

Nevertheless, external debt and foreign direct investment can have both positive and negative effects on the economy and poverty. For example, foreign direct investment and external debt can indirectly impact economic growth, potentially creating jobs and increasing investment. The Nigerian government has been working to meet the United Nations Sustainable Development Goals and reduce poverty. However, the country did not meet the 2015 Millennium Development Goals objectives.

Consequently, the government has accumulated external debt to bridge the financial gap due to insufficient revenue leading to a deficit. Nigeria's external debt has fluctuated over the years, reaching 32.86 trillion naira in 2020, as reported by the Central Bank of Nigeria (CBN) in 2020. Despite some increases in real GDP, Nigeria continues to face challenges such as rising poverty, poor investment performance, unemployment, and high inflation, primarily due to fluctuating revenue. Studies have highlighted the prevalence of poverty in Nigeria, with over 70% of the population living on less than $1 per day (Oladipo & Ajisafe, 2015).

Poverty rates have fluctuated over the years, with concerns raised about the efficacy of poverty alleviation measures. Policymakers have been called upon to adopt more proactive government policies and effective poverty reduction strategies to achieve Sustainable Development Goals and alleviate poverty in Nigeria (Orajaka and Okoli, 2018). Two main poverty reduction strategies have been identified: the direct approach and the indirect approach. The indirect approach focuses on economic growth strategies, while the direct approach involves government intervention through programs and policies. Researchers have indicated that investment and foreign aid are crucial for economic growth in developing nations, emphasizing the importance of government intervention to achieve full employment and control interest rates.

Further empirical research is warranted to better understand the relationship between external debt, foreign direct investment, and poverty, and to identify the most effective variables for reaching Sustainable Development Goals. Studies have examined the relationship between external debt, foreign direct investment, and growth without considering the impact of poverty and government interventionist approaches, calling for additional research in this area (Shadrach & Wei, 2021, Oladipo, Ajibola & Gbologe, 2019, Sailesh, Chengchum & Glauco, 2018, Babak & Reyhaneh, 2016).

LITERATURE REVIEW

The relationship between foreign direct investment (FDI), external debt, and poverty reduction has been the subject of extensive research, yielding varied and sometimes conflicting results. The interaction between these factors is complex, with three main perspectives: external debt theories, debt overhang, and the poverty-growth nexus. While

some researchers, such as Donmar (1946) and Rostow (1960), have proposed proportional relationships between investment, foreign aid, and economic growth, others, like Larry & Hlovor (2019) and Tee et al. (2017), emphasize the need for international aid to support domestic economic development in developing nations.

Studies also highlight the potential positive impacts of FDI on employment, with Awunyo and Sackey (2018) and Mohammed (2018) suggesting that FDI can lead to increased job opportunities. However, the effects of medium-term and long-term FDI on total employment are subject to uncertainty and contingent on factors such as spillover effects. The relationship between foreign debt, FDI, and poverty reduction is further explored through the concepts of debt overhang and crowding-out effects. While debt overhang may lead to inefficiently low investment without substantial debt reduction, crowding-out effects may result in a decrease in current debt service payments leading to increased investment, as described by Frimpong and Oteng-Abayie (2016) and Kombui and Kotey (2019) respectively.

Empirical research on the connection between foreign debt, FDI, and poverty reduction has yielded mixed results, with some studies suggesting unidirectional causality between variables, while others indicate bidirectional causality or no causal connection at all. These differing outcomes underscore the complexity of the relationship and caution against generalizing findings across all countries. Research on the impact of FDI on poverty reduction in Sub-Saharan Africa and North Africa between 1990 and 2011 has shown promising results, indicating that FDI can Granger cause poverty reduction and contribute to improvements in the Human Development Index in certain regions.

The findings of Moga, Helian, and Igor-Mathieu (2016) strongly support the idea that long-term debt has a positive impact on economic expansion. Contradictory to this, Ato-Mensah & Long (2021) concluded that external debt is detrimental to the economy. Meanwhile, Osuji and Ozurumba (2013) found that different types of external debt have varying effects on economic growth. Azam, Emirullah, Prabhakar, and Khan (2013) also reported that foreign debt negatively affects economic growth. On the other hand, Bolanle, Fapetu, and Olufemi (2015) revealed that foreign direct investment has a harmful impact on Nigeria's economic growth. However, Muhammad and Ijirshar's (2015) research contradicts this, suggesting that foreign direct investment has a positive but statistically insignificant effect on economic growth in Nigeria. Additionally, Nadia Deutsche (2015) highlighted the inverse relationship between poverty and investment, while Melnyk, Kubatko, and Pysarenko (2014) confirmed that FDI influenced the growth of post-communism transition economies. Al Khathlan (2014) uncovered a significant positive relationship between FDI inflows and economic growth in Saudi Arabia. In contrast, Saqib, Masnoon, and Rafique (2013) indicated that foreign investment has a detrimental impact on Pakistan's economic performance, suggesting that domestic investment could benefit the country more.

RESEARCH METHODOLOGY

Theoretical Structure

In this study, the debt overhang theory provides the underlying framework for analysis. It explores the complex interplay between foreign debt, foreign direct investment (FDI), and economic growth. The theoretical analysis emphasizes the overshadowing impact of external borrowing on the perceived negative relationship between foreign debt and investment, ultimately influencing poverty alleviation and economic growth.

Model specification

To effectively summarize the dynamic interactions of macroeconomic variables, the study utilizes the Vector Autoregressive (VAR) model specification. VAR is a multi-equation model that explains each variable by its own lagged values, as well as the current and past values of the other variables. It serves as the reduced form of a dynamic economic system, encompassing a vector of variables denoted as Zt.

$$Az_t = \beta_1 z_{t-1} + \beta_2 z_{t-2} + \beta_3 z_{t-3} \ldots \ldots \ldots \beta_P z_{t-P} + \mu_t \text{ -------------------------------- (1)}$$

$$Z_t = (EXD, FDI, PI) \text{ and } \mu_t = \sum e_t \text{ --- (2)}$$

Where

β_1, β_2 ……. β_3 are the coefficient of external debt, foreign direct investment and poverty index. Therefore, Z_t can be expressed as thus:

$$EXD_t = \beta_1 EXD_{t-1} + \beta_2 FDI_{t-1} + \beta_3 PI_{t-1} + e_1 t \text{ -- (3)}$$

$$FDI_t = \beta_4 FDI_{t-1} + \beta_5 EXD_{t-1} + \beta_6 PI_{t-1} + e_2 t \text{ --- (4)}$$

$$PI_t = \beta_7 PI_{t-1} + \beta_8 FDI_{t-1} + \beta_9 EXD_{t-1} + e_3 t \text{ --- (5)}$$

"To assess the dynamic impact of external debt, foreign direct investment (FDI), and poverty reduction, we will estimate equations 3 to 5. In these equations, EXD represents external debt, FDI represents foreign direct investment, and PI represents the poverty index. Equations 3 to 5 employ impulse response functions to capture the interactive effects of external debt, foreign direct investment, and economic development. This study primarily utilized secondary data. The data for the variables was sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (2020) and the World Development Indicator (2020)."

In order to obtain accurate results in the study of the combined impacts of external debt, foreign direct investment, and economic growth, the research utilized the VAR model with impulse responses. The Granger Causality Test was then employed to examine the causal relationship between external debt, foreign direct investment, and economic growth. Additionally, the time series properties of the variables in the model were assessed at the outset to prevent spurious regression. Detecting the order of variable integration involved subjecting the data series to a unit root test using the Augmented Dickey-Fuller procedure (ADF). Following the determination of the order of integration,

the study conducted Johansen cointegration analysis to ascertain if the variables were linked by a cointegrating vector.

Empirical results

Time sequence characteristics of data

The data exhibited time sequence characteristics. As indicated in Table 1, variables such as external debt, foreign direct investment, and poverty level (approximated by real consumer expenditure per capita) did not have stationary levels. However, after taking the first difference, they became stationary as the series was integrated to order I(1) at a significance level of 5%.

Table 1: ADF Statistics for Testing Unit Roots in the Variables

Series	Level	First Diff	Remark
EXD	-1.33	-5.75	I(1)
FDI	-1.52	-7.50	I(1)
PI	-2.34	-7.61	I(1)

Critical value at 5% = -2.94

Sources: computed from study data

Determining the Optimal Lag Length

It is important to determine the optimal lag length for estimating a VAR model. All five criteria (LR, FPE, AIC, SC, and HQ) indicate that the ideal lag order for the VAR used in the cointegration study is one, as presented in Table 2.

Table 2: Determination of Optimal Lag Length

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-82.12332	NA	0.022720	4.729073	4.861033	4.775131
1	-10.89971	126.6197*	0.000718*	1.272206*	1.800046*	1.456436*
2	-4.083555	10.98158	0.000821	1.393531	2.317250	1.715934
3	0.069614	5.999023	0.00117	1.662799	2.982398	2.123375

*indicates lag order selected by the criterion at a 5 per cent level of significance.

Cointegration Analysis

The cointegration test was performed using the Johansen cointegration test with the Lag 1 parameter. It's important to note that Johansen cointegration may be sensitive to errors in small sample sizes. Additionally, it is robust against various departures from normality as it allows for normalizing any model variable that instantly becomes a dependent variable. The results of the cointegration test can be found in Table 3 below.

Table 3: Results of the Cointegration Test

Sample (adjusted): 1983 - 2019

Included observations: 37 after adjustments

Trend assumption: Linear deterministic trend. Series: LEXD LFDI LPI

Hypothesized No. of CE (s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.545529	41.17971	29.79707	0.0016
At most 1	0.243735	12.00074	15.49471	0.1569
At most 2	0.043984	1.664265	3.841466	0.1970

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level. * denotes rejection of the hypothesis at the 0.05 level. **MacKinnon-Haug-Michelis (1999) p-values

The cointegration test results in Table 3 have confirmed the presence of a cointegration link among the macroeconomic variables considered in the model. This indicates that the series are interrelated and can be integrated into a linear form. Despite short-term shocks potentially affecting the movement of individual series, they are expected to converge over time. To analyze the interaction effects of external debt, foreign direct investment, and poverty level, the study has estimated VAR models specified in equations 3 through 5 using their first differences.

Definition of Impulse Response Analysis

In Figure 1, the standard deviation of each variable was calculated in percentage form. The horizontal axis of the impulse response function (IRF) indicates the number of periods that have passed since the impulse, while the vertical axis shows how the variables changed following the impulse. The impact of LEXD on LFDI is noteworthy, showing a significant effect from period 1 to period 8, with LFDI remaining constant.

This suggests that shocks to LEXD have a substantial favorable effect on LFDI in both the short and long run. The initial response of LRCX to LEXD shows no discernible effect in periods 1 to 3, with the response gradually decreasing until period 3 when it reaches a steady-state value. After the fifth period, LEXD surpasses its steady-state value and remains positive, indicating that LEXD shocks will have a favorable effect on LRCX in both the short and long term.

It has been established that a one percent innovation in LFDI elicits a positive response from LEXD, indicating that LFDI shocks have favorable short-term and long-term effects. Similarly, the response of LPI to LFDI demonstrates the same characteristic. The response of LEXD to LPI initially shows an unfavorable impact, but from period 1 to 4, its negative influence diminishes, becoming gradually stable by period 5.

Response to Cholesky One S.D. (d.f. adjusted) Innovations ± 2 S.E.
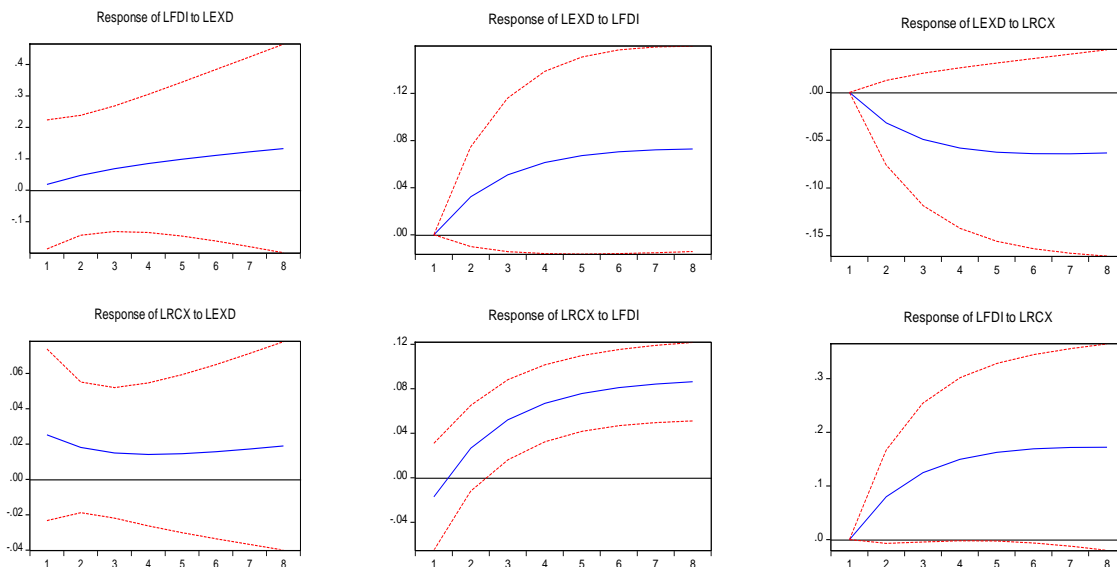
CONCLUSION AND POLICY IMPLICATIONS

The research findings suggest that there is a strong correlation between foreign direct investment (FDI) and poverty levels in a country. It is evident that FDI has a positive impact on poverty reduction and economic growth. Conversely, the study also indicates a negative association between foreign debt and poverty levels, emphasizing the importance of utilizing external debt for productive investments.

Based on these observations, the following recommendations are proposed: To effectively work towards the Sustainable Development Goals (SDGs) set by the United Nations and to combat poverty, it is imperative for governments to actively promote and facilitate FDI within the country. Additionally, governments should strategically allocate external debt towards productive investments to stimulate job creation, foster economic growth, and attract more FDI, consequently leading to poverty alleviation.

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