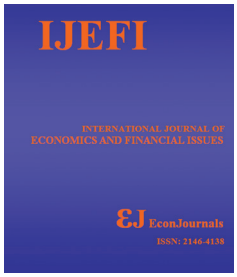

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Trade Liberalization, Foreign Investment and Economic Growth: Experience from Non-Oil Producing Countries in Africa

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ABSTRACT

This study focuses on trade liberalization, foreign investment and economic growth in non-oil-producing countries of Africa using the panel autoregressive distributed lag (ARDL) model. Annual time series data spanning from 2000 to 2023. The study reveals a strong long-term relationship between trade liberalization, foreign direct investment (FDI), and economic growth in non-oil-producing African countries. This finding is evidenced by the rejection of the "no long-run relationship" hypothesis, indicating a solid and enduring connection among these factors, which aligns with previous research. Most variables conform to theoretical expectations, supporting the hypothesis that trade liberalization and FDI contribute positively to economic growth. However, FDI and exchange rates exhibit unexpected deviations, likely reflecting structural challenges common in non-oil African economies, such as barriers that limit stable FDI inflows and hinder sustainable growth. The error correction term (ECT) further suggests that these economies adjust quickly from deviations, with respective short-run adjustment rates of 90%, 10%, and 50% in different model specifications. This high responsiveness indicates that, despite short-term disruptions, these economies tend to revert swiftly to their long-term growth trajectories. Based on the findings, we recommend that policies should be directed towards the pursuit of consistent and sustainable trade liberalization by reducing trade barriers, and reduction of obstacles to foreign investment to improve economic growth in non-oil-producing countries of Africa.

Keywords: Trade Liberalization, Foreign Investment, Economic Growth
JEL Classification: F10, F21, O40

1. INTRODUCTION

Economic growth is vital for non-oil-producing African nations, as it fosters resilience, reduces poverty, creates jobs, and promotes sustainable development. With these countries primarily relying on agriculture, manufacturing, and services, economic diversification is a priority (Srinivasan, 1999). Growth elevates income levels, supports investments in education and healthcare, and enhances community welfare. Improved infrastructure, including transportation, energy, and telecommunications, is essential for economic activities and connectivity (Harrison, 1994). Trade liberalization and FDI drive this growth—trade liberalization expands markets and increases competition, while FDI injects capital, technology, and expertise, enhancing productivity and innovation (Ray, 1998). Together, these factors bolster intra-African trade, strengthen economic ties, and improve trade balances, while supporting political stability and governance, reducing conflict risks (Chen and Gupta, 2006). Integrating into the global economy enables these nations to access international markets, essential for sustainable development (Grossman and Helpman, 1990). Without trade liberalization and FDI, achieving growth goals is challenging (Baldwin et al., 2001).

Trade liberalization plays a crucial role in driving economic growth in non-oil-producing African nations, which heavily rely on agriculture, manufacturing, and services. Opening markets

to international trade reduces barriers, fostering competition, lowering prices, and boosting efficiency (Emehelu, 2021; Fatima et al., 2020). This growth leads to higher income levels, facilitating investment in vital services like healthcare and education, thus improving living standards and reducing poverty (Claire Emilienne and Joseph, 2021). Additionally, trade liberalization encourages diversification, making economies more resilient and attracting foreign direct investment (FDI), which brings capital, technology, and expertise to stimulate productivity and infrastructure development (Infante-Amate et al., 2020; Singh, 2023). The resulting regional integration strengthens intra-African trade, economic ties, and collaboration, positioning non-oil-producing countries to engage more robustly in the global economy for long-term sustainable growth (Ajayi and Araoye, 2019; Yusuf et al., 2020). In addition, Foreign direct investment (FDI) significantly boosts economic growth in Africa's non-oil-producing nations by addressing challenges such as limited capital and technological advancement (Mwitta, 2022). FDI introduces financial resources, technology, and expertise, fostering productivity and innovation (Umar and Abdullahi, 2022). This investment also drives job creation, poverty alleviation, and higher living standards by stimulating local businesses and infrastructure, leading to increased economic activity (Ayenew, 2022). Additionally, FDI promotes economic diversification, reducing dependence on single industries and enhancing resilience against global market shifts (Teunen et al., 2022). Moreover, efforts to attract FDI encourage improvements in governance and institutional quality, fostering a stable business environment and boosting investor confidence (Ezeaku and Ugwuanyi, 2020).

Based on the preceding discussions, it is evident that for non-oil-producing countries to achieve economic growth, trade liberalization and the attraction of foreign direct investment are critical factors. The argument underscores the necessity for non-oil-producing nations to diversify their economies, emphasizing sectors like agriculture, manufacturing, services, health, science, technology, and education as pivotal for development (Yusuf et al., 2020; Claire Emilienne and Joseph, 2021). Global market integration of these economies can further fuel progress by boosting access to goods and services, elevating trade volumes, and promoting economic dynamism. Foreign direct investment (FDI) aids this shift by fostering new enterprises, expanding existing businesses, generating employment, and introducing advanced technologies, enhancing productivity and global competitiveness. Moreover, FDI encourages regional cohesion, sustainable practices, and poverty reduction, accelerating these nations' alignment with the global economy. This study explores the effects of trade liberalization, measured through trade openness and FDI inflows, on key growth indicators—real GDP, GDP growth rate, and GDP per capita—in non-oil African nations. It addresses two central inquiries: (a) How does trade liberalization influence economic growth in these countries? (b) What role does FDI play in advancing economic growth in this context? Our study utilizes the autoregressive distributed lag (ARDL) approach to investigate the combined impact of trade liberalization—measured by trade openness—and foreign direct investment (FDI) inflows on economic growth in non-oil African nations. Unlike previous studies that focused solely on trade and growth (Emehelu, 2021; Fatima et al., 2020; Ajayi and Araoye, 2019; Infante-Amate et al., 2022) or FDI and growth (Odhiambo, 2021; Sunde, 2023; Umar and Abdullahi, 2022), this research addresses both, filling a gap in understanding. Prior findings have been mixed, with some identifying negative impacts of trade liberalization on growth (Emehelu, 2021; Infante-Amate et al., 2022) and others showing positive effects (Claire Emilienne and Joseph, 2021; Yusuf et al., 2020). Considering new African trade policies like AfCFTA and REC, our study reassesses these dynamics to contribute to more consistent insights for non-oil-producing countries.

This study makes significant contributions to the literature by exploring the synergy between trade liberalization, foreign direct investment (FDI) and economic growth in non-oil-producing African nations. First, it investigates how trade liberalization fosters economic growth by promoting diversification, innovation, and competitiveness. As trade barriers are reduced, these nations gain access to new markets for non-oil exports, which encourages industries to improve efficiency, adopt global standards, and expand regionally. For example, countries like Kenya have expanded their floriculture exports, tapping into global markets through trade liberalization, significantly contributing to their economic growth. Second, the study examines the crucial role of FDI in driving growth. FDI is essential in providing capital for infrastructure and industrial development, particularly in sectors such as manufacturing and technology. Additionally, FDI supports social responsibility initiatives that contribute to broader societal goals, such as education and sustainability. In Mauritius, for instance, foreign investments in tourism and services have not only driven economic growth but also contributed to job creation and environmental sustainability. Third, the study employs the autoregressive distributed lag (ARDL) model to analyze the short- and long-term effects of trade liberalization and FDI on economic growth. This model allows for a comprehensive understanding of the dynamics between these variables. The paper is structured as follows: Section 2 reviews the literature on trade liberalization, FDI, and economic growth, Section 3 outlines the methodology used for the analysis, Section 4 presents the empirical results, and Section 5 concludes with policy implications and recommendations for enhancing the benefits of trade liberalization and FDI in non-oil-producing African nations.

2. LITERATURE REVIEW

2.1. Theoretical Review

International trade and economic growth are analyzed through various "old" and "new" theories that explain the reasons for trade among nations. Neoclassical trade theories, including the concepts of comparative advantage and the Heckscher-Ohlin-Samuelson model, provide foundational explanations for trade. The Ricardian model highlights that as countries open up to trade, they benefit from specializing in goods where they have a comparative advantage, which stems from differences in technology or natural resources rather than from factor endowments. This specialization leads to increased welfare gains. Conversely, the Heckscher-Ohlin-Samuelson model explores welfare gains in a two-country, two-factor framework, where each country exports goods that intensively use its abundant factors, whether capital or labour.

This framework indicates that both countries can achieve better outcomes through trade compared to an autarky scenario, as they exploit their comparative advantages. In the context of economic growth, the relationship between trade and growth rates is not straightforward. Early growth models, such as the Harrod-Domar model, suggest that trade liberalization can positively influence growth, given the assumption that the marginal product of capital remains positive (Srinivasan, 1999). Neoclassical models, such as the Solow model (1957), present a different view, asserting that growth is determined exogenously. A key aspect of the Solow model is the notion of a steady-state level of per capita GDP, indicating that countries with similar savings, depreciation, and population growth rates can converge to similar living standards in the long run (Ray, 1998). Harrison (1994) argues that trade openness facilitates the inflow of capital goods and technology, which enhances industrial activity and promotes economic growth.

New trade theories have emerged, addressing the complexities of trade by incorporating a broader range of factors. These models focus on endogenous growth, proposing that developing countries can achieve long-term economic growth through factors that are inherently determined rather than externally. This growth is often linked to increasing returns to scale. Chen and Gupta (2006) contend that economies can sustain growth due to increasing returns to scale, asserting that trade openness leads to knowledge spillovers, enhanced productivity, and improved human capital. Similarly, Romer (1990) posits that openness provides domestic producers with a wider array of capital and intermediate goods, thereby expanding the knowledge base and fostering faster productivity growth. Grossman and Helpman (1990) expand on endogenous growth theory by linking trade openness and foreign direct investment (FDI) inflows to economic growth, noting that technology diffusion drives technological advancement and stimulates growth. However, Baldwin et al. (2001) present a contrasting perspective, arguing that market openness can lead to global divergence, with industrialized nations in the North growing faster than those in the South.

2.2. Empirical Literature

2.2.1. Trade liberalization and economic growth

Claire Emilienne and Joseph (2021) conducted a study on the relationship between trade liberalization, economic growth, and poverty in Sub-Saharan African countries from 1990 to 2017. The study used various statistical methods to test for unit root and long-run relationships among variables. The results showed that trade openness, foreign direct investment, and institutional quality positively impact a country's economic growth in the long run. However, institutional quality and trade liberalization have adverse effects on economic growth in the short run. Emehelu (2021) investigated the impact of international trade on Nigeria's economic growth using data from the Central Bank of Nigeria (CBN) statistical bulletin annual report and the National Bureau of Statistics for 37 years (1981-2018). The study found that Nigeria's exchange rates have a negative and minor link with economic growth, while several trade policies have been seen to stifle Nigeria's economic progress. Obisike et al. (2020) used the ordinary least square (OLS) regression approach to investigate the impact of international trade on Nigeria's economic growth. They found that oil commodity terms of trade (OCTOT) and non-oil commodity terms of trade (NOCTOT) had a beneficial impact on Nigeria's economic growth in the short run, but they were independent of one another. Yusuf et al. (2020) also found that all explanatory variables were positively related to economic growth, except for exchange rate, and all explanatory factors were statistically significant with economic growth.

Tomic et al. (2020) found that trade has a consistent long-run and short-run relationship on international trade of developed countries. Infante-Amate et al. (2022) examined the impact of trade on material flow in the world, showing a negative impact of trade on economic development from 1900 to 2016. Singh (2023) explained the long-run positive impact of TOT on Indian economic growth between 1990 and 2018. Fatima et al. (2020) assessed the link between GDP growth and trade liberalisation using the System Generalised Methods of Moments (SGMM) dynamic panel data models estimator from 1980 to 2014. They concluded that trade might negatively impact actual output when nations display low human capital accumulation (HCA) levels. Ajayi and Araoye (2019) used the cointegration test and the Engle and Granger test to evaluate the trade liberalisation effect on Nigeria's growth from 1970 to 2016. Thi and Trong (2021) conducted an empirical study of the financial and trade liberalisation influence on economic advancement from 2003 to 2017 for 64 developing nations. They found that trade openness is a fundamental financial development determinant and that there is an insignificant relationship between financial growth and simultaneously opening both capital and trade accounts. Monyela and Saba (2024) investigated the interplay between trade liberalisation, economic growth, and economic development in South Africa in the two distinct periods, pre-BRICS (1991-2010) and post-BRICS (2011-2021). They found that trade openness substantially influences GDP growth in the post-BRICS period and highlights a unidirectional causal relationship between trade liberalization and economic growth.

Omoke and Opuala-Charles (2021) explored the link between trade openness and Nigeria's economic growth, considering total trade, import trade, and export trade as three indices of trade openness. The results showed that import trade has a significant negative influence on economic growth, while export trade has a significant positive impact on economic growth. The study emphasizes the need for higher levels of governance in Nigeria to promote economic growth through trade openness initiatives. Yusuff et al. (2020) examined the impact of foreign trade on Nigeria's economic growth from 1986 to 2017, finding a negative connection between foreign trade and GDP per capita. Wen et al. (2023) discovered that trade openness promotes economic growth via technological innovation and efficient resource utilization in both internal and external markets. Adu-Gyamfi et al. (2020) determined the effects of trade openness and inflation on economic growth for nine West-African countries from 1998 to 2017. Wiredu et al. (2020) empirically examined the relationship between openness to trade and foreign direct investment (FDI) to economic growth for a committee from four West African countries between 1998 and 2017. The study used static panel regression techniques to examine the causal relationship between FDI, trade openness, investment, and inflation on GDP. Results showed that aggregated trade

openness positively impacts economic growth in Côte d'Ivoire, Ghana, Nigeria, and Senegal.

2.2.2. Foreign direct investment and economic growth

Amin et al. (2020) found that foreign direct investment (FDI) positively influences economic growth in Romania, Kenya, China, Namibia, Nigeria, and Nigeria. They used time series data from 1990 to 2019 to analyze the relationship between FDI and economic growth. The results showed a significant positive impact of FDI on GDP growth, enhancing competitiveness and productivity while lowering costs. Wang et al. (2022) found a consistent positive relationship between FDI and economic growth in China. Sunde (2023) found a significant positive relationship between FDI and GDP, emphasizing the need for improving infrastructure and human resources to maximize FDI benefits. Ezeaku and Ugwuanyi (2020) found a positive relationship between FDI inflows and economic growth, underscoring the role of FDI in driving economic development in Nigeria. Olaniyan and Okemakinde (2021) found a positive link between FDI inflows and economic expansion, emphasizing the need for stability-enhancing policies to attract and retain FDI. Umar and Abdullahi (2022) conducted a Granger causality test, demonstrating bidirectional causality and emphasizing the importance of creating a conducive investment climate to boost FDI attractiveness. Overall, these studies highlight the importance of FDI in driving economic development and attracting sustainable FDI.

Ciobanu (2021) study found a long-term relationship between foreign direct investment (FDI), trade, labor, and economic growth in Romania from 1991 to 2018. The study found that real GDP and FDI were cointegrated, indicating that FDI, trade openness, and the labor force significantly contribute to Romania's economic growth over time. Increases in GDP, exports, imports, and the labor force positively influenced FDI inflows. Ayenew (2022) supported these findings, while Makhoba and Zungu (2021) found a positive correlation between FDI and economic activity in South Africa. Nketiah-Amponsah and Sarpong (2019) explored the interaction between infrastructure and FDI in sub-Saharan Africa, concluding that FDI positively impacts economic growth when coupled with adequate infrastructure. Teunen et al. (2022) found a unidirectional causal relationship from FDI to economic growth, while Oumarou and Maiga (2019) identified a bidirectional relationship between trade and economic growth and a unidirectional causality from trade to FDI. Mwitta (2022) found a positive correlation between real GDP growth and the FDI-to-GDP ratio, while a negative correlation with the gross fixed capital formation ratio. Lawal and Olusegun (2023) found a positive and statistically significant relationship between FDI and economic growth in Nigeria, emphasizing the critical role of FDI in Nigeria's economic development.

2.3. Knowledge Gaps

While existing literature provides insights into the effects of trade liberalization and foreign direct investment (FDI) on economic growth in non-oil-producing African nations, significant gaps remain in the empirical understanding of their combined impact. Previous studies have often focused on trade liberalization (Emehelu, 2021; Fatima et al., 2020) or FDI (Umar and Abdullahi, 2022) in isolation, leaving the interaction between these two factors underexplored. Additionally, findings on the effects of trade liberalization have been inconsistent, with some studies identifying negative impacts on growth (Emehelu, 2021) while others suggest positive outcomes (Claire Emilienne and Joseph, 2021). The dynamic effects of these variables, particularly within the context of recent regional trade policies like AfCFTA and RECs, remain poorly understood. Furthermore, the existing literature often overlooks the potential synergies between trade liberalization and FDI in fostering economic diversification, innovation, and regional integration. This study addresses these gaps by exploring the combined effects of trade liberalization and FDI on key economic growth indicators such as real GDP, growth rate of GDP and per-capita GDP using the autoregressive distributed lag (ARDL) approach, which allows for a more comprehensive understanding of their short- and long-term impacts.

3. METHODOLOGY

3.1. Data and Sources

In the quest to study trade liberalization, foreign direct investment and economic growth in non-oil-producing nations of Africa, annual time series data spanning from 2000 to 2023 was used and the choice of the sampled countries and years of the study was based on the availability of data. After conducting an extensive review of both theoretical and empirical literature, we choose the following variables. Trade openness (TOPEN) was used as a proxy for trade liberalization; foreign direct investment (FDI) as a proxy for foreign investment and economic growth was proxied with the real gross domestic product (RGDP), gross domestic product per capita (GDPpc) and gross domestic product growth rate (GDPgrt) while controlling for import, export and exchange rate. The data were sourced from the World Bank's World Development Indicator (WDI) 2023 edition. Hence, the summary of the variables, sources and expected economic apriori signs are summarized in the Table 1 below.

3.2. Model Specification: Autoregressive Distributed Lag (ARDL) Model

The choice of the Autoregressive Distributed Lag (ARDL) model, as proposed by Pesaran and Pesaran (1997), Pesaran and Shin (1998), and Pesaran et al. (2001), is informed by its numerous advantages over other econometric models. First, the ARDL model is particularly suitable for examining both short- and long-term relationships among variables, making it ideal for studying the dynamic interplay between trade liberalization, foreign direct investment (FDI), and economic growth. The model allows for the inclusion of different lags of the dependent and independent variables, offering flexibility in capturing complex interactions across time. Additionally, the ARDL approach is robust in handling variables that are either stationary at level (I(0)) or integrated of order one (I(1)), making it ideal for the mixed integration properties commonly encountered in time-series data. This model also facilitates the estimation of long-run coefficients even in the presence of small sample sizes, which is a common challenge in empirical research on developing economies.

In the context of this study, which examines the effects of trade liberalization and FDI on economic growth, the ARDL model is

Table 1: Data definition and source

Variable	Acronyms	Repository
Real Gross Domestic Product	RGDP	https://data.worldbank.org/indicator/NY.GDP.MKTP.CD https://data.worldbank.org/indicator/NY.GDP.DEFL.ZS
Gross Domestic Product Per Capita	GDPpc	https://data.worldbank.org/indicator/NY.GDP.PCAP.CD
Gross Domestic Product Growth Rate	GDPgrt	https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG
Trade Openness (Calculated)	TOPEN	https://data.worldbank.org/indicator/NE.TRD.GNFS.ZS
Foreign Direct Investment	FDI	https://data.worldbank.org/indicator/BX.KLT.DINV.WD.GD.ZS
Import	IMP	https://data.worldbank.org/indicator/NE.IMP.GNFS.CD
Export	EXP	https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS
Exchange Rate	EXR	https://data.worldbank.org/indicator/PA.NUS.FCRF

Source: Author's concept

particularly well-suited to explore how these factors influence growth over both the short and long term. Furthermore, the ARDL approach allows for the testing of cointegration among the variables, providing robust evidence of whether a long-run equilibrium relationship exists between trade liberalization, FDI, and economic growth. Thus, based on the theoretical underpinnings and empirical advantages, the ARDL model is adopted following Manasseh et al. (2024) to provide comprehensive insights into the dynamic relationship between the variables. The empirical model for this study is therefore specified as follows:

$$Y = f(TRL, FLM, C) \tag{1}$$

For the function to be incorporated into the study, the ARDL model is specified as follows:

$$Y_t = \beta_0 + \sum_{i-1}^{p} \beta_i TRL_{t-1} + \sum_{j=1}^{q} \theta_i FINV_{i-j} + \sum_{k=1}^{n} \delta_i C_{i-k} + \varepsilon_t \tag{2}$$

Where, Y represents the dependent variable. TRL denotes the trade liberalization measures, while $FINV$ denotes the foreign investment measure. C represents the control variables. β_0 represent constant term, while β_i, θ_i and δ_i are the short run coefficients. ε_t is the error terms. p, q and n represents the optimal lag lengths for the respective variables.

The ARDL model has been chosen for this study due to its numerous advantages. Firstly, it can be applied regardless of whether the individual regressors are integrated of order I(0) or I(1), meaning it can handle variables that are stationary at level or first difference, making it versatile in dealing with different time-series properties. Secondly, the ARDL model takes a sufficient number of lags to capture the data-generating process effectively, transitioning from a general to a specific modeling framework (Laurenceson and Chai, 2003). Thirdly, it yields superior estimates of long-run coefficients, and the diagnostic tests of the estimated equation are more reliable, ensuring robust results (Gerrard and Godfrey, 1998; Laurenceson and Chai, 1998). Fourthly, one of the key strengths of the ARDL approach is its ability to derive a dynamic error correction model (ECM) through a simple linear transformation (Banerjee et al., 1994). The ECM is useful for measuring the short-run relationship among the model's variables, allowing for a more comprehensive understanding of the dynamics at play. Lastly, the ARDL model is particularly well-suited for smaller sample sizes, making it appropriate for this study, which may face limitations in the available data.

Therefore, to captures the dynamic relationship between trade liberalization, FDI, and economic growth, allowing for an exploration of both short-run and long-run dynamics, eqn.2 is transformed into eqn.3 below.

$$\begin{aligned}\Delta Y_{i,t} = {} & \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta Y_{t-1} + \sum_{i=1}^{p} \beta_2 \Delta TOPEN_t + \sum_{i=1}^{p} \beta_3 \Delta IMP \\ & + \sum_{i=1}^{p} \beta_4 \Delta EXP_t + \sum_{j=1}^{q} \theta_1 \Delta FINV_t + \sum_{k=1}^{n} \delta_1 \Delta EXR_t + \\ & \varphi_1 lnY_{t-1} + \varphi_2 lnTOPEN_t + \varphi_3 lnIMP_t + \varphi_4 lnEXP_t + \\ & \forall_1 lnFINV_t + \rho_1 lnEXR_t + \varepsilon_t \end{aligned} \tag{3}$$

While p, q and n remain as defined above, $\Delta Y_{i,t}$ is the change in economic growth (real GDP, GDP per capita and GDP growth rate) at time t. $TOPEN_t$, IMP_t and EXP_t represents the independent variable related to trade openness, import and export, respectively. $FINV_t$ denotes foreign investment. β_i, θ_1 and δ_1 are the short-run coefficients, and the short run measure the immediate effects of changes trade liberalization, foreign investment on economic growth. δ_i, $\forall_1$ and ρ_1 are the long run coefficients. These coefficients indicate how changes in trade liberalization and foreign investment influence economic growth in the long run, assuming the system has reached equilibrium. ϵ_t is the error terms. From the ARDL model in eqn.3, an Error Correction Model (ECM) can be derived to capture short-run dynamics and how the system corrects towards long-run equilibrium:

$$\begin{aligned}\Delta Y_{i,t} = {} & \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta Y_{t-1} + \sum_{i=1}^{p} \beta_2 \Delta TOPEN_t + \sum_{i=1}^{p} \beta_3 \Delta IMP_t + \\ & \sum_{i=1}^{p} \beta_4 \Delta EXP_t + \sum_{j=1}^{q} \theta_1 \Delta FINV_t + \sum_{k=1}^{n} \delta_1 \Delta EXR_t + \lambda ECM_{t-1} \end{aligned} \tag{4}$$

Where ECM_{t-1} is the error correction term. λ is the coefficient of the error correction term, indicating the speed at which the variables return to long-run equilibrium after a shock. In this model, λ is expected to be negative and significant, indicating that any short-run disequilibrium is corrected in the long run.

The ARDL approach involves two stages. First, the existence of the long-run nexus (cointegration) between variables under investigation is tested by computing the F-statistics for analyzing the significance of the lagged levels of the variables. (Pesaran et al., 1999) and (Narayan, 2004) have provided two sets of appropriate critical values for different numbers of regressors (variables). This model contains an intercept, trend or both. One set assumes that all

the variables in the ARDL model are of I(0), and another assumes that all the variables are I(1). If the F-statistic lies above the upper-bound critical value for a given significance level, the conclusion is that there is a non-spurious long-run level relationship with the dependent variable. If the F-statistic lies below the lower bound critical value, the conclusion is that there is no long-run level relationship with the dependent variable. If it lies between the lower and the upper limits, the result is inconclusive. Secondly, if the cointegration between variables is identified, then one can undertake further analysis of the long-run and short-run (error correction) relationship between the variables.

4. EMPIRICAL RESULTS AND ANALYSIS

This section presents the results of the panel autoregressive distributed lag (ARDL) model used in this study. Prior to estimating the model, we tested the fundamental assumptions of the econometric model to ensure the variances are normally distributed, the error terms are serially uncorrelated, and homoscedasticity holds. Additionally, we verified that the model is correctly specified. We also conducted unit root tests, descriptive statistics, correlation analysis, and cointegration tests to assess the nature of the variables. The data description is provided in the next section.

4.1. Data Description

In Table 2, the descriptive statistics, which summarize the basic characteristics of the model variables, were used to assess the central tendency of the data, including measures such as mean, median, skewness, kurtosis, and standard deviation. These statistics help in understanding the nature of the variables in the model. The findings reveal that the total variation in the series ranged from −6.226 to 7.432, representing the lowest and highest values in the dataset. Additionally, we observed that the mean, median, standard deviation, skewness, and kurtosis values were relatively consistent. The Jarque-Bera test results indicated that the probability values for all variables were <0.05, suggesting that the errors of the variables are normally distributed, making them suitable for analyzing the relationships between trade liberalization, foreign direct investment, and economic growth in non-oil-producing countries in Africa.

Additionally, we performed the Spearman's correlation test (Table 2) on the variables to assess the presence of correlations between trade liberalization, foreign direct investment, and economic growth in non-oil-producing African countries. The results revealed that trade openness (TOPEN) exhibited a moderate positive correlation with economic growth, while foreign direct investment (FDI) showed a strong positive correlation with economic growth in these countries. Furthermore, we found that the control variables—import (IMP), export (EXP), and exchange rate (EXR)—also had strong positive correlations with economic growth in the non-oil-producing nations of Africa.

4.2. Unit Root Test

In panel studies, it is standard practice to determine the stationarity level and order of integration of the study variables. The order of integration refers to the number of times a non-stationary series is differenced until it becomes stationary (Christopoulos and Tsionas, 2004). This process helps researchers make informed decisions regarding the variables in the study. To assess stationarity, four unit root tests were conducted: Levine et al. (2002), Im et al. (2003), and Fisher-type tests using ADF and PP tests (Madala and Wu, 1999). The results are summarized in the table below. As shown in Table 3, the unit root test outcomes indicate that all variables are stationary but are integrated at different orders. Some variables are stationary at the level (I(0)), while others are stationary at the first difference (I(1)). This mixed order of integration is appropriate for the ARDL estimation technique.

4.3. Cointegration Test

The results of the unit root tests indicate that all variables in the study are stationary and integrated of either order I(0) or I(1), which makes them suitable for analysis using the Autoregressive Distributed Lag (ARDL) model. In order to examine the cointegration relationship between the model's variables, the Pedroni (1999; 2004) and Kao (1999) cointegration tests were employed. The null hypothesis for these tests is "no cointegration," and the decision rule is to reject this null hypothesis if the calculated P-value is less than the significance level of $\alpha = 0.05$. Pedroni and Kao tests are based on the Engle-Granger (1987) two-step residual-based cointegration method, which is considered superior to the Fisher-type Johansen test (Madala and Wu, 1999) in providing more reliable estimates for cointegration. The results of these tests are summarized in Table 4. From the Pedroni cointegration test, the P-values of most of the estimates are below the 0.05 threshold, leading to the rejection of the null hypothesis of "no cointegration." Similarly, the results from the Kao cointegration test, which serves as a robustness check, also confirm the existence of a long-run cointegrating relationship between the variables, as all P-values are below 0.05. These findings indicate that there is significant long-run cointegration between the variables in the model, suggesting that the variables move together over time and are linked in a stable long-term equilibrium. This strengthens the validity of the ARDL model for examining the relationships between trade liberalization, foreign direct investment, and economic growth in the study's context.

4.4. Panel ARDL Result

After confirming the presence of cointegration among trade liberalization, foreign direct investment (FDI), and economic growth, it is important to investigate whether a long-term relationship exists between these variables. To achieve this, the panel autoregressive distributed lag (ARDL) estimation technique was employed. Before proceeding with the estimation, all specified models (1-3) underwent pre- and post-OLS diagnostic tests. The outcomes of these tests revealed that the error terms of the models were normally distributed and free from serial correlation, indicating the absence of autocorrelation. Moreover, the variance of the models was homoscedastic, meaning it remained consistent across observations, which is an essential assumption for reliable statistical estimation. Additionally, the models were well-specified, confirming that the functional form was suitable for the data.

With the diagnostic tests confirming the models' robustness, the ARDL estimation results were then presented. These results,

Table 2: Descriptive and correlation matrix

Descriptive statistics								
Variable	**RGDP**	**GDPPC**	**GDPGRT**	**TOPEN**	**FDI**	**IMP**	**EXP**	**EXR**
Mean	0.587	1.230	0.900	2.719	101.7	−0.673	−0.618	−0.748
Median	0.105	0.448	0.896	0.597	83.18	−0.680	−0.694	−0.783
Maximum	1.936	6.335	5.066	7.432	4.841	1.196	1.420	1.160
Minimum	−0.698	−1.665	−1.588	−6.226	0.102	−2.547	−1.916	−2.450
Standard Deviation	5.668	4.993	0.720	22.92	81.37	0.678	0.630	0.644
Skewness	1.254	5.948	0.245	30.76	1.960	0.074	0.617	0.330
Kurtosis	4.458	57.82	7.162	989.4	6.885	3.287	2.957	3.028
Jarque-Bera	69.36	1447	808.0	4493	1401.	4.823	70.34	20.15
Probability	0.000	0.000	0.000	0.000	0.000	0.089	0.000	0.000
Correlation Matrix								
RGDP	1.000							
GDPPC	0.545	1.000						
GDPGRT	0.612	−0.017	1.000					
TOPEN	0.465	0.152	−0.013	1.000				
FDI	0.857	0.043	0.763	0.039	1.000			
IMP	0.780	0.037	−0.006	−0.239	0.182	1.000		
EXP	0.674	0.040	−0.011	−0.085	0.104	0.516	1.000	
EXR	0.609	−0.043	0.056	−0.193	0.129	0.739	0.469	1.000

Source: Authors' Concept

Table 3: Unit root test results

Variable	**LLC**	**IPS**	**ADF-Fisher**	**PP-Fisher**	**Order of integration**	
					Level	**First Dif.**
RGDP	−5.836***	−6.978***	174.6***	321.3***	I (0)	-
	(0.000)	(0.000)	(0.000)	(0.000)		
GDPpc	−17.12***	−13.72***	292.9***	342.1***	-	I (1)
	(0.000)	(0.000)	(0.000)	(0.000)		
GDPgrt	−15.15***	−13.80***	306.6***	318.4***	I (0)	-
	(0.000)	(0.000)	(0.000)	(0.000)		
TOPEN	−4.028***	−3.085***	112.5***	107.5***	I (0)	-
	(0.000)	(0.000)	(0.000)	(0.000)		
FDI	−11.03***	−10.02***	236.9***	332.9***	I (0)	-
	(0.000)	(0.000)	(0.000)	(0.000)		
IMP	−29.16***	−12.43***	409.1***	416.0***	I (0)	-
	(0.000)	(0.000)	(0.000)	(0.000)		
EXP	−3.502***	−3.462***	126.9***	294.6***	I (0)	-
	(0.002)	(0.000)	(0.000)	(0.000)		
EXR	−13.27***	−10.05***	230.3***	245.5***	-	I (1)
	(0.000)	(0.000)	(0.000)	(0.000)		

Source: Authors' Concept. (.) represents the *P* values, ***, ** and * represents the level of significance

Table 4: Pedroni and Kao cointegration test

Model	**1**		**2**		**3**	
Within Dimension						
Panel-V Statistic	−1.545*	−4.257*	−3.644*	4.780*	−2.187*	−4.057
	(0.041)	(0.039)	(0.047)	(0.045)	(0.044)	(0.125)
Panel-rho Statistic	1.991516*	1.902	2.337	−17.72235***	2.121757*	2.649*
	(0.046)	(0.368)	(0.689)	(0.000)	(0.374)	(0.045)
Panel-PP Statistic	−12.62***	−13.16***	−15.56***	−10.33***	−8.982***	−7.771***
	(0.000)	(0.009)	(0.001)	(0.000)	(0.000)	(0.000)
Panel-ADF Statistic	−9.719***	−9.997***	−11.67***		−8.638***	−7.407***
	(0.000)	(0.000)	(0.000)		(0.000)	(0.000)
Between Dimension						
Group rho-Stat	3.952*		4.780*		4.542*	
	(0.048)		(0.046)		(0.041)	
Group PP-Stat	−24.38***		−17.72***		−14.07***	
	(0.000)		(0.000)		(0.003)	
Group ADF-Stat	−11.68***		−10.33***		−9.751***	
	(0.000)		(0.000)		(0.000)	
Robust Check: KAO Cointegration Test						
ADF-Stat	−8.251		4.231		−3.470	
Prob.	0.000		0.000		0.000	

Source: Authors' Concept. ***, ** and * represents 1%, 5% and 10% level of significance

displayed in Table 5, shed light on the long-run relationships between the variables under investigation. By analyzing the ARDL coefficients, it is possible to assess the long-term impact of trade liberalization, FDI, and economic growth on each other, providing valuable insights into their interactions within the context of non-oil-producing African countries.

The findings in Table 5 show that the model adheres to the essential assumptions of both OLS and ARDL approaches. After verifying the stationarity and integration levels of the variables, the ARDL estimation method was applied to specify the model. In this study, trade liberalization is represented by trade openness (TOPEN), foreign investment is measured through foreign direct investment (FDI), and economic growth is indicated by real gross domestic product (RGDP). Furthermore, imports (IMP), exports (EXP), and exchange rate (EXR) were included as control variables to account for their potential influence on the relationship between trade liberalization, FDI, and economic growth.

A Hausman test was performed to identify the most suitable model, with results showing that the random effects model is independent of the explanatory variables (Table 5). This outcome suggests that the random effects model is the best fit for analyzing the data, as it enables the estimation of long-term relationships while considering variations across different non-oil-producing African countries. For example, in countries such as Kenya and Uganda, trade liberalization and foreign investment have been found to positively impact economic growth by opening markets and attracting capital inflows, illustrating the applicability of the ARDL model in these settings.

Model 1 reveals a positive relationship between trade openness (TOPEN), imports (IMP), and exports (EXP) at the 1%, 10%, and 5% significance levels, respectively. The coefficients suggest that, holding other factors constant, a one-unit increase in TOPEN, IMP, and EXP would result in changes to real GDP (RGDP) of approximately 4.043, 0.315, and 0.155487, respectively. Conversely, foreign direct investment (FDI) and the exchange rate (EXR) were found to negatively affect economic growth at the 5% significance level. Specifically, the coefficients (−0.014 and −0.263) indicate that a one-unit increase in FDI and EXR would lead to reductions in RGDP by −0.014 and −0.263, respectively, ceteris paribus.

Based on these findings, the null hypothesis is rejected, as the majority of P-values are below 0.05 (Table 5). This supports the acceptance of the alternative hypothesis, confirming a long-term relationship between trade liberalization, FDI, and economic growth. These results are consistent with previous research, including studies by Odhiambo (2021), Lawal and Olusegun (2023), Emehelu (2021), and Sunde (2023). For example, in non-oil-producing African countries such as Kenya and Tanzania, trade openness and FDI have been linked to economic growth through enhanced market access and the transfer of technology. These findings underline the role of trade liberalization in promoting growth, as suggested by Srinivasan (1999), who argued that trade openness positively impacts the marginal product of capital. Furthermore, the relationships between imports and exports align with economic theory, further supporting the positive effects of trade liberalization on growth.

Foreign direct investment (FDI), serving as a proxy for foreign investment, and exchange rates were found to have a negative effect on economic growth in non-oil-producing African countries. This may be due to the relatively weak international connections between these nations, as crude oil remains the dominant export commodity across the continent. Non-oil-producing African

Table 5: Panel ARDL and robustness check results

Variable	Model 1 Dependent Var.=InRGDP ARDL (1,1,1,1,1) Lag: AIC	Model 2 Robustness Check Dependent Var.=InD (GDPpc) ARDL (1,1,1,1,1) Lag: AIC	Model 3 Robustness Check Dependent Var.=InGDPgrt ARDL (1,1,1,1,1) Lag: AIC
InTOPEN	4.043***	2.134***	0.062***
	(0.000)	(0.001)	(0.000)
InFDI	−0.014**	0.085***	0.360***
	(0.036)	(0.007)	(0.009)
InIMP	0.315	0.101***	0.206***
	(0.767)	(0.009)	(0.000)
InEXP	0.487**	0.033	0.416***
	(0.013)	(0.514)	(0.000)
D (EXR)	−0.263**	−2.187***	0.158
	(0.012)	(0.001)	(0.952)
Hausman Test	6.438	8.140	5.885
	(0.265)	(0.148)	(0.317)
Normality Test	8129.1	1518.	4272
	(0.000)	(0.000)	(0.000)
Serial Correlation Test	1.219	1.294	1.330
	(0.113)	(0.371)	(0.234)
Ramsey Reset Test	−0.507	−0.102	−0.563
	(0.000)	(0.000)	(0.000)
Heteroscedasticity Test	0.310	0.469	0.321
	(0.906)	(0.955)	(0.993)

Source: Authors' Concept. ***, ** and * represents 1%, 5% and 10% level of significance. (.) represents probability values

countries have not been able to attract substantial international investment, likely because they lack the factors that make them appealing to multinational companies. Companies typically evaluate several criteria when considering investment locations, such as a favorable business climate, rule of law, security, governance quality, government effectiveness, regulatory standards, corruption control, liberal trade policies, a skilled workforce, and other competitive advantages.

In many African economies, crude oil is the main export, while sectors like science, technology, and capital investment for static industries are less developed. Additionally, deviations in exchange rates from expected economic patterns can be attributed to unfavorable terms of trade, often driven by protectionist measures designed to protect domestic industries and stimulate economic growth. This finding is consistent with the "Ricardian model," which suggests that countries benefit from trade by specializing in goods where they have a comparative advantage due to differences in technology or natural resources. To further investigate the long-term relationship between trade liberalization, FDI, and economic growth, alternative indicators of economic performance, such as GDP per capita (GDPpc) and GDP growth rate (GDPgrt), were incorporated into the model. These variables replaced real GDP (RGDP) in equations (5) and (6) for robustness. The models underwent a series of pre- and post-OLS tests, including normality, the Breusch-Godfrey Serial Correlation LM test, the Ramsey RESET test, and the White Heteroscedasticity test. The results confirmed that the error terms were normally distributed, free from serial correlation, and homoscedastic, ensuring the models were well-specified and reliable.

The outcome of the Hausman test suggest random effects model as the best for the estimation. The results of model 2, shows that trade openness (TOPEN), foreign direct investment (FDI), import (IMP) and export (EXP) positively impact economic growth at 1% and 10% level of significant, while exchange rate (EXR) have negative impact on economic growth at 1% critical level. Their coefficient (2.134, 0.085, 0.101, 0.033 and −2.187) suggests that a unit change in the variables would amount to about 2.134, 0.085, 0.101, 0.033 and −2.187 decreases in the economic growth all things being equal. In the like manner, the coefficients of model 3 have positive impact on economic growth at 1% level of significant. Their estimated coefficients (0.062, 0.019, 0.206, 0.416, and 0.158) shows that all things being equal, a unit increase in the variables would lead to about 0.062, 0.019, 0.206, 0.416, and 0.158 changes in the economic growth. The findings of the result would also lead to rejection of the null hypothesis since most of the P-values of the models are statistically significant and less than 0.05. Thus, the results also rhymed with the findings of other scholars (Claire Emilienne and Joseph, 2021, Emehelu, 2023, Ezeaku and Ugwuanyi, 2020, and Ajayi and Araoye, 2019). The findings of the results of the robustness checks are in contrast with the original result since the trade openness (TOPEN) and foreign direct investment (FDI) were found to have positive impact on economic growth, in contrast to findings in model 1, which suggested that FDI have negative impact on economic growth.

4.5. Short Run Dynamics

Having established the long-term impact of trade liberalization and foreign direct investment (FDI) on economic growth, it is essential to delve into the short-term dynamics of these relationships. While the long-term findings offer valuable perspectives on overall trends, examining the short-term variations is equally important for a more nuanced understanding of how trade policies and foreign investments affect economic growth in the shorter run. This analysis will help us identify both the immediate impacts and potential delays in economic growth's response to changes in trade liberalization and foreign direct investment. Table 6 presents the results of the short-term dynamics, where we explore the immediate effects of trade openness, FDI, and other key variables on economic growth. By investigating these short-term interactions, we can better comprehend the factors driving economic performance in the near term, providing policymakers with insights to craft focused strategies that foster economic growth in both the short and long run.

The coefficient of the error correction term indicates the rate at which adjustments in the long run are corrected in the short run.

Table 6: Short-run estimated results

Variable	Model 1 Dependent var.=lnrgdp ARDL (1,1,1,1,1) Lag: AIC	Model 2 Robustness check Dependent var.=Ind (gdppc) ARDL (1,1,1,1,1) Lag: aic	Model 3 Robustness check Dependent var.=lngdpgrt ARDL (1,1,1,1,1) Lag: aic
ECM (-1)	−0.908***	−0.016***	−0.506***
	(0.000)	(0.002)	(0.000)
lnΔTOPEN	1.878***	−0.933	0.121**
	(0.009)	(0.251)	(0.030)
lnΔFDI	0.175***	0.093	0.103
	(0.000)	(0.298)	(0.441)
lnΔIMP	−1.547	0.078**`	−1.394
	(0.291)	(0.018)	(0.224)
lnΔEXP	−6.375	−0.211**	−6.761
	(0.171)	(0.029)	(0.187)
ΔEXR	−0.392	−0.032	0.041
	(0.530)	(0.392)	(0.837)
Constant	−11.29	0.049	-

Source: Authors' Concept. ***, ** and * represents 1%, 5% and 10% level of significance. (.) represents probability values. Δ represent the first difference operator

According to Pahlavani et al. (2005), an error correction model should be validated with two key properties: a negative sign and statistical significance. In the case of the models specified in this study, the coefficients of the error correction terms (ECT) for each model display negative signs and are statistically significant at the 1% level (Table 6). This implies that in the short run, the models will adjust toward long-run equilibrium at speeds of 90%, 10%, and 50%, respectively. For instance, in non-oil producing African countries like Kenya and Tanzania, the speed of adjustment observed suggests a rapid correction of economic imbalances, which can be attributed to their increasing trade openness and foreign investment, despite the lack of oil resources. This aligns with the findings of previous studies (Emehelu, 2021; Fatima et al., 2020; Ajayi and Araoye, 2019; Infante-Amate et al., 2022; Odhiambo, 2021; Sunde, 2023; Umar and Abdullahi, 2022; Ayenew, 2022; Mwitta, 2022; and Lawal and Olusegun, 2023: Yuen and Yuen, 2022; Imeokparia et al., 2023), which also noted significant short-run adjustments in the economic dynamics of countries with limited natural resources. These findings further support the view that trade liberalization and foreign direct investment contribute to the swift adjustment of economic conditions in these countries.

4.6. Discussion of Findings

This study examines the relationship between trade liberalization, foreign direct investment (FDI), and economic growth in non-oil-producing African countries from 2000 to 2023, using annual time series data sourced from the World Bank's World Development Indicators (2023 edition). Trade liberalization is measured by trade openness (TOPEN), foreign investment is represented by FDI, and economic growth is assessed using real gross domestic product (RGDP), GDP per capita (GDPpc), and GDP growth rate (GDPgrt). Control variables include imports (IMP), exports (EXP), and exchange rate (EXR). The analysis employs the Panel Autoregressive Distributed Lag (ARDL) model with a bounds testing approach. To address the potential issue of spurious regression often encountered with time series data, four unit root tests (Levine, Lin, and Chun (LLC), Im, Pesaran, and Shin (IPS), and Fisher-type combined Fisher-ADF and Fisher-PP tests) were conducted. The variables were found to be stationary and integrated at orders I(0) and I(1), but not higher than I(1). Pedroni cointegration tests revealed evidence of cointegration between trade liberalization, FDI, and economic growth in the models. Additionally, the Koa cointegration test confirmed this result.

The long-run panel ARDL estimates indicate a significant long-run relationship between trade liberalization, FDI, and economic growth, with all variables meeting the a priori expectations except for FDI and exchange rate. This deviation may be attributed to the structural challenges faced by many African economies, particularly non-oil producers, which are often characterized by economic difficulties that hinder growth, international trade, and foreign investment. In contrast, the robustness check using GDPpc and GDPgrt as dependent variables in models 2 and 3 revealed a positive relationship between all variables and economic growth, with statistically significant results ($P < 0.05$). This led to the rejection of the null hypothesis of no long-run relationship. In the short run, the coefficient of the error correction term (ECT (-1)) indicates a 90% adjustment rate from the long run to the short run. The short-run dynamics show that models 2 and 3 adjust at speeds of 10% and 50%, respectively. These findings are consistent with previous studies by Emehelu (2021), Fatima et al. (2020), Ajayi and Araoye (2019), Infante-Amate et al. (2022), Odhiambo (2021), Sunde (2023), Umar and Abdullahi (2022), Ayenew (2022), Mwitta (2022), and Lawal and Olusegun (2023).

5. CONCLUSIONS AND POLICY RECOMMENDATIONS

This study explored the relationships between trade liberalization, foreign direct investment (FDI), and economic growth in non-oil-producing African countries from 2000 to 2023. The findings reveal a significant long-run relationship between these variables, with the rejection of the null hypothesis of "no long-run relationship" highlighting a strong connection, consistent with prior research. Most variables align with economic theories, supporting the hypothesis that trade liberalization and FDI contribute positively to economic growth. However, deviations in FDI and exchange rates suggest that structural challenges within non-oil African economies, such as barriers to consistent FDI inflows and risks to sustainable growth, may explain these anomalies.

The error correction term (ECT) shows a rapid adjustment rate of 90%, 10%, and 50% in the short-run model, indicating a high responsiveness of these economies to short-term shocks and a quick return to the long-run growth path. Based on these findings, policymakers should focus on several key strategies. First, consistent and sustainable trade liberalization policies are crucial to enhancing economic growth by reducing trade barriers, improving access to international markets, and fostering greater economic integration. Second, addressing the deviations in FDI requires creating a more attractive investment climate by improving institutional quality, strengthening regulations, and reducing corruption. Third, since exchange rates did not meet expectations, maintaining currency stability should be prioritized to support economic stability, trade, and investor confidence. Fourth, given the rapid adjustment speeds observed in the short run, policymakers should implement dynamic fiscal and monetary policies that enable quick responses to economic shocks. Finally, targeted development policies that focus on infrastructure, human capital, and technological advancements are essential to addressing the structural challenges of non-oil-producing African economies and supporting long-term, sustainable growth. These policies can help these countries better leverage trade and investment opportunities to foster enduring economic prosperity.

REFERENCES

Adu-Gyamfi, G., Nketiah, E., Obuobi, B., Adjei, M. (2020), Trade openness, inflation and GDP growth: Panel data evidence from nine (9) West Africa Countries. Open Journal of Business and

Management, 8, 314-328.
Ajayi, E.O., Araoye, F.E (2019), Trade openness and economic growth in Nigeria. International Journal of Economics, Finance and Management, 4(2), 50-63.
Amin, A., Ionescu, L., Popescu, M. (2020), The effects of outward foreign direct investment on Romania's economic development: A time series analysis (1990-2019). Journal of Economic Development, 45(3), 123-145.
Ayenew, A. (2022), Cointegration between economic growth and foreign direct investment in Africa. Journal of Economic Studies, 49(4), 620-634.
Baldwin, R.E., Francois, J., Portes, R. (2001), The costs and benefits of a North American free trade agreement. In: The Economics of Regional Trading Blocs. University of Chicago Press. p39-61.
Chen, S., Gupta, A. (2006), Trade openness and economic growth: A panel data analysis. Journal of International Trade and Economic Development, 15(3), 319-342.
Christopoulos, D.K., Tsionas, E.G. (2004), Financial development and economic growth: Evidence from panel unit root and cointegration tests. Journal of Development Economics, 73(1), 55-74.
Ciobanu, A.M. (2021), The impact of FDI on economic growth in case of Romania. International Journal of Economics and Finance, 12(12), 1-81.
Claire Emilienne, Y.W., Joseph, O.A. (2021), Trade liberalization, economic growth and poverty levels in Sub-Saharan Africa. Economic Research-Ekonomska Istrazivanja, 34(1), 754-774.
Emehelu, C.I. (2021), Effects of international trade on the economic growth of Nigeria. International Journal of Innovative Finance and Economics Research, 9(1), 144-157.
Ezeaku, I., Ugwuanyi, M. (2020), The impact of foreign direct investment on economic growth in Nigeria: An ARDL approach. Nigerian Journal of Economic and Financial Research, 12(3), 215-230.
Fatima, S., Chen, B., Ramzan, M., Abbas, Q. (2020), The nexus between trade openness and GDP growth: Analyzing the role of human capital accumulation. SAGE Open, 10(4), 1-18.
Gerrard, W.J., Godfrey, L. (1998), Diagnostic checks for single-equation error-correction and autoregressive distributed lag models. The Manchester School of Economic and Social Studies, 66(2), 222-237.
Grossman, G.M., Helpman, E. (1990), Trade, innovation, and growth. The American Economic Review, 80(2), 86-91.
Harrison, A. (1994), Openness and Growth: A Time-series, Cross-country Analysis for Developing Countries. NBER Working Paper No. 4890.
Im, K.S., Pesaran, M.H., Shin, Y. (2003, Testing for unit roots in heterogeneous panels. Journal of Econometrics, 115(1), 53-74.
Imeokparia, L., Peter, O.O., Bello, B.A., Osabohien, R., Aderemi, T.A., Gershon, O., Abidemi, A. (2023), A panel analysis of crude oil exports and poverty reduction in african oil producing countries: Implication for the sustainable development goal one. International Journal of Energy Economics and Policy, 13(4), 169-174.
Infante-Amate J., Urrego-Mesa A., Piñero P., Tello E. (2022), The open veins of Latin America: Long-term physical trade flows (1900–2016). Global Environmental Change, 76, 102579.
Kao, C. (1999), Spurious Regression and Residual-Based Tests for Cointegration in Panel Data. Journal of Econometrics, 90, 1-44.
Laurenceson, J., Chai, J.C.H. (2003), Financial Reform and Economic Development in China. United Kingdom: Edward Elgar Publishing.
Laurenceson, J., Chai, J.C.H. (1998), Financial liberalization and financial depth in China. Savings and Development, 22(4), 393-413.
Levine, A., Lin, C.F., Chu, C.S.J. (2002), Unit root tests in panel data: Asymptotic and finite-sample properties. Journal of Econometrics, 108, 1-24.
Lawal, A., Olusegun, T. (2023), The impact of foreign direct investment on economic growth in Nigeria: A dynamic panel data analysis. Nigerian Journal of Economic and Financial Research, 15(2), 145-160.
Maddala, G.S., Wu, S. (1999), A comparative study of unit root tests with panel data and a new simple test. Oxford Bulletin of Economics and Statistics, 61(S1), 631-652.
Makhoba, N., Zungu, L. (2021), Foreign direct investment and economic growth in South Africa: An empirical analysis. South African Journal of Economic and Management Sciences, 24(1), 1-12.
Manasseh, C.O., Nwakoby, I.C., Okanya, O.C., Nwonye, N.G., Odidi, O., Thaddeus, K.J., Ede, K.K., Nzidee, W. (2024), Impact of digital financial innovation on financial system development in Common Market for Eastern and Southern Africa (COMESA) countries. Asian Journal of Economics and Banking, 8(1), 121-142.
Monyela, M.N., Saba, C.S. (2024), Trade openness, economic growth and economic development nexus in South Africa: A pre-and post-BRICS analysis. Humanities and Social Sciences Communications, 11, 1108.
Mwitta, D. (2022), The impact of foreign direct investment on economic growth in Tanzania: A vector error correction model approach. African Economic and Business Review, 20(3), 259-275.
Narayan, P.K. (2004), Reformulating Critical Values for the Bounds F-statistics Approach to Cointegration: An Application to the Tourism Demand Model for Fiji. (Discussion Paper No. 02/04). Victoria, Australia: Monash University.
Nketiah-Amponsah, E., Sarpong, K. (2019), Infrastructure, foreign direct investment, and economic growth in sub-Saharan Africa. Journal of African Business, 20(1), 1-17.
Obisike, N.E., Onwuka, I.N., Okoli, U.V., Udeze, R.C. (2020), Impact of international trade on Nigerian economic growth: Evidence from oil terms of trade. International Journal of Economic and Financial Management, 5(2), 31-47.
Odhiambo, N.M. (2021), Foreign direct investment and economic growth in Kenya: An autoregressive distributed lag approach (1980-2018). African Journal of Economic and Management Studies, 12(4), 567-580.
Olaniyan, A., Okemakinde, T. (2021), Foreign direct investment and economic growth in Nigeria: Evidence from panel co-integration analysis. Journal of African Business, 22(1), 45-62.
Omoke, P.C., Opuala-Charles, S. (2021), Trade openness and economic growth nexus: Exploring the role of institutional quality in Nigeria. Cogent Economics and Finance, 9(1), 1-17.
Pahlavani, M., Valadkhani, A., Worthington, A. (2005), Testing for Structural Breaks in Australia's Monetary Aggregates and Interest Rates: An Application of the Innovational Outlier and Additive Outlier Models. Faculty of Business - Economics Working Papers wp05-02. University of Wollongong. Available from: https://ro.uow.edu.au/econwp
Pedroni, P. (2004), Panel cointegration: Asymptotic and finite sample properties of pooled time series tests with an application to the PPP hypothesis. Econometric Theory, 20, 597-625.
Pesaran, M.H., Shin, Y., Smith, R. (2001) Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16, 289-326.
Pesaran, M.H., Shin, Y., Smith, R.P. (1999) Pooled mean group estimation of dynamic heterogeneous panels. Journal of the American Statistical Association, 94, 621-634.
Pesaran, M.H., Shin, Y. (1998) An Autoregressive Distributed-Lag Modelling Approach to Cointegration Analysis. Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium. Vol. 31. p371-413.
Pesaran, M.H., Pesaran, B. (1997) Working with Microfit 4.0: Interactive Econometric Analysis; Windows Version. Oxford: Oxford University Press.
Romer, P.M. (1990), Endogenous technological change. The Journal of

Political Economy, 98(5), S71-S102.
Ray, D. (1998), Development Economics. Princeton: Princeton University Press.
Srinivasan, T.N. (1999), Trade liberalization and economic growth: A theoretical perspective. The World Economy, 22(1), 7-21.
Singh, T. (2023), Do terms of trade affect economic growth? Robust evidence from India. Economics of Transition and Institutional Change, 31, 491-521.
Sunde, T. (2023), The impact of foreign direct investment on Namibia's economic growth: An analysis from 1990 to 2020. Namibian Journal of Economics, 15(2), 89-104.
Teunen, M., Nubong, N., Teunen, S. (2022), The impact of foreign direct investment on economic growth in South Africa: A Cobb-Douglas approach. South African Journal of Economics, 90(2), 185-200.
Thi, T.D.P., Trong, H. (2021), Impacts of openness on financial development in developing countries: Using a Bayesian model averaging approach. Cogent Economics and Finance, 9(1), 1937848.
Tomic, D., Skare, M., Kristek, I. (2020), Terms of trade impact on international trade: A panel cointegration analysis. Transformations in Business and Economics, 19, 136-158.
Umar, A., Abdullahi, H. (2022), Causal relationship between foreign direct investment and economic growth in Nigeria: A granger causality approach. African Journal of Economic Review, 10(2), 98-115.
Wang, Y., Liu, J., Zhang, H. (2022), Bibliometric analysis of foreign direct investment and economic growth: Insights from 1995 to 2019. International Journal of Business and Economics, 22(1), 45-62.
Wen, Y., Song, P., Gao, C., Yang, D. (2023), Economic openness, innovation and economic growth: Nonlinear relationships based on policy support. Heliyon, 9(1), e12825.
Wiredu, J., Nketiah, E., Adjei, M. (2020), The relationship between trade openness, foreign direct investment and economic growth in West Africa: Static panel data model. Journal of Human Resource and Sustainability Studies, 8, 18-34.
Yuen, T.H.A., Yuen, W.K.T. (2022), Relationship between geopolitical risk in major oil producing countries and oil price. International Journal of Energy Economics and Policy, 12(5), 117-123.
Yusuf, L.O., Nchom, H., Osuji, P., Udeorah, S.A.F. (2020), Impact of international trade on the growth of the Nigerian economy. International Journal of Research and Innovation in Social Science, 4(8), 573-576.
Yusuff, S., Adekanye, T., Babalola, O. (2020), International trade and its effect on economic growth in Nigeria (1986-2017). American Journal of Economics, 4(2), 70-85.