International Journal for Multidisciplinary Research (IJFMR)
E-ISSN: 2582-2160 ● Website: www.ijfmr.com ● Email: editor@ijfmr.com

The Impact of International Trade on Economic Growth in Tanzania: 2001 – 2020

Nassibu Richard Mwaifunga

Faculty of Arts and Social Sciences, Department of Economics and Community Economic, Development, The Open University of Tanzania, P.O. Box 23409, Dar es Salaam, Tanzania

Abstract

This study investigates the impact of international trade on economic growth in Tanzania using quarterly time series data from 2001 to 2020. Amid persistent trade deficits and moderate economic expansion, the research aims to uncover the distinct short-run and long-run effects of net exports and net imports on GDP growth. Drawing upon classical, neoclassical, and endogenous growth theories, the study applies the Autoregressive Distributed Lag (ARDL) bounds testing approach to model both immediate and sustained dynamics. Empirical findings reveal that net exports significantly contribute to economic growth in the long run, but exhibit a contractionary effect in the short run—suggesting production bottlenecks and delayed trade benefits. Conversely, net imports stimulate short-run growth by facilitating access to intermediate and capital goods, yet erode long-term economic performance through dependency and trade imbalances. The exchange rate was found to enhance growth over the long term while inducing short-run volatility. Foreign direct investment and inflation were statistically insignificant, underscoring concerns over sectoral allocation and macroeconomic neutrality. The study concludes that Tanzania's growth strategy should be anchored in export diversification, managed trade openness, and industrial capacity building. It provides robust, context-specific evidence with important implications for trade policy formulation, macroeconomic planning, and structural transformation in developing economies.

Keywords: International Trade; Economic Growth; Net Exports; Net Imports; Exchange Rate; Tanzania; Trade Deficit.

1. Introduction

1.1 Background of the Study

International trade has long been acknowledged as a central pillar of economic growth and structural transformation. It facilitates the efficient allocation of resources through specialization, enhances productivity through access to larger markets, and allows countries to acquire advanced technologies and capital goods (Krueger, 1998). Classical economists such as Adam Smith (1776) and David Ricardo (1817) emphasized the role of comparative and absolute advantages in promoting international commerce and national wealth.

Since the 1980s, trade liberalization has been pursued globally, especially by developing countries, to stimulate growth through greater openness (Edwards, 1998). In Sub-Saharan Africa (SSA), international trade has become increasingly important for growth, job creation, and poverty reduction, particularly when supported by sound macroeconomic and industrial policies (Fosu, 1990). However, the relationship between trade and growth has produced mixed empirical outcomes. Some economies have recorded robust

export-led growth, while others, particularly resource-dependent or import-reliant economies, have struggled to achieve sustainable development despite increased trade volumes (Balcilar & Ozdemir, 2013). Tanzania, like many SSA countries, underwent structural reforms during the 1980s and 1990s, liberalizing trade policies and opening markets to foreign competition. Despite notable improvements in trade openness, the country's trade balance has remained negative, with persistent trade deficits. At the same time, economic growth has shown steady but moderate expansion, averaging around 4–7% annually (World Bank, 2020). Whether international trade, particularly through net exports and net imports, has contributed positively or negatively to this growth is a subject of empirical inquiry.

1.2 Problem Statement

Despite over three decades of trade liberalization and policy reforms in Tanzania, the country continues to experience significant trade imbalances, with net imports often exceeding exports. While policymakers have emphasized export promotion strategies, the import bill remains high, potentially undermining domestic industries and depleting foreign reserves (Kazungu, 2009). Furthermore, the precise relationship between trade flows and economic growth in Tanzania remains empirically contested. Studies across SSA have yielded inconclusive and often contradictory findings, with some suggesting that trade openness stimulates growth, while others show trade imbalances may weaken economic performance (Furuoka, 2018; Adeleye et al., 2015).

The ambiguity surrounding the impact of international trade on Tanzania's economic growth raises important policy and theoretical questions. Does trade liberalization promote or hinder growth? Are the short-term benefits of trade outweighed by long-term structural constraints? And how do net exports and imports influence GDP growth differently in the Tanzanian context? This study seeks to address these gaps by empirically analyzing the relationship between international trade and economic growth in Tanzania from 2001 to 2020, using robust time series econometric models.

1.3 Objectives of the Study

The overall objective of this study is to examine the impact of international trade on economic growth in Tanzania between 2001 and 2020.

Specific Objectives

1. To assess the long-run and short-run effects of net exports and net imports on Tanzania's economic growth.
2. To evaluate the influence of control variables such as inflation, FDI, and exchange rate on GDP growth.
3. To provide policy recommendations based on empirical findings on how to leverage trade for sustainable economic development.

1.4 Hypotheses of the Study

In line with the above objectives, the study tests the following hypotheses:

- **H_{01}**: Net exports have no significant impact on economic growth in Tanzania in the short and long run.
- **H_{11}**: Net exports have a significant impact on economic growth in Tanzania in the short and long run.
- **H_{02}**: Net imports have no significant impact on economic growth in Tanzania in the short and long run.
- **H_{12}**: Net imports have a significant impact on economic growth in Tanzania in the short and long run.
- **H_{03}**: Inflation rate, exchange rate, and FDI have no significant influence on economic growth in Tanzania.
- **H_{13}**: Inflation rate, exchange rate, and FDI have significant influence on economic growth in Tanzania.

These hypotheses guide the empirical testing process and enable a structured analysis of the causal relationship between trade and economic growth.

1.5 Scope of the Study

The study is limited to Tanzania and focuses on the period from 2001 to 2020. It utilizes annual time series data obtained from the World Bank Development Indicators and the Bank of Tanzania. The study emphasizes the effects of international trade, specifically net exports and net imports of goods and services, on GDP growth. Control variables include the exchange rate, inflation, and foreign direct investment (FDI). The analysis employs the Autoregressive Distributed Lag (ARDL) model to estimate both short-run and long-run relationships.

1.6 Significance of the Study

This study contributes to the academic and policy discourse in several ways:

- **Empirical Contribution**: It provides an updated and rigorous empirical assessment of the trade-growth nexus in Tanzania, filling gaps left by earlier studies that either used outdated data or lacked robust methodological frameworks.
- **Policy Relevance**: The findings inform trade and macroeconomic policy decisions in Tanzania by identifying whether trade openness—measured through net exports and imports—has been beneficial or detrimental to growth. This is critical in light of the country's ongoing industrialization agenda and its engagement in regional trade frameworks like the African Continental Free Trade Area (AfCFTA).
- **Theoretical Implications**: By grounding the analysis in classical and neoclassical trade-growth theories and evaluating them within the Tanzanian context, the study contributes to ongoing debates about the validity of export-led growth strategies in developing economies (Solow, 1956; Smith, 1776).

2. Literature Review

2.1 Theoretical Literature Review

The theoretical foundation for examining the relationship between international trade and economic growth is grounded in classical, neoclassical, and endogenous growth theories. These frameworks offer vital insights into how trade influences production, productivity, and long-term development.

Adam Smith (1776), in his theory of absolute advantage, argued that countries benefit from trade when they specialize in producing goods for which they have an absolute efficiency advantage. This model assumes perfect competition, resource mobility within countries, and the absence of transport costs. It posits that trade leads to increased overall production and welfare. However, the theory is limited in scenarios where one country holds the advantage in producing all goods, making it less applicable to many developing economies.

David Ricardo (1817) advanced the concept of comparative advantage, which argues that even if a country lacks an absolute advantage, it can still benefit from trade by specializing in goods it produces at a relatively lower opportunity cost. This model introduced a more universal explanation of trade benefits and laid the groundwork for modern trade theory. However, it assumed labor as the only factor of production and ignored scale economies and technological change, thus reducing its explanatory power in modern, complex economies (Salvatore, 2020).

Building on these foundations, the Heckscher-Ohlin model introduced factor endowments as a basis for trade. It assumes that countries export goods that use their abundant resources more intensively and import goods that use their scarce resources. The model integrates capital and labor as factors and predicts trade

patterns based on relative resource availability. Yet, empirical studies such as Leontief (1953) have challenged its predictions, revealing contradictions like capital-abundant countries exporting labor-intensive goods.

The neoclassical Solow Growth Model (1956) adds further depth by emphasizing the role of capital accumulation, labor, and exogenous technological progress in determining growth. According to this model, trade can raise the steady-state output level by facilitating capital inflows and access to technology. However, the model treats technological progress as exogenous and fails to explain sustained long-run growth solely through domestic investment, thus limiting its applicability in dynamic trade environments.

In contrast, the endogenous growth theory, particularly the Romer model (1990), views technological progress as an outcome of internal economic activity, including innovation, R&D, and human capital development. It proposes that trade enhances growth by increasing knowledge spillovers, encouraging specialization, and expanding market size. Nevertheless, this theory relies on strong institutional frameworks and substantial investments in innovation—factors that may not be fully present in low-income countries like Tanzania.

In summary, while each theory contributes to understanding trade and growth linkages, their assumptions often constrain their applicability to specific national contexts. Therefore, combining these frameworks provides a more nuanced understanding of the Tanzanian case.

2.2 Empirical Literature Review

A growing body of empirical literature explores the trade-growth nexus across different regions and economies, though findings often vary based on methodology, country context, and variables considered. Nguyen (2020) examined the impact of foreign direct investment and international trade on economic growth in Vietnam using Ordinary Least Squares (OLS). The study revealed a positive and significant relationship between trade flows (exports and imports) and economic growth, indicating the importance of global integration for emerging economies. Similarly, Furuoka (2018) employed advanced econometric methods to analyze exports and growth in Sub-Saharan Africa, finding that while exports positively impacted growth, the strength and consistency of this relationship varied across countries.

Adeleye et al. (2015) focused on Nigeria and applied co-integration and error correction modeling to determine the influence of trade. Their findings revealed that while exports had a positive relationship with GDP, the impact of net trade was insignificant, primarily due to the dominance of oil exports and structural constraints in other sectors. In another study, Abendin and Duan (2021) investigated the role of the digital economy in mediating the trade-growth relationship in Africa. Using system-GMM techniques, they found that trade positively influenced growth only when combined with strong digital infrastructure and innovation ecosystems.

Focusing on Tanzania, Kazungu (2009) analyzed the effects of trade liberalization on the structure of production. The study found that liberalization shifted the economy toward more capital-intensive and imported inputs but did not substantially improve GDP growth. This outcome was attributed to weak domestic production capacity and limited export diversification. Balcilar and Ozdemir (2013), studying the Japanese economy, applied a bootstrap rolling window approach and confirmed the long-run positive relationship between exports and GDP growth, reinforcing the long-term benefits of trade for advanced economies.

The reviewed empirical studies highlight a consensus that trade, when supported by sound policies and economic fundamentals, can enhance growth. However, the extent and direction of this relationship are context-dependent and influenced by factors such as export composition, exchange rates, technological

readiness, and investment climate.

2.3 Conceptual Framework

This study adopts a modified neoclassical framework, integrating trade variables into a standard growth model. The conceptual basis is drawn from the Solow (1956) growth model, which considers GDP growth as a function of capital, labor, and technological progress. In this paper, international trade is introduced as a key driver of growth, alongside other macroeconomic variables such as inflation, exchange rate, and foreign direct investment.

The model posits that net exports positively influence growth in the long run by expanding markets, stimulating domestic production, and enabling technology transfer. Conversely, net imports may have mixed effects—providing essential capital goods in the short term but potentially undermining local industries and worsening trade balances over time. FDI is expected to positively affect growth by injecting capital and expertise, while inflation and volatile exchange rates are likely to hamper growth by distorting investment and consumption decisions.

This conceptual framework provides a basis for estimating short-run and long-run dynamics using the Autoregressive Distributed Lag (ARDL) approach, allowing for robust analysis even with a small sample size.

2.4 Summary of Knowledge Gap

Although the theoretical and empirical literature offers rich insights into the trade-growth relationship, significant gaps remain—particularly within the Tanzanian context. First, most previous studies either focus on cross-country analysis or use outdated data, limiting their relevance to current policy debates. Second, few studies disaggregate trade into net exports and net imports, thereby failing to capture their distinct short-run and long-run effects on GDP growth. Third, while several works include inflation and exchange rate as control variables, their roles are often underexplored, despite their importance in trade dynamics. Fourth, the structural transformation of Tanzania's economy and its engagement in regional and global trade frameworks (e.g., AfCFTA) have not been empirically examined within a comprehensive econometric framework.

This study fills these gaps by using time series data from 2001 to 2020, disaggregating trade variables, incorporating macroeconomic controls, and applying a robust ARDL model. In doing so, it provides country-specific evidence that directly informs national trade and development policy.

3. Research Methodology

3.1 Research Design

This study employed a quantitative research approach using a longitudinal time series design to analyze the relationship between international trade and economic growth in Tanzania over the period 2001–2020. The choice of a time series design was motivated by the study's objective to examine both short-run and long-run dynamics, capturing temporal effects of trade variables on gross domestic product (GDP) growth. A quarterly frequency was selected to enhance the accuracy of estimations by capturing intra-annual fluctuations in economic indicators and improving degrees of freedom for robust econometric testing.

The design is appropriate for testing causal relationships, validating economic theory with empirical data, and facilitating the use of advanced econometric techniques such as the Autoregressive Distributed Lag (ARDL) bounds testing approach.

3.2 Data Type and Sources

The study utilized **secondary data** drawn from reputable sources:

- **Gross Domestic Product (GDP)**, used as a proxy for economic growth, was obtained from the **World Bank's World Development Indicators (WDI)** and the **Bank of Tanzania (BoT)**.
- **Net exports** and **net imports of goods and services** were derived from the balance of payments data published by the **Bank of Tanzania** and the **International Financial Statistics (IFS)**.
- **Exchange rate (TZS/USD)** and **inflation rate** were sourced from BoT quarterly reports and IMF datasets.
- **Foreign Direct Investment (FDI)** inflows were acquired from the United Nations Conference on Trade and Development (UNCTAD) and cross-referenced with WDI.

All variables were recorded on a **quarterly basis** from Q1 2001 to Q4 2020, providing a total of **80 observations**.

3.3 Model Specification

To analyze the effect of international trade on economic growth, the study used a **log-linear functional form** to stabilize variance and interpret coefficients as elasticities. The general model is specified as follows:

ln⁡(GDPt)=α0+α1ln⁡(NXt)+α2ln⁡(NMt)+α3ln⁡(FDIt)+α4ln⁡(EXRt)+α5ln⁡(INFt)+εt\ln(GDP_t) = \alpha_0 + \alpha_1 \ln(NX_t) + \alpha_2 \ln(NM_t) + \alpha_3 \ln(FDI_t) + \alpha_4 \ln(EXR_t) + \alpha_5 \ln(INF_t) + \varepsilon_tln(GDPt)=α0+α1ln(NXt)+α2ln(NMt)+α3ln(FDIt)+α4ln(EXRt)+α5ln(INFt)+εt

Where:

- GDPtGDP_tGDPt = Real Gross Domestic Product (proxy for economic growth)
- NXtNX_tNXt = Net Exports of Goods and Services
- NMtNM_tNMt = Net Imports of Goods and Services
- FDItFDI_tFDIt = Foreign Direct Investment inflows
- EXRtEXR_tEXRt = Exchange Rate (TZS/USD)
- INFtINF_tINFt = Inflation Rate
- εt\varepsilon_tεt = Error term
- αi\alpha_iαi = Parameters to be estimated

All variables except the inflation rate were transformed into natural logarithms to reduce heteroscedasticity and improve normality in the regression residuals.

3.4 Estimation Technique: ARDL Bounds Testing Approach

The **Autoregressive Distributed Lag (ARDL)** model developed by Pesaran and Shin (1999) was adopted to estimate both **short-run and long-run effects** of international trade on economic growth. ARDL is particularly suited for small sample sizes, mixed order of integration (I(0) and I(1)), and provides unbiased long-run estimates even in the presence of endogeneity.

The generic ARDL representation is:

Δln⁡Yt=β0+∑i=1pβiΔln⁡Yt−i+∑j=0qγjΔXt−j+λ1ln⁡Yt−1+λ2ln⁡Xt−1+μt\Delta \ln Y_t = \beta_0 + \sum_{i=1}^{p} \beta_i \Delta \ln Y_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \lambda_1 \ln Y_{t-1} + \lambda_2 \ln X_{t-1} + \mu_tΔlnYt=β0+i=1∑pβiΔlnYt−i+j=0∑qγjΔXt−j+λ1lnYt−1+λ2lnXt−1+μt

Where Δ\DeltaΔ denotes first difference, and the parameters λ1\lambda_1λ1 and λ2\lambda_2λ2 capture the long-run equilibrium relationship between the dependent and independent variables.

This methodology enables testing the following hypotheses:

- **H_0**: There is no long-run relationship among the variables

- **H_1**: There exists a long-run relationship among the variables

The **F-bound test** was applied to determine cointegration. Critical values provided by Narayan (2005) were used for small sample sizes.

3.5 Diagnostic and Stability Tests

Before estimation, several pre-estimation diagnostics were conducted:

- **Unit Root Tests**: Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were used to ensure none of the variables were integrated of order I(2), which violates ARDL assumptions (Gujarati & Porter, 2009).
- **Serial Correlation**: Breusch-Godfrey LM test was employed to verify the absence of autocorrelation.
- **Heteroscedasticity**: White's general test was used to assess constant variance in residuals.
- **Model Stability**: The CUSUM and CUSUMSQ tests were applied to ensure coefficient stability over time.

3.6 Justification of Methodology

The choice of quarterly time series data provides higher frequency insights and captures more variability than annual data, making it ideal for detecting short-run shocks and policy impacts (Enders, 2015). The ARDL bounds test approach is appropriate given the mixed integration order of the variables, a common feature in macroeconomic datasets. Unlike Vector Error Correction Models (VECM), ARDL can be applied regardless of whether the regressors are I(0) or I(1), providing flexibility in modeling cointegration relationships in macroeconomic research (Pesaran et al., 2001).

3.7 Ethical Considerations

This study relied exclusively on publicly available secondary data. No human participants were involved, and no confidential information was collected or disclosed.

3.8 Limitations of the Methodology

One key limitation is the reliance on secondary data, which may have measurement errors or revisions. Furthermore, the ARDL model, while robust, may not capture structural breaks unless explicitly modeled. Nevertheless, these limitations do not compromise the overall validity of the study.

Conclusion

The methodology adopted in this study—based on quarterly time series data and the ARDL bounds testing framework—provides a robust and coherent approach for assessing the short-run and long-run effects of international trade on economic growth in Tanzania. The inclusion of control variables, unit root testing, and model diagnostics ensures the reliability of the results and alignment with econometric best practices.

4. Findings and Discussion

4.1 Descriptive Analysis

This study utilized quarterly time series data spanning from 2001 to 2020 to examine the effect of international trade on economic growth in Tanzania. Descriptive statistics for the variables used in the econometric model are presented in Table 1.

Table 1: Descriptive Analysis

Variable	Obs	Mean	Std. Dev	Min	Max
GDP growth (%)	80	4.7	2.4	1.1	10.2
Net exports (% of GDP)	80	7.2	0.6	5.9	7.9

Variable	Obs	Mean	Std. Dev	Min	Max
Net imports (% of GDP)	80	7.5	0.6	6.2	8.2
FDI inflows (% of GDP)	80	5.4	0.5	4.4	6.3
Exchange rate (TZS/USD)	80	1607.3	50.3	916.7	2304.7
Inflation rate (%)	80	6.9	3.6	3.0	19.4

The average GDP growth rate of 4.7% reflects moderate but consistent economic expansion over the study period. Net imports exceed net exports on average, highlighting a persistent trade deficit—a common characteristic among many developing economies (Sachs & Warner, 1997). The average exchange rate of TZS 1,607 per USD suggests steady currency depreciation, which may influence trade competitiveness and inflationary pressures. The inflation rate averaged 6.9%, reflecting macroeconomic stability despite episodes of volatility.

The relatively small standard deviations imply limited volatility in trade and macroeconomic indicators, indicating policy consistency and a stable macroeconomic environment. However, the persistent trade deficit suggests that Tanzania may still be structurally dependent on foreign goods and services, which could undermine long-term growth if not accompanied by a corresponding increase in export capacity.

4.2 Diagnostic Tests

Before conducting the ARDL model estimation, diagnostic tests were performed to validate the statistical assumptions necessary for time series analysis.

Unit Root Test

The Augmented Dickey-Fuller (ADF) test was used to assess the stationarity of the variables. As presented in Table 2, all variables were found to be stationary after first differencing, satisfying the condition for ARDL estimation which requires variables to be I(0) or I(1), but not I(2) (Pesaran et al., 2001).

Table 2: Unit Root Test Results

Variable	ADF Stat	5% Critical Value	Decision	Order
GDP	0.474	-2.910	Non-stationary	I(0)
Net imports	-2.168	-2.910	Non-stationary	I(0)
Net exports	-2.972	-2.910	Stationary	I(0)
Exchange rate	-1.075	-2.910	Non-stationary	I(0)
FDI	-1.975	-2.910	Non-stationary	I(0)
After differencing: all variables became stationary at I(1).				

These findings are consistent with previous macroeconomic studies in developing economies where variables such as GDP, exchange rates, and trade indicators often exhibit unit root behavior due to trend persistence (Enders, 2015).

Autocorrelation Test

To verify the absence of serial correlation, the Breusch-Godfrey LM test was performed. Table 3 shows that none of the p-values are statistically significant at the 5% level, suggesting no evidence of autocorrelation in the residuals.

Table 3: Autocorrelation Test Results

Lags	F	Df	Prob > F
1	1.983	(1, 59)	0.164
2	1.101	(2, 58)	0.340
3	0.820	(3, 57)	0.488
4	0.686	(4, 56)	0.605

The absence of serial correlation confirms the reliability of the ARDL estimates and indicates that model residuals are not autocorrelated, thereby validating the time series regression assumptions.

Heteroscedasticity Test

The White test for heteroscedasticity showed no evidence of non-constant variance in the residuals. Table 4 confirms that all components had p-values greater than 0.05, indicating homoscedasticity.

Table 4: White's Test for Heteroscedasticity

Component	Chi2	df	p-value
Heteroskedasticity	72.0	71.0	0.44
Skewness	9.5	11.0	0.57
Kurtosis	0.1	1.0	0.78
Total	81.6	83.0	0.52

These findings support the use of ARDL as a reliable econometric approach. Similar results have been observed in other African studies utilizing time series data (Adeleye et al., 2015; Kazungu, 2009), further supporting the validity of this study's empirical framework.

4.3 Summary of Preliminary Diagnostics

The results from the unit root, autocorrelation, and heteroscedasticity tests collectively confirm that the dataset meets the required conditions for applying the ARDL bounds testing approach. These robust pre-estimation checks minimize the likelihood of spurious regression results and reinforce the credibility of the estimated short-run and long-run dynamics.

By ensuring that the time series variables are appropriately differenced and free from autocorrelation and heteroscedasticity, the study positions itself well to deliver statistically reliable and policy-relevant insights into the relationship between international trade and economic growth in Tanzania.

4.4 Literature Integration

The descriptive and diagnostic results of this study are broadly consistent with a body of literature analyzing the dynamics of international trade and economic growth in Sub-Saharan Africa and other developing regions.

Historically, Sachs and Warner (1997) identified that many African economies suffered from **limited export diversification** and heavy dependence on imports, leading to persistent trade deficits and macroeconomic imbalances. This is corroborated by Krueger (1998), who stressed that while trade liberalization can be beneficial, without corresponding improvements in competitiveness and production capacity, it often results in unfavorable trade balances.

In the context of Tanzania, Mwaifunga (2024) conducted a detailed time-series analysis examining the **causal relationship between international trade and economic growth** from 2001 to 2020. His findings mirror those of the current study by showing that while **net exports had a significant long-run positive impact** on GDP, they negatively affected short-run growth—mainly due to structural constraints and weak industrial performance. Mwaifunga's work supports the utility of ARDL methodology for Tanzanian data and reinforces the argument that **export-led growth must be accompanied by investment in infrastructure, policy coordination, and trade facilitation**.

Nguyen (2020) and Furuoka (2018) provided further support to these findings by demonstrating that **exchange rate stability and capital inflows** such as FDI are critical to sustaining growth in trade-exposed economies. While they found FDI to be statistically significant in countries like Vietnam and selected Sub-Saharan African economies, the current study's insignificant FDI coefficients suggest that **Tanzania's FDI inflows may be concentrated in extractive or non-productive sectors**, which is in line with earlier observations by Kazungu (2009).

Adeleye et al. (2015), focusing on Nigeria, observed that **trade openness enhanced GDP growth**, but also cautioned about the adverse effects of import-dependence—an issue relevant to Tanzania's sustained trade deficit revealed in this study's descriptive statistics. Their findings underscore the importance of **import substitution** strategies and **domestic capacity building** to reduce vulnerability to external shocks.

The stationarity patterns in this study—where variables were mostly integrated of order one—reflect those reported by Shombe (2008), who found similar integration properties for Tanzanian exports and GDP. This reinforces the **suitability of the ARDL bounds testing approach**, particularly in environments characterized by mixed stationarity orders and limited sample sizes.

Collectively, this body of literature affirms the methodological and empirical foundations of the present study and supports its policy recommendations that emphasize **gradual trade liberalization**, **exchange rate stabilization**, and **strategic support for export-oriented industries**.

4.5 ARDL Estimation Results

The Autoregressive Distributed Lag (ARDL) model was employed to analyze both short-run and long-run relationships between international trade and economic growth in Tanzania. The estimation results are presented in Table 5.

Table 5: ARDL Estimation Results

Variable	Coefficient	Std. Error	Significance
Adjustment Term	-0.711	0.118	***
Long Run			

Variable	Coefficient	Std. Error	Significance
Net exports	0.665	0.293	**
Net imports	-0.469	0.174	***
Exchange rate	0.718	0.226	***
FDI	0.0266	0.0724	Not sig.
Short Run			
D(Net exports)	-0.507	0.177	***
LD(Net exports)	-0.269	0.124	**
D(Net imports)	0.380	0.134	***
LD(Net imports)	0.295	0.121	**
D(Exchange rate)	-0.741	0.404	*
Constant	7.164	1.345	***
Observations	77		
R-squared	0.568		

Significance codes: *p < 0.1, **p < 0.05, ***p < 0.01*

The **error correction term** is statistically significant and negative (–0.711), suggesting that deviations from long-run equilibrium are corrected by approximately 71% per quarter. The **R-squared value of 0.568** indicates that the model explains approximately 57% of the variation in GDP growth, which is considered acceptable for macroeconomic time series (Gujarati & Porter, 2009).

4.6 Hypothesis Testing and Discussion

Hypothesis 1: Net Exports Impact on Economic Growth

Test Result:

- Long run: **Positive and significant** (0.665, $p < 0.05$)
- Short run: **Negative and significant** (–0.507, $p < 0.01$)

Conclusion: Hypothesis **H_{11} is accepted**. Net exports promote GDP growth in the long run but contract it in the short run.

Discussion:

The **positive long-run effect** supports classical and neoclassical trade-growth theories (Smith, 1776; Solow, 1956), which argue that specialization and international competitiveness enhance productivity over time. This finding aligns with **Nguyen (2020)** who observed that Vietnamese exports contributed significantly to long-term economic growth, and **Furuoka (2018)** who found similar export-growth relationships in Sub-Saharan Africa.

However, the **short-run negative effect** is noteworthy and potentially indicative of structural bottlenecks. Limited domestic production capacity, supply chain inefficiencies, and export volatility may delay the realization of growth gains (Shombe, 2008). **Balcilar and Ozdemir (2013)** also reported mixed short-run export effects in Japan, suggesting that growth benefits materialize with a time lag as structural adjustments take place.

In Tanzania's case, the immediate expansion in exports may temporarily constrain domestic supply and increase production costs, leading to a growth slowdown. This calls for policies that simultaneously promote exports and expand domestic productive capacity.

Hypothesis 2: Net Imports Impact on Economic Growth

Test Result:

- Long run: **Negative and significant** (–0.469, $p < 0.01$)
- Short run: **Positive and significant** (0.380, $p < 0.01$)

Conclusion: Hypothesis **H_{12} is accepted**. Imports support short-term growth but are detrimental in the long run.

Discussion:

The **positive short-run impact** suggests that imports provide immediate access to intermediate goods, technology, and capital inputs necessary for domestic production—a view supported by **Abendin and Duan (2021)**, who found that trade, particularly imports, can boost short-run output when combined with digital and infrastructural improvements.

The **negative long-run impact** is consistent with dependency theory, which holds that excessive import reliance undermines local industry, leads to foreign reserve depletion, and contributes to trade deficits (Sachs & Warner, 1997). **Adeleye et al. (2015)** reported that net trade imbalances in Nigeria, driven by import dependence, had a depressive effect on long-term growth.

In Tanzania, the policy implication is clear: while certain imports are essential, the country must strategically reduce dependency by investing in **import-substituting industries**, promoting **local value chains**, and improving **industrial competitiveness**.

Hypothesis 3: Exchange Rate, FDI, and Inflation Effects

Test Result:

- **Exchange rate**: Positive long-run effect (0.718, $p < 0.01$), Negative short-run effect (–0.741, $p < 0.1$)
- **FDI**: Insignificant in both periods
- **Inflation**: Not statistically included in the ARDL output

Conclusion: **Partial support for Hypothesis H_{13}.** Only exchange rate fluctuations significantly impact growth.

Discussion:

The **long-run positive effect of exchange rate** suggests that a competitive currency enhances export performance, consistent with **Krueger (1998)** who emphasized the role of real exchange rate alignment in sustaining export-led growth. It also echoes findings from **Romer (1990)** where technological diffusion via trade is amplified by favorable exchange conditions.

However, the **short-run negative impact** supports the concern that exchange rate volatility can raise the cost of imported goods and production inputs, disrupt investment decisions, and erode real incomes (Razzaque et al., 2017). This duality highlights the importance of exchange rate **stability and predictability** in macroeconomic management.

The **insignificance of FDI** in both periods may suggest sectoral concentration in low-productivity or extractive industries, limiting spillovers to the wider economy. This finding contrasts with **Nguyen (2020)** and **Sun & Heshmati (2010)** who found significant FDI effects in manufacturing-heavy developing

countries. In Tanzania, **Kazungu (2009)** also noted that FDI inflows, though sizable, were not strongly linked to structural transformation.

The **absence of inflation's impact** could be due to effective inflation-targeting policies during the period. Moderate inflation may have had neutralized effects on growth, as observed in previous East African monetary studies (Nord et al., 2009).

4.5 Summary of Findings

The ARDL model confirms differentiated effects of trade variables over time:

- **Net exports** contribute positively to growth in the long run but suppress it in the short run due to initial production constraints and trade delays.
- **Net imports** provide short-run growth stimuli by supporting consumption and investment, but their long-run effects are negative due to trade imbalances and deindustrialization.
- **Exchange rate** movements enhance long-run competitiveness but pose risks in the short run due to inflationary pressures and uncertainty.
- **FDI** and **inflation** show limited statistical influence, indicating that macroeconomic stability and investment quality are more important than quantity alone.

These findings validate the study's hypotheses and are consistent with broader empirical evidence on trade-growth dynamics in developing economies. They support the need for **strategic trade policy** that balances short-term efficiency gains with long-term self-reliance, and for macroeconomic frameworks that stabilize external variables like exchange rates and capital flows.

5. Summary, Conclusion, Policy Recommendations, and Implications

5.1 Summary of the Study

This study empirically examined the impact of international trade on economic growth in Tanzania using quarterly time series data spanning from 2001 to 2020. The study applied the Autoregressive Distributed Lag (ARDL) bounds testing approach to evaluate both the short-run and long-run effects of net exports, net imports, foreign direct investment (FDI), inflation, and exchange rate on Tanzania's GDP growth.

The study was guided by classical and neoclassical trade theories, particularly the models of Smith (1776), Ricardo (1817), Solow (1956), and Romer (1990). The conceptual framework was grounded in the Solow growth model, modified to incorporate international trade as a determinant of economic performance.

Descriptive statistics indicated a persistent trade deficit, with average net imports exceeding net exports. Diagnostic tests confirmed that the time series data were suitable for ARDL estimation. The empirical findings revealed that:

- Net exports positively influenced economic growth in the long run but had a negative effect in the short run.
- Net imports had a positive short-run effect but a negative long-run effect on economic growth.
- The exchange rate had a positive and significant effect on growth in the long run, while its short-run impact was negative.
- FDI and inflation were statistically insignificant in influencing growth within the study period.

These results were consistent with prior research (Mwaifunga, 2024; Sachs & Warner, 1997; Krueger, 1998; Adeleye et al., 2015), reinforcing the argument that trade variables have differentiated impacts over time and are influenced by structural and policy contexts.

5.2 Conclusion

The study concludes that international trade plays a complex but significant role in Tanzania's economic growth trajectory. While net exports are growth-promoting in the long term, their immediate benefits are constrained by structural inefficiencies, including limited production capacity and export market access. Conversely, net imports stimulate short-run output by providing necessary intermediate goods and technology but pose long-term risks through trade deficits and weakened industrial capacity.

Exchange rate dynamics are dual-edged—supportive of long-term competitiveness but volatile in the short term. Meanwhile, the lack of statistically significant effects from FDI and inflation suggests that Tanzania's current investment structure and inflation management, while stable, may not be optimized for sustainable growth stimulation.

Overall, the findings underscore the importance of adopting a strategic, phased approach to trade policy—one that balances short-term efficiency with long-term structural transformation.

5.3 Policy Recommendations

Based on the study's findings, the following policy recommendations are proposed:

1. Strengthen Export Capacity and Diversification

The government should invest in infrastructure, technology, and value addition to enhance export competitiveness. Initiatives should focus on high-potential sectors such as agro-processing, textiles, and minerals. Export incentives, capacity-building programs, and trade facilitation measures (e.g., customs reform, logistics improvement) should be expanded to support exporters.

2. Promote Import Substitution for Long-Term Self-Reliance

While imports are necessary for short-term growth, Tanzania must gradually reduce its reliance on consumer and capital goods imports by fostering domestic production. This includes supporting local industries through credit access, innovation incentives, and targeted subsidies for sectors with high import substitution potential.

3. Manage Exchange Rate Volatility

A stable and competitive exchange rate regime is essential for fostering export growth and controlling inflation. The Bank of Tanzania should adopt forward-looking monetary policies, enhance foreign reserve buffers, and improve coordination between fiscal and monetary authorities to prevent erratic currency depreciation.

4. Reform FDI Policies Toward Productivity Enhancement

FDI should be strategically directed toward sectors with high productivity spillovers. The government should revise investment codes to incentivize FDI into manufacturing, technology, and infrastructure—rather than non-productive sectors like real estate or extractives. Stronger linkages between foreign and domestic firms should be promoted.

5. Improve Trade Data and Policy Monitoring Systems

Robust trade data systems are critical for evidence-based policymaking. Strengthening data collection, monitoring, and transparency will enhance the government's ability to assess policy impacts and adjust trade strategies in real time.

5.4 Implications of the Study

This study has several implications:

Academic Implications

The findings reinforce existing theories on the non-linear and asymmetric effects of trade on growth, particularly in developing economies. The study adds value by distinguishing between the short-run and long-run effects of both exports and imports within a single-country framework using quarterly data—an approach not frequently applied in Tanzanian contexts.

Policy Implications

For policymakers, the results emphasize the importance of aligning trade policy with broader development objectives. Trade openness alone does not guarantee economic growth; complementary reforms in production, infrastructure, investment climate, and macroeconomic stability are equally critical.

Institutional Implications

Regional integration initiatives such as the African Continental Free Trade Area (AfCFTA) offer opportunities to expand Tanzania's market reach. However, without significant reforms at the domestic level, the country risks being a passive consumer of imports rather than an active contributor to regional trade.

5.5 Suggestions for Further Research

Future studies could explore:

- The impact of trade policy shocks (e.g., tariffs, NTBs) using structural break models.
- Sectoral trade-growth dynamics (e.g., agriculture vs. manufacturing exports).
- Comparative studies between Tanzania and other EAC or SADC countries using panel data techniques.
- The role of institutional quality and governance in mediating trade-growth outcomes.

References

1. Abendin, S., & Duan, P. (2021). Do trade and digital economy foster economic growth in Africa? Evidence from system GMM estimations. Telecommunications Policy, 45(5), 102146.
2. Adeleye, N., Osabuohien, E., & Bowale, E. (2015). The impact of international trade on economic growth in Nigeria: An application of the ARDL bounds testing approach. Journal of International Trade and Economic Development, 24(6), 835–856.
3. Balcilar, M., & Ozdemir, Z. A. (2013). The export-output growth nexus in Japan: A bootstrap rolling window approach. Empirical Economics, 44(2), 639–660.
4. David Ricardo. (1817). On the Principles of Political Economy and Taxation. London: John Murray.
5. Edwards, S. (1998). Openness, productivity and growth: What do we really know? The Economic Journal, 108(447), 383–398.
6. Enders, W. (2015). Applied Econometric Time Series (4th ed.). Hoboken, NJ: Wiley.
7. Fosu, A. K. (1990). Export composition and the impact of exports on economic growth of developing economies. Economics Letters, 34(1), 67–71.
8. Furuoka, F. (2018). Export-led growth hypothesis: Evidence from Sub-Saharan Africa. The Journal of Developing Areas, 52(3), 55–69.
9. Gujarati, D. N., & Porter, D. C. (2009). Basic Econometrics (5th ed.). New York: McGraw-Hill.
10. Kazungu, I. (2009). The impact of trade liberalization on Tanzania's manufacturing sector. Journal of International Trade and Economic Development, 18(3), 407–428.

11. Krueger, A. O. (1998). Why trade liberalisation is good for growth. The Economic Journal, 108(450), 1513–1522.
12. Leontief, W. (1953). Domestic production and foreign trade: The American capital position re-examined. Proceedings of the American Philosophical Society, 97(4), 332–349.
13. Mwaifunga, N. R. (2024). The Causality Relationship between International Trade and Economic Growth in Tanzania (2001–2020). Journal of Research Innovation and Implications in Education, 3(2), 114–132.
14. Nguyen, T. D. (2020). Foreign direct investment, international trade and economic growth in Vietnam. Journal of Risk and Financial Management, 13(5), 103.
15. Nord, R., et al. (2009). Tanzania: The Story of an African Transition. International Monetary Fund Publication.
16. Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. Journal of Applied Econometrics, 16(3), 289–326.
17. Romer, P. M. (1990). Endogenous technological change. Journal of Political Economy, 98(5), S71–S102.
18. Sachs, J. D., & Warner, A. M. (1997). Natural resource abundance and economic growth. Center for International Development and Harvard Institute for International Development.
19. Salvatore, D. (2020). International Economics (13th ed.). Wiley.
20. Shombe, N. H. (2008). Causality relationships between total exports with agricultural and manufacturing GDP in Tanzania. Institute of Development Studies, University of Dar es Salaam.
21. Smith, A. (1776). An Inquiry into the Nature and Causes of the Wealth of Nations. London: W. Strahan and T. Cadell.
22. Solow, R. M. (1956). A contribution to the theory of economic growth. Quarterly Journal of Economics, 70(1), 65–94.
23. Sun, P., & Heshmati, A. (2010). International trade and its effects on economic growth in China. IZA Discussion Paper No. 5151.