Open Economy and Poverty Reduction in Nigeria

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ABSTRACT

This paper investigated how an open economy impacted poverty reduction in Nigeria during the period between 1985 and 2022. To analyze the effect of open economy through trade openness, export, import, foreign direct investment (FDI), and external borrowings on poverty level in Nigeria, this work used the Autoregressive Distributed Lag (ARDL) model, and data were sourced from the CBN Statistical Bulletin, the World Bank's PovcalNet database, and World Development Indicators. The analysis indicated a long-run cointegration relationship in the model. Empirical results showed that trade openness, FDI, and imports positively affected poverty levels in Nigeria. Contrary to this, the effect of export had a negative relationship but statistically significantly impacted the poverty level in the long-run period. However, external borrowing had a negative relationship with poverty level, as increasing external borrowing was associated with decreased poverty and was statistically significant in the short-term period. The study concluded that export growth and external borrowing helped reduce poverty in Nigeria. Based on the findings and conclusion, the study recommended, among others, that Nigerian policymakers should encourage and subsidize export industries to produce their long-term effect in reducing poverty and transparently direct external borrowings to productive investments, especially in infrastructure, human capital development (education and health), and real sectors (agriculture and manufacturing), in order to maximize short-term effects of poverty reduction.

Keywords: Trade Openness, Export, Import, FDI, External Borrowing, and Poverty Level.

INTRODUCTION

The economic health of a nation relies heavily on economic productivity, which, among other things, increases employment, decreases poverty, and improves national income, living standards, and the quality of public services (Al-Hemzawia et al., 2021). One of the forces behind these advantages is trade openness, as it facilitates enhanced international trade and integration in global markets. Due to economic globalization, the growing interconnectedness in world economies has caused much variation in macroeconomic variables, which are trade openness, stable exchange rates, foreign direct investment, and technological progress (Todaro & Smith, 2006). Jhingan (2005) argues that the poverty may be eradicated by opening the economy to foreign trade, which would help in augmenting country revenue, but on the other hand, it will demand competition in the international market.

The importance of trade openness to economic enhancement cannot be over emphasized. Classical and neoclassical financial analysts hold that international trade is the sine qua non of the developed nations. Trade can create fundamental changes in economies by motivating the countries to produce goods and services efficiently and to allocate funds to countries that have a competitive advantage (Frankel & Romer, 1999). To enhance trade openness, the following reforms have been adopted by Nigeria: National Economic Empowerment and Development Strategy (NEEDS) and establishment of regional and international trade bodies like the Economic Community of West African States (ECOWAS) and the World Trade Organization

(WTO). All these measures, such as the establishment of industrial and trade zones, however, have not completely produced the expected gain in the social and economic productivity. The agreements on implementing reforms that would ensure that the economy of Nigeria is more efficient, technologically advanced, and competitive were supposed to lead to a high rate of growth of the economy. It was believed that liberalization of trade would give more power to the business community, enhance the capacity of production, and decrease state control. This led to an increase in the amount of trade that was accounted for in Nigeria by the ratio of trade openness (the total sum of traded goods as a percentage of the gross domestic product), which used to be 9.14 in 1986 but reached its peak of 44.53 in 2012 and currently falls to 25.40 in the year 2020. At the same time, the improvement in GDP per capita rose to 5.20 from 1996 to 2009 but decreased to 4.26 in the year 2020 (CBN, 2021; World Bank, 2021).

But this has not been all good news for Nigeria's fight against poverty, as the subsequent sections will reveal. The decline in export revenues and import duties has partly contributed to the government's poor financial capacity to fund poverty-minimizing initiatives. However, trade openness may be overpowered by uncertainty in exchange rates, high inflation rates and/or fiscal deficits, and institutional vulnerability (Ogunniyi & Igberi, 2014). Even though Nigeria has improved in her foreign trade and income per capita, poverty headcount and unemployment remain high; poverty increased from 27.2 percent in 1980 to 54.73 percent in 2019 (World Bank 2021). This is the reason why some scholars refer to them as 'vanity indicators,' where, while poverty is high, the GDP per capita is increasing; this is in support of the 2020 World Poverty Clock report that defined Nigeria as having the highest number of poor people in Sub-Saharan Africa based on an estimated 105 million people living below $2 a day.

The empirical works on the effect of trade openness on poverty in Nigeria have yielded conflicting results. Yameogo & Omojolaibi (2020), Ezzat (2018), and Stella et al. (2022) concluded that trade openness increased poverty, contrary to the findings advanced by Sunge et al. (2021), Olufemi et al. (2021), and Onakoya et al. (2019). However, some number of the previous researches find that there is no significant relationship between trade openness of the economy and poverty (Omojilaibi, 2020; and Ezzat, 2018), while Yameogo & Omojolaibi (2020) result showed a significant relationship. These conflicting results underscore the rationale for more research with a view to establishing the precise position of openness of the economy on poverty level in Nigeria. The remainder of the study is divided into literature review, methodology, results, and recommendations.

REVIEW OF LITERATURE

Conceptual Literature

Open Economy

According to Obinna (2018), an open economy refers to that economy that actively participates in the export and import of goods and is available in foreign exchange transactions. Such engagement entails the buying and selling of goods, services, and capital in order to ease the movement of all resources across the international frontier. The open economy thus gains from FDI and technology and gets access to a larger variety of products in the global market. In often such economies there is observed an increase in economic growth, improved productivity, and hence uplifted standards of living because of competitiveness and innovation. However, the openness of the economy has its merit that needs to be maintained. These economies are more exposed to the country's economies of the world, hence experiencing instabilities and uncertainties. Local markets and businesses may be threatened by foreign competition through threats such as job losses in industries or deaths of whole industries. An open economy, therefore, operates based on free trade, globalization, economic interlinkage, and cooperation among different countries (Obinna, 2018).

Poverty

The World Bank Organization (2008) describes poverty in this way: "Poverty is hunger. Poverty is lack of shelter. As poor people say, poverty is being sick without being able to afford a doctor. Poverty is not having

a school to attend and having never learned how to read. Many say that poverty is not having a job and being afraid of the future. Poverty is deprivation, which includes

i. status and self-actualization deprivations resulting from health, nutrition, literacy, education, and self-esteem;
ii. material deprivations arising from lack of property and income, asset and factor endowment, capital and credit;
iii. social deprivations that result from inability to fully participate in social, economic, and political activities;
iv. cultural disadvantages arising from inability to finance;
v. cultural deprivation in terms of lack of access to values, beliefs, knowledge, information, and attitudes, which deprives the people of the control of their own destinies;
vi. social deprivation as a result of denial from full participation in social, political, and economic activities; and
vii. political deprivation in terms of lack of political voice to partake in decision-making that affects their lives (Gafar, Mukaila, Raji, and Ajayi, 2011).

Theoretical Review

There are three main theories that will underpin this study in examining the effects of open economy in reducing poverty. The Keynesian model of the income determination, two-gap model and the Heckscher-Ohlin model are discussed as follows:

Keynesian Model of Income Determination in an Open Economy

The Keynesian model of income determination in an open economy, advocated by John Maynard Keynes in 1936, involves the additions of exports, imports, government expenditures and taxes to the analysis of national income. Government expenditure and exports are projected as injection of more demand to the goods and services and on the other hand are identified as taxes and imports which acts as leaks to the demand. This functional form of this model is $Y = C + I + G + (X – M)$, where Y is national income, C is consumption expenditure, I is investment expenditure, G is government spending, X is exports, and M is imports. It is helpful in determining how open economy factors affect the national income and its balance. In achieving this goal, this study seeks to examine these dynamics in order to diagnose how trade policies could assist in eradicating poverty in Nigeria based on institutional mechanisms targeted at stimulating demand for goods and hence encouraging growth.

The Two-Gap Model

The two-gap model was developed by Chenery and Strout in 1966 as a way of presenting the link between capital imports and economic development. As an expansion of the Harrod-Domar theory of growth, the Two-Gap Model places greater significance on physical capital accumulation in economic growth and presents two main gaps: the savings-investment gap and trade or foreign exchange imbalance. According to the model, capital imports are the only way through which an open economy can meet its ’savings and investment demands. In this study, the two-gap model is used to analyze how an open economy can enhance economic growth and poverty reduction. highlighting the role of foreign direct investment in filling the gap attributable to limited resources.

Heckscher-Ohlin Model

Proposed by Eli Heckscher and Bertil Ohlin in the 1920s, this Heckscher-Ohlin model, also referred to as factor proportion theory, has presumed that two countries have the same technological development but differ in the endowment of factors of production. The theory affirms that a country with capital will export capital inventions and products, and a country with labor will export labor inventions and products. According to this model, in the context of an open economy, it comes out that trade openness lets the country

get the maximum from its factors and, in turn, can improve the welfare of the economic system and poverty also. This paper provides an assessment of the impact of trade openness on poverty in Nigeria with a focus on demonstrating theoretical trade models, such as the Heckscher-Ohlin model, as a developed country to explain how the utilization of comparative advantage in the accumulation of factors of production enhances the country's consideration in the global trading system and the subsequent positive impacts on poverty levels.

Empirical Literature

Many empirical investigations have been dedicated to examining the relationship between an open economy and economic growth, yet only a limited number of investigations have been directed to poverty impacts. These studies are presented for cross-country and country-specific. For example, Sunge, Kumbula, & Makamba (2021) examined the trade-poverty nexus for SSA during the period of 2003–2017. Engaging 30 SSA countries and GMM panel data, they uncovered that trade openness stimulates poverty decline depending on its source. Exports to other partners in SSA and from MENA partners delivered more value. Combined with higher quality institutions, poverty reduction improved even more. The study called for advancing African trade amongst itself as well as with the Middle East and North Africa region, improving institutions, and curtailing corruption to optimize returns from trade liberalization.

Yameogo & Omojolaibi (2020) studied trade openness and growth and poverty effect in 40 SSA countries covering 1990-2017 using Panel ARDL and SYS-GMM. They discovered that trade openness negatively and significantly impacts poverty in the short run, but the effect is positive in the long run. They suggested a change of strategy for poverty reduction interventions in Africa to be one that will put into consideration sustainable development.

Onakoya et al., (2019) also provided a synthesis on trade liberalization and poverty in 21 African countries between 2005 and 2014. They used correlation matrix, descriptive statistics, and variance inflator by panel unit root tests, panel co-integration tests, and Pooled Ordinary Least Square (POLS). The empirical result showed that as trade openness increases, poverty decreases and vice versa.

In a study, Hlalefang, Nwabisa, & Clement (2017) aimed to provide supporting results on long-run cointegration between trade openness and economic growth with data covering 1980–2016 in Ghana and Nigeria. They included variables such as investment, exchange rates, and inflation as other variables and applied the autoregressive distributed lag model to analyze the long-run co-integration. Consequently, their findings showed that there is a long-run co-integration between the variables in both countries. Trade openness had a positive and significant effect on economic growth in the case of Ghana at the 1 percent level and was negative but insignificant in the Nigerian implication, and therefore, different policy measures should be adopted by the two countries.

Ezzat (2018) examined the effect of trade openness on poverty measured by headcount multidimensional poverty. Using the GMM technique for the MENA countries in the time frame of 1995 to 2015, the study established that trade liberalization deepened poverty severity and multidimensional poverty, proving adverse impacts on poor households during the analysis period.

Using the analysis of the ARDL approach on the data obtained from the period between 1981 and 2019, Shido-Ikwu et al., (2023) assessed the effect of international trade on Nigeria's economic growth. The results further revealed that import trade, FDI, and exchange rates have negative effects on economic growth, while export trade has a positive effect on economic growth. To them, they advised that exports should be encouraged while imports should be discouraged by subsidizing local producers together with tax exemptions.

Abinabo & Abubakar (2023) investigated the nexus between trade openness and economic growth in Nigeria through the period 1990–2021 by employing the Johansen Cointegration test and the ECM. Their findings

showed that there exists a long-run co-integration between trade openness and economic growth, with imports having a negative influence on the growth. They said that Nigeria gains from imports, and hence there is a need for the country to liberalize the import business.

Umeh et al., (2022) examined the effect of international trade on poverty in Nigeria within the period 1980 to 2019, adopting an ex post facto research design. Competing institutional variables were comprised of poverty rate, total export value, total import value, foreign direct investment, trade openness, and trade tariffs. They adopted both the error correction model and a number of statistical tests. These results affirmed that total export value has a positive and significant impact on poverty reduction, while the total import value had an insignificant and negative impact on poverty reduction, and FDI has moderate impacts on enhancing poverty reduction.

Stella et al., (2022) explored the trade openness and poverty relationship in Nigeria over the 1986 to 2019 study and used the ARDL technique. They discovered that in the short and long run, trade openness has a positive relationship with poverty. Further, inflation causes poverty in the short run, while the gross domestic product per capita decreases poverty to a significant level.

Chinwe et al., (2022) conducted the research on the role of FDI in the reduction of poverty in Nigeria between the years 1985 and 2020. The results obtained from the ARDL model established that FDI has a negative effect on poverty reduction in Nigeria. The augmented Dickey-Fuller (ADF) unit root test analysis pointed out that some variables were of first order (1), while FDI was of first order (0). Cointegration was confirmed by the ARDL Bounds test, while gross fixed capital formation was the only variable that impacted the poverty headcount ratio.

Olufemi et al., (2021) have examined the interconnection between trade openness and poverty decline in Nigeria during the period 1985–2020. The ARDL technique was employed in estimating the model. From the empirical result, it was discovered that domestic credit to the private sector, electric power consumption, primary school enrollment, and the KOF globalization index have a negative impact on poverty, while GDP per capita has a positive effect.

From 2000 to 2017, Akindutire (2019) investigated the impacts of external debt on poverty reduction in Nigeria. The poverty indicator was operationalized using the public expenditure on social goods and services, while various debt-related variables were exogenous. The model was analyzed using the ARDL. The coefficients from the short-run model showed a positive relationship between external debt and poverty level, while there was a negative relationship between domestic debt, exchange rate, and inflation and poverty. But in the long run, it was established that debt service payment, inflation, and exchange rate had a negative relationship with poverty. Internal debt was seen as having a negative long-run relationship with poverty, while external debt was seen as having an insignificant positive impact on poverty.

Gap(s) Identification

Prior literature on the interaction between economic openness and the poverty levels have yielded conflicting results. Yameogo & Omojolaibi (2020), Ezzat (2018), and Stella et al., (2022) concluded that trade openness increased poverty, contrary to the findings advanced by Sunge et al., (2021), Olufemi et al. (2021), and Onakoya et al., (2019). However, some number of the previous researches find that there is no significant relationship between trade openness of the economy and poverty (Omojilaibi, 2020; and Ezzat, 2018), while Yameogo & Omojolaibi (2020) result showed a significant relationship. These conflicting results underscore the rationale for more research with a view to establishing the precise position of openness of the economy on poverty level in Nigeria. To overcome these discrepancies, the current research analyzes a longer time frame altogether, from 1985 to 2022. It also integrates as part of the model of an open economy the financial flows, such as FDI and foreign borrowing, to check this hypothesis and examine their influence on vulnerability to poverty.

METHODOLOGY

The section outlines the analyses that were carried out in this study and the sources from which the data was obtained as well.

Data Required and Sources

The data were obtained from the World Bank's PovcalNet database and World Development Indicators (WDI) as well as the Central Bank of Nigeria Statistical Bulletin covering 1985 to 2022. To analyze the relationship between open economy and poverty in Nigeria, poverty level is computed by the poverty headcount index, whereby it portrays the proportion of people living below $1.90 at 2011 purchasing power parity. In this paper, trade openness indicates the ratio between GDP and the sum of exports and imports. Additional variables involve total exports and imports in billions of naira based on the Central Bank of Nigeria, (2023) annual statistical bulletin and FDI as a ratio to GDP and external borrowing as a percentage of GDP based on the World Bank Development Indicator (2023).

Model Specification

The model created by Umeh et al., (2022) is used in the research as follows:

$$PVR = f(TPN, XPT, IMP, FDI, TAF) \quad (1).$$

Based on the study's objectives and theoretical background, this model is modified to include external borrowing so as to capture inflow through borrowing of government spending on poverty level: Thus, the functional specification of the model becomes:

$$PVR = f(TPN, XPT, IMP, FDI, EXB) \quad (2).$$

The econometric specification of the model is written as:

$$PVR_t = \beta_0 + \beta_1 TPN_t + \beta_2 XPT_t + \beta_3 IMP_t + \beta_4 FDI_t + \beta_5 EXB_t + \mathcal{E}_t \quad (3).$$

Where: PVR_t =Poverty rate, TPN_t = Trade openness, XPT_t = Export Trade, IMP_t = Import trade, FDI_t = Foreign direct investment inflow, EXB_t = External borrowing, TAF=Trade Tariff, and $\mathcal{E}_t$= Error term. All things being equal, the theoretical apriori expectation is: $\beta_1<0$, $\beta_2<0$, $\beta_3>0$, $\beta_4<0$, & $\beta_5<0$. The variables on poverty rate, trade openness, exports, imports, and external borrowing were transformed with a natural logarithm, while FDI was not transformed because of its negative value in the data series.

Analytical Techniques

Finally, analysis of properties regarding the variables was conducted in order to avoid spurious regression. The augmented Dickey-Fuller (ADF) test was conducted to check whether the series was stationary at level I(0) or after first differencing I(1). Since this research seeks to investigate the long-run data relationship between the dependent and the independent variable, the selected method of econometrics is the ARDL bound testing approach based on Pesaran, Shin & Smith (2001). However, it allows for the integration of both I(1) and I(0) variables much in the same way that Pesaran, Shin & Smith (2001) and Sulaiman and Mohammad (2010) have. Thus, the present empirical analysis employs the ARDL model as appropriate for this kind of estimation. Specification of the ARDL model (by equation (3)) is as follows:

$$\Delta PVR_t = \beta_0 + \beta_1 PVR_{t-1} + \beta_2 TPN_{t-1} + \beta_3 XPT_{t-1} + \beta_4 IMP_{t-1} + \beta_5 FDI_{t-1} + \beta_6 EXB_{t-1} + \sum_{i=1}^{k} \beta_7 \Delta PVR_{t-1} + \sum_{i=0}^{k} \beta_8 \Delta TPN_{t-i} + \sum_{i=0}^{k} \beta_9 \Delta XPT_{t-i} \sum_{i=0}^{k} \beta_{10} \Delta IMP_{t-i} + \sum_{i=0}^{k} \beta_{11} \Delta FDI_{t-i} + \sum_{i=0}^{k} \beta_{12} \Delta EXB_{t-i} + \varepsilon_t \quad (4).$$

Where: ΔPVR_t = the poverty rate at time t, β_0 = Constant term (intercept) of the model, $\beta_1 PVR_{t-1}$= Previous period's poverty rate, $\beta_2 TPN_{t-1}, \beta_3 XPT_{t-1}, \beta_4 IMP_{t-1}, \beta_5 FDI_{t-1}, \beta_6 EXB_{t-1}$= The long-run relationship between the poverty rate and its determinants (trade openness, export trade, import trade, foreign direct investment inflow, and external borrowing), $\sum_{i=1}^{k} \beta_7 \Delta PVR_{t-1}$ = The short-run dynamics of the change in the poverty rate, $\sum_{i=0}^{k} \beta_8 \Delta TPN_{t-i} + \sum_{i=0}^{k} \beta_9 \Delta XPT_{t-i} \sum_{i=0}^{k} \beta_{10} \Delta IMP_{t-i} + \sum_{i=0}^{k} \beta_{11} \Delta FDI_{t-i} + \sum_{i=0}^{k} \beta_{12} \Delta EXB_{t-i}$= The short-run effects of changes in trade openness, export trade, import trade, foreign direct investment inflow, and external borrowing on the poverty rate, and ε_t= the error term, capturing any variation in the change in poverty rate that is not explained by the model.

Model Justification

The use of the ARDL model in this paper is also effective against the endogeneity that may be present because it has flexible parameters of lags, cointegration, and the existence of error correction. Further uneasiness about the robustness of the long-run coefficients is consistent with sturdy diagnostic aspects and congruency between the short-term and long-term consequences. Nevertheless, the present validation establishes that the ARDL model can provide a theoretically informed and plausible model of measuring trade, investment, and macro-financial flow implications of poverty in Nigeria.

RESULTS AND DISCUSSION

Descriptive Analysis

Table 1: Descriptive Statistics Result

	PVR	TPN	XPT	MPT	FDI	EXB
Mean	60.72553	0.218528	6882.522	5740.052	1.335084	36.67920
Median	62.60000	0.169672	3845.334	2033.640	1.177898	30.43510
Maximum	78.00000	0.728391	27251.57	27115.11	4.282088	120.8353
Minimum	42.70000	0.000876	8.920600	5.983600	-0.039522	4.950816
Std. Dev.	10.53173	0.196825	7315.285	7265.606	0.948650	30.54054
Skewness	-0.394438	0.648489	0.863930	1.399619	0.807325	0.793398
Kurtosis	1.839316	2.521867	2.838987	4.115644	3.648292	2.974331
J.B	3.118398	3.025379	4.768086	14.37730	4.793347	3.987753
Prob.	0.210304	0.220317	0.092177	0.000755	0.09102	0.136167
Obs.	38	38	38	38	38	38

Source: Author's computation (2025).

Table 1 reveals that the poverty rate (PVR) averages 60.7255, the openness of trade recorded (TPN) an average value of 21.8528%, total exports average 6882.522 billion Naira, total imports average 5740.052 billion Naira, foreign direct investment (FDI) averages 1.335084% of GDP, while external borrowing (EXB) averages 36.67920% of GDP. The coefficient of skewness shows that all the variables are positively skewed

except for the poverty rate. However, the normality distribution of the variables shows that all the variables except foreign direct investment are normally distributed.

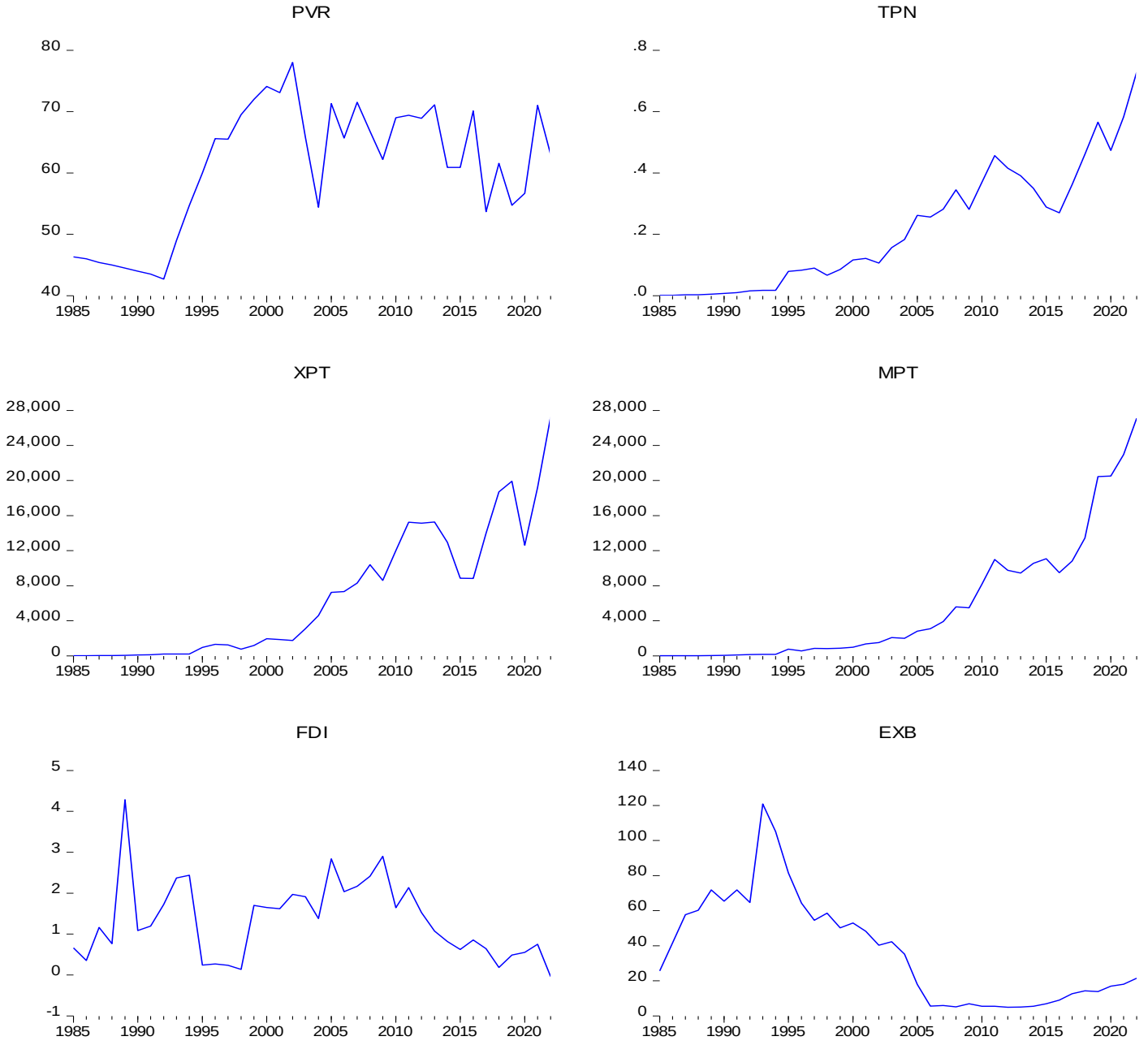


Figure 1: Showing Trend Analysis of the Selected Variables.

Source: Author's computation (2025).

The poverty rate is trending upwards starting in 1985 up until about the year 2000, when it levels out a little but still remains very high during the 2020s. The trade openness has been relatively rising since 1995, with a major rise after 2010, and it keeps on growing through the 2020s. Export has been experiencing a consistent level increase since the mid-1990s, with intense growth since 2015, with its climax during the 2020s. As with exports, the imports have been growing steadily since the mid-1990s, although their growth significantly accelerated circa 2015, reaching its climax in the 2020s. FDI is highly volatile, and we see its peak around the late 80s and early 2000s. The drop can be observed after the mid-2000s, as there are some swings after it; however, there is no obvious increasing tendency. External borrowing as percentage of GDP exhibits great variability, as it rose drastically during the late eighties and later went down in the 1990s onwards. The trend further continues to decrease going into the 2020s, although it does flatten at the low end.

Unit Root Test Analysis

Table 2: Augmented Dickey-Fuller (ADF) Unit Roots Result

Variable	ADF			I(d)
	Level	1st Diff	5% Critical Value	
PVR_t	-1.7955	-8.5475***	-2.9458	I(1)
TPN_t	0.9825	-4.9835***	-2.9458	I(1)
XPT_t	0.9484	-5.7784***	-2.9484	I(1)
MPT_t	3.2699	-4.2040***	-2.9458	I(1)
FDI_t	-3.8806**	-	-3.5366	I(0)
EXB_t	-1.2254	-5.8861***	-2.9458	I(1)

Note: *, **, and *** denote significance at 10%, 5% and 1%, respectively.

Source: Author's computation (2025).

The result above was conducted using the Augmented Dickey-Fuller (ADF) unit root test. The outcomes show that only foreign direct investment (FDI) was stationary at level. However, poverty rate (PVR), trade openness (TPN), export (XPT), import (IMPT), and external borrowing (EXT) were stationary after first differencing. The outcomes show that the series incorporated in the model are combinations of I(0) and I(1), satisfying the condition for the use of the bounds test cointegrating relationship.

Cointegration

The cointegration test followed by this study is the bounds test advanced by Pesaran, Shin and Smith (2001). Table 3 reports the result.

Table 3: Cointegration Bound Test Result

Significant level	I(0) Bound	I(1) Bound	Value
10%	2.75	3.79	F-Statistic = 7.084799***
5%	3.12	4.25	
2.5%	3.49	4.67	K = 5
1%	3.93	5.23	

Note: *, ** and *** denote significance at 10%, 5% and 1% level, respectively.

Source: Author's computation (2025).

The analysis above indicates a case of cointegration given the fact that the F-statistic obtained as 7.084799 is higher than the critical value at level I(0) and I(1) series at all levels of significance, namely α=0.10, α=0.05, and α=0.01. By this, the null hypothesis, which postulates that there is no cointegration among the series, is rejected. This further goes to mean that in the long run, poverty rate, openness of trade, export, import, foreign direct investment, and external borrowing have similar trends.

Model Estimation

This paper used the ARDL approach that allows for decomposition of both short-run and long-run relations with economic factors, thus, offers useful explanations of the effects of such factors on poverty levels in Nigeria.

Table 4: ARDL Long Run Result (4,2,1,2,2,2)

Dependent Variable: PVR_t				
Variable	***Coefficient***	***Std.Error***	***t − Stats***	***Prob.***
$InTPN_t$	0.8140	0.4521	1.8003	0.0934
$InXPT_t$	-1.2643***	0.4616	-2.7389	0.0160
$InMPT_t$	0.5632	0.4189	1.3446	0.2001
FDI_t	0.1074	0.0597	1.7983	0.0937
$InEXB_t$	-0.1728	0.0907	-1.9046	0.0776

Note: *, ** and *** denote significance at 10%, 5% and 1% level, respectively.

Source: Author's computation (2025).

From the static model presented above, the degree of trade openness portrays a positive and insignificant relationship with poverty levels, a result that goes contrary to theoretical expectation given the fact that openness to trade should reduce poverty. From the analysis, it is evident that trade openness leads to higher poverty levels, similar to the findings by Sunge et al. (2021), who postulated the effect of trade openness for poverty reduction depends on the source of trade. The policy implication of this finding, therefore, is that the Nigerian policymakers must tread carefully whenever engagements in trade liberalization are being contemplated. Instead of opening up the trade broadly, they should target areas as well as trading partners, which can positively impact the economy and directly benefit the poor. Specific directed trade policy that leads efforts to poverty-fighting trade activities may be more effective in poverty alleviation than a general increase of trade freedom.

The export coefficient portrays a negative and statistically significant relationship, noting that higher levels of exports are linked to decreases in poverty rates in connection to the theoretical expectations. The result deviates from the study by Nwali Sebastian Umeh, Nonso, and Obi (2022) that found a positive relationship between export and poverty level. The policy implication is that export promotion could serve as a valuable strategy to reduce poverty levels since export activity is linked to a decline in poverty levels. Trade in general should not just be increased in terms of quantity of exports, but also consideration should be made as to the nature of goods involved as far as poverty is concerned. The policies must promote exports that are job-generating and provide income to the low-income households, hence reducing the level of poverty. Conversely, the effect of imports during the period of poverty indicates that the coefficient measure of imports is positive and insignificant, implying that a 1 percent rise in imports contributes to a 56.32 percent increase in poverty conditions. This finding is in line with the results of Umeh, Nwali, Sebastian, and Obi (2022), who reported the same outcomes. However, the coefficient of import disconnects from the apriori theoretical expectation. The policy implication is that although statistically insignificant, the positive relationship between imports and poverty suggests that increased import levels may exacerbate poverty. Policymakers are advised to put in place strategies to ensure the local industries are boosted and that more dependence on imports is prevented to avert any adverse effects on poverty.

On the analysis of the FDI, the result that obtains contravenes economic expectation. The result shows that FDI demonstrated a positive relationship with poverty level. A positive FDI view brings in the understanding that FDI's increment of 1% will lead to an increased poverty level of 10.74% in Nigeria. This result is contrary to that of Sunday et al. (2023), which highlighted the poverty-reducing effect of FDI. The adverse influence of the positive impact of the FDI effect on poverty is occasioned by the fact that FDI is in capital-intensive sectors that generate few job opportunities, but the profits are repatriated with minimum reinvestment. Also, systemic corruption and weak institutions may enable the advantages of FDI to be reaped by the elites and not the entire population. The policy implication is obvious: A positive connection between FDI and poverty implies that the foreign investments are not targeted and inclusive in Nigeria. In order to realize a reduction in poverty, policymakers ought to ensure that FDI is used on sectors that favor job creation and adequate distribution of income and also reduced corruption through establishment of

institutional strength that is able to carry out government policy without corruption. Finally, external borrowing is negatively related to poverty, which corroborates the theoretical expectation; therefore, a one percent increase in external borrowing decreases the poverty level by 17.28 percent in the steady state. This is perhaps counter to the work of Akindutire (2019), who noted a long-run positive influence of external borrowing on poverty levels in Nigeria. In terms of policy implications, policymakers should, hence, concern themselves with enhancing the efficiency and transparency of loan usage to maximize the developmental implications, as well as long-term poverty reduction.

Table 5: ARDL Short Run Result (4,2,1,2,2,2)

Dependent Variable: PVR_t				
Variable	***Coefficient***	***Std. Error***	***t − Stats***	***Prob.***
$D(InPVR_{t-1})$	-0.3213***	0.1096	-2.9318	0.0109
$D(InPVR_{t-2})$	0.0882	0.1511	0.5834	0.5689
$D(InPVR_{t-3})$	0.4673***	0.1321	3.5387	0.0033
$D(InTPN_t)$	0.0756	0.3284	0.2302	0.8213
$D(InTPN_{t-1})$	0.4883***	0.1011	4.8309	0.0003
$D(InXPT_t)$	-0.3471	0.1778	-1.9523	0.0712
$D(InMPT_t)$	0.2172	0.1745	1.2444	0.2338
$D(InMPT_{t-1})$	-0.5336***	0.1039	-5.1362	0.0002
$D(FDI_t)$	0.0376**	0.0164	2.2953	0.0377
$D(FDI_{t-1})$	-0.0234	0.0152	-1.5379	0.1464
$D(InEXB_t)$	-0.2724***	0.0537	-5.0759	0.0002
$D(InEXB_{t-1})$	-0.1807***	0.0522	-3.4589	0.0038
ECM_{t-1}	-0.8230***	0.1084	-7.5954	0.0000
R^2 = 0.8279; R^2-Adjusted = 0.7010;		F-statistic = 6.5287(Prob 0.0001) DW- statistic = 2.4799		

Note: *, ** and *** denote significance at 10%, 5% and 1% level, respectively.

Source: Authors computation (2025).

ARDL short-run estimation shows that ECM model is well-specified in regards to dynamics stability. Its coefficient is statistically significant, negative, and less than one. The coefficient of -0.8230 implies that the rate of adjustment is approximately 82.3 percent towards when the long-run equilibrium is restored. This finding supports the earlier evidence of cointegration of the model among the variables. On the impact of coefficients on poverty level, trade openness has a positive impact on poverty level, not aligning with support from both the economic literature and analysis of data on trade and poverty in the selected countries of study. The coefficient export indicates a negative and insignificant effect on poverty, conforming to the theoretical expectations and consistent with the sign in its long-term implication. The coefficient of import, which is positive, does not significantly affect poverty, having the same result as the long-run effects of imports on poverty reduction.

The relationship between FDI and the level of poverty is not in line with the expectations of the theory to the extent that FDI influences the level of poverty positively and significantly. This finding aligns with the sign of the long-term implication of FDI on poverty level. Lastly, the external borrowing coefficient is negative with a significant influence on poverty reduction. While this tandems with economic expectation in the short term, it aligns with the long-run effect, where external borrowing negatively impacted poverty levels in Nigeria.

Post-Estimation Test

To ensure the reliability and stability of the model, validity of these assumptions for normality, heteroscedasticity, and serial correlation were conducted and presented in Table 6.

Table 6: Diagnostic Results

Tests	CLRM Problem	χ^2 Value	Prob.	Decision
Breusch-Godfrey LM	Serial Correlation	0.4478	0.1188	Serial independence
Breusch-Godfrey	Heteroscedasticity	0.6605	0.5270	Constant Variance
Jarque-Bera	Normality	4.5258	0.1041	Normal residuals
CUSUM of Squares	Stability	-	-	Stable Model

Note: CLRM = Classical linear regression model.

Source: Author's compilation.

From the above results, the model satisfied the assumptions of Classical linear regression model for serial correlation, constant variance of the random term, normality distribution and as well as stability presented using the CUSUM of squares plot in Figure 2 and 3 demonstrates that the estimated coefficients are stable, with absent of structural breaks in the distributions.

Figure 2: CUSUM Test

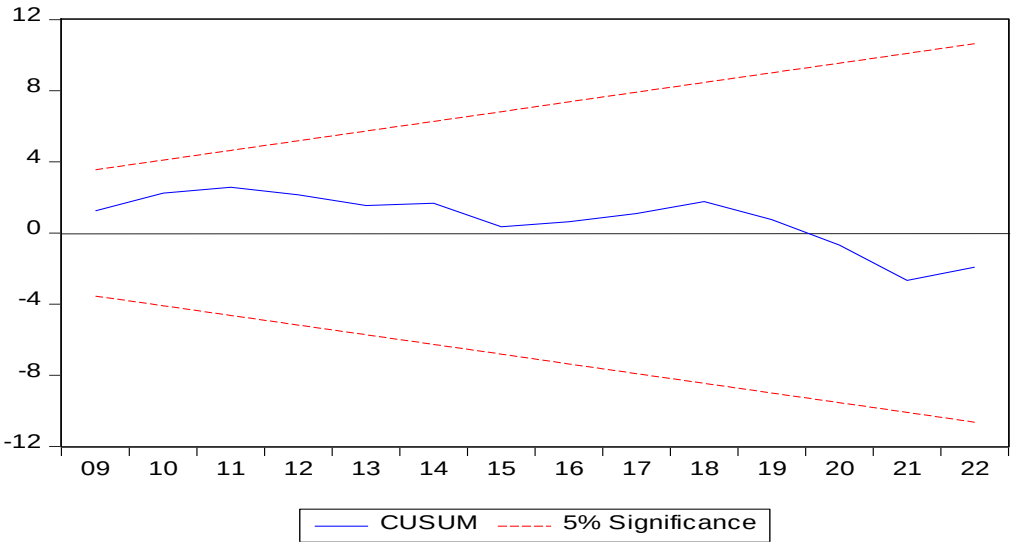
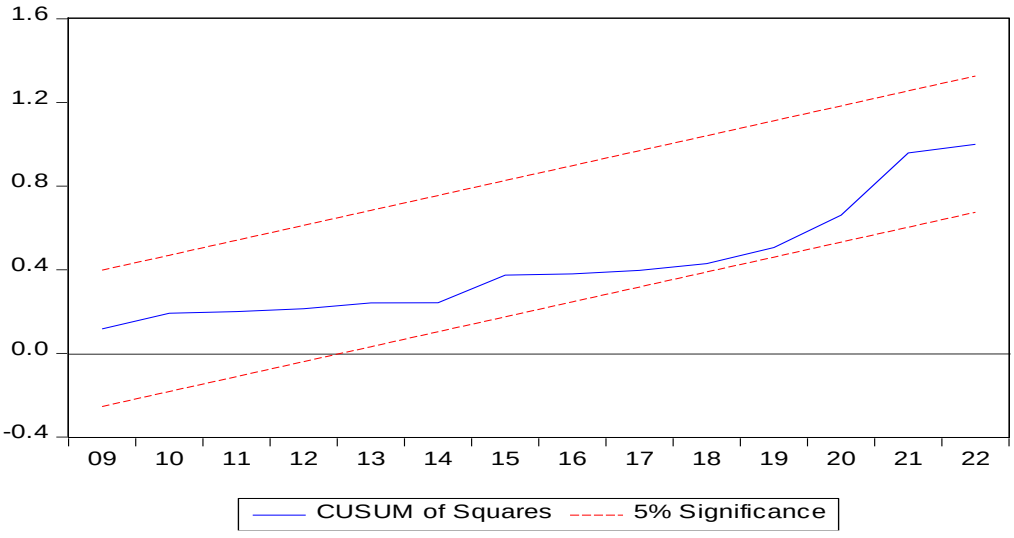


Figure 3: CUSUM of Square plot



These diagnostic outcomes suggest that the ARDL model does not suffer from key endogeneity-related issues, enhancing confidence in the parameter estimates.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

To analyze the effect the trade openness, export, import, FDI, and external borrowings had on the poverty reduction in Nigeria, this work used the empirical method of the Autoregressive Distributed Lag (ARDL) from 1985 to 2022. Empirical results showed that trade openness, FDI, and imports positively affected poverty levels in Nigeria. Contrary to this, the effect of export had a negative relationship but statistically significantly impacted the poverty level in the long-run period. However, external borrowing had a negative relationship with poverty level, as increasing external borrowing was associated with decreased poverty and was statistically significant in the short-term period.

The conclusion of this study is that export growth and external borrowing help to reduce poverty in Nigeria. Policy recommendations: (i) Nigerian policymakers should encourage and subsidize export industries to produce their long-term effect in reducing poverty; (ii) provide strategic regulations and value-added changes on FDI and imports to ensure they contribute directly to welfare and employment in the country; (iii) transparently direct external borrowings to productive investments, especially in infrastructure, human capital development (education and health), and real sectors (agriculture and manufacturing), in order to maximize short-term effects of poverty reduction.

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