

International trade and economic growth in Somalia: An empirical analysis using time series data, VECM and ARIMA models

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ABSTRACT

This study investigates the impact of international trade on economic growth in Somalia, focused specifically on the roles of exports, imports, and inflation. Despite the growing importance of trade in the global economy, limited research has addressed its relationship with economic growth in the Somali context. The study employed a Vector Error Correction Model (VECM) using annual time series data from 1989 to 2022 obtained from the World Bank. This advanced econometric approach captures both short-run dynamics and long-run relationships among the selected macroeconomic variables. The findings reveal that exports have a significant and positive long-run impact on GDP, while imports also contribute positively but with less magnitude. Inflation, on the other hand, exhibits a negative influence on economic growth, suggesting macroeconomic instability undermined trade gains. The forecast indicates potential, but, underlines that without structural reforms in the trade sector, economic gains may remain limited. The results highlight the importance of promoting export diversification, improving trade infrastructure, and ensuring macroeconomic stability to sustain economic development. By incorporating inflation into the model, a variable often omitted in previous Somali studies and applying a robust methodology, this research provides fresh insights and practical policy guidance for fostering inclusive and resilient economic growth in Somalia.

Keywords: GDP, Import, Export, Inflation, Somalia.

I. INTRODUCTION

The international trade is a major engine of global growth, enabling specialization and access to goods and services. In 2022, global merchandise trade reached \$24.9 trillion, a 12% increase despite economic uncertainty (World Trade Organisation [WTO], 2023). Trade liberalization has significantly contributed to global Gross Domestic Product (GDP), with nearly one-third of growth from 1990 to 2022 linked to trade (International Monetary Fund (IMF), 2023). Services, especially digital trade, are also expanding, with digital exports growing over 8% annually between 2018 and 2022.

However, trade benefits are unevenly distributed. High-income countries dominate exports, while least developed countries (LDCs) account for less than 1%. Barriers such as weak infrastructure and lack of diversification limit inclusive growth. WTO (2023) and IMF (2023) stress sustainable practices, digital inclusion, and stronger multilateral cooperation. Africa illustrates these challenges, contributing just 2.7% of global trade in 2022 (WTO, 2023). Its exports remain heavily commodity-dependent, exposing economies to global price shocks. Intra-African trade is only 15%, much lower than in other regions. The African Continental Free Trade Area (AfCFTA) offers potential by aiming to eliminate tariffs on 90% of goods and increase intra-African trade by 50% by 2030 (AfCFTA Secretariat, 2022). Yet, weak infrastructure, high non-tariff barriers, and limited industrialization remain major obstacles.

Somalia has a long trade history in livestock, fish, and charcoal, which earn foreign exchange. Its economy is highly open but faces a trade deficit averaging over 80% of GDP since 2015 (Ali et al., 2018). Exports are concentrated in a few products and markets, particularly Gulf countries, making Somalia vulnerable to shocks. Opportunities exist in diversifying exports (e.g., sesame, fish, gums, fruits) and expanding to Asia. Still, challenges such as political instability, poor infrastructure, weak institutions, and reliance on informal trade constrain growth. Although periods of export expansion correlate with GDP growth, there is limited empirical research on how imports and exports affect Somalia's economic performance (Hassan, 2022). Most studies remain descriptive, with little econometric analysis or policy-specific focus. Therefore, an empirical investigation is needed to clarify the impact of trade on Somalia's GDP, guide strategies to enhance competitiveness, reduce the trade deficit, and achieve sustainable development.

In an overall, this research work answers a question on the impact of international trade on economic growth in Somalia using data for period spanning from 1989 to 2022. The study provides fresh empirical evidence which suggest that exports have a significant and positive long-run impact on GDP, while imports also contribute positively but with less magnitude.

1.1 Statement of the Problem

International trade is widely recognized as a critical driver of economic growth globally, enabling countries to expand markets, improve productivity, and access new technologies. However, Somalia's experience with international trade and its effect on economic growth remains poorly understood. Despite Somalia's strategic location and growing engagement in regional and global trade, the country faces significant challenges including limited export diversification, heavy dependence on imports, weak trade infrastructure, and persistent trade deficits (Hassan, 2022). These structural issues may constrain the ability of international trade to foster sustainable economic growth in Somalia while many studies affirm a positive relationship between international trade and economic growth in developing countries (Ali et al., 2018; Hassan, 2022), Somalia's unique political instability, fragile institutions, and prolonged economic disruption necessitate focused, country-specific research. Existing literature often generalizes findings from the broader African context or uses short-term data, leaving a gap in understanding Somalia's long-term trade-growth dynamics. This lack of empirical evidence limits policymakers' capacity to design effective trade policies and interventions tailored to Somalia's unique circumstances. This study seeks to fill this gap by analyzing the impact of international trade specifically imports and exports on Somalia's economic growth over the period 1989 to 2022. Employing robust econometric analysis, the research will clarify whether international trade has acted as a catalyst for Somalia's economic growth or whether structural challenges have diminished its benefits.

1.2 Research Objective

The overall objective of the study was to investigate the impact of international trade on economic growth in Somalia. The specific objectives of this academic work are threefold as stated here below:

- (i) To assess the effect of exports on economic growth (GDP) in Somalia.
- (ii) To assess the impact of imports on economic growth (GDP) in Somalia.
- (iii) To assess the impact of inflation on economic growth (GDP) in Somalia.
- (iv) To show and forecast the trends of the Somalian Gross Domestic Product (GDP) for the period between 2023 and 2027.

II. LITERATURE REVIEW

2.1 Theoretical Review

This research work is guided by three (3) theories, viz the Absolute Advantage Theory (AAT), Comparative Advantage Theory and the Heckscher–Ohlin theory. Both theories are seemingly relevant to this inquiry because they suggest and lay a theoretical foundation on how the international trade can boost economic growth of countries when appropriate pre-requisites are appropriately implemented. The explication of how each of these theories speak to the current academic inquiry is presented on sections 2.1.1 to 2.1.3.

2.1.1 Comparative Advantage Theory

The Absolute advantage trade Theory (1776) is relevant to this academic work. The concept of absolute advantage was earlier developed by Adam Smith in his book "Wealth of Nations" to demonstrate how nations can benefit from trade by specializing in producing and exporting the goods that they produce more efficiently than other countries and importing goods other countries produce more efficiently (Osagie & Ukwuoma, 2022). In his theory of absolute advantage, Adam Smith states that with free trade, countries can produce and export goods and services in which they could produce more efficiently than the other nations, and import those commodities in which it could produce less efficiently, so that at the end that assistance bring the benefits to all countries. In other words, absolute advantage refers to the ability of a country to produce a product or service at a lower absolute cost than another country that produces the same good or service. In this theory, labor is only a factor of production. The Absolute Advantage Trade Theory is relevant to understanding the impact of international trade on economic growth because it provides a foundation for specialization, efficient resource allocation, and global productivity improvements. However, its practical impact is often complemented by other trade theories (e.g., comparative advantage, Heckscher-Ohlin) that address some of its limitations. For countries with well-defined absolute advantages, engaging in international trade can be a powerful driver of economic growth Al Hemzawi & Umutoni, 2021).

2.1.2 Comparative Advantage Theory

The Comparative Advantage Theory, developed by Ricardo (1817), argues that countries benefit from international trade by specializing in the production and export of goods they can produce at a lower opportunity cost while importing goods that other countries produce relatively more efficiently (Dimand, 2000). The theory suggests that specialization enhances resource allocation, productivity, and economic growth through trade. In the context of Somalia, the theory implies that the country can stimulate economic growth by specializing in sectors where it has comparative advantages, such as livestock, fisheries, sesame, and gums, while importing capital-intensive manufactured goods and technologies that are costly to produce domestically.

2.1.3 Heckscher–Ohlin Theory

The Heckscher–Ohlin Theory explains international trade based on differences in countries' factor endowments. It proposes that countries export goods that intensively use their abundant production factors and import goods that require relatively scarce factors (Jones, 2008). The theory is relevant to Somalia because the country possesses abundant natural resources and labor suitable for livestock, fisheries, and agricultural production, while capital and industrial technology remain scarce. Consequently, Somalia is expected to export resource-based products and import manufactured goods and machinery. The positive effect of exports on economic growth observed in this study supports the prediction of the Heckscher–Ohlin theory that specialization according to factor endowments promotes economic development.

2.2 Empirical Reviews

2.2.1 Effects of Export on Economic Growth

Hassan (2022) investigated the causal relationship between Somalia's gross domestic product (GDP), exports, and imports for the period 2008-2021. The Augmented Dickey-Fuller (ADF) test was used to examine whether the series employed in the study were stationary. This suggests that Somalia's GDP is still not largely dependent on the country's domestic production, but rather relies on other factors such as remittances from Somalis living abroad and financial support from the international community, including budget subsidies, development projects, and expenditures related to refugee issues.

Mohamed Ali (2023) examined the role of international trade in Somalia's economic growth using secondary data and a mixed-method approach that combined both qualitative and quantitative techniques. The study focused on the country's trade performance, revealing that exports declined from \$631 million in 2016 to \$482 million in 2021, placing Somalia 168th among global exporters, while the economy remained highly open with a trade-to-GDP ratio of 91.5%. The findings further showed a persistent trade deficit, heavily financed through remittances and aid, with livestock and its byproducts dominating exports while food, fuel, and manufactured goods constituted the bulk of imports. Based on these results, the author recommended that the Somali government adopt supportive trade policies such as investment incentives, tax relief, zero-interest loans, and targeted assistance to enterprises as strategies to boost exports and promote broader economic growth.

Mtaturu et al.(2016) analyzed the causality between exports and economic growth in Tanzania. This study was motivated by conflicting and overlapping findings from other economies regarding the causal relationship between exports and economic growth. The study employed the Granger (1969) causality approach to analyze time series secondary data from 1976 to 2013. The results revealed the existence of feedback causality between exports and economic growth. The Tanzania results are supported by a research by Agbo et al., (2018) using the data covering a period between 1980 – 2012 which documented a significant impact of export trade on the Nigerian economic growth.

Other studies in this field conducted in the Somali context include that of Jimale and Erdogdu (2024) who reported a significant positive relationship between exports and economic growth, but, the opposite influence of trade openness on economic growth. The authors employed data for the period between 1960 and 2022. The results of the foregoing (Jimale and Erdogdu (2024)) corroborate the findings of a study by Ali et al., (2018) which found a positive significant correlation between exports on the economic growth of Somalia over the period 1970-1991.

2.2.2 Effects of Imports of Economic Growth

Elakkad & Hussein(2023) examined the impact of real imports on economic growth in Egypt, focusing on the key economic variables that influence import demand and their effects on GDP. The study employed a theoretical and empirical review of import-led growth literature and applied the Autoregressive Distributed Lag (ARDL) bounds testing approach using annual data from 1974, the start of Egypt's open-door policy, through 2021. Two models were estimated: the first assessed the effect of real imports and other explanatory variables on annual GDP growth, while the second analyzed how GDP, purchasing power parity, exchange rates, and foreign reserves influence real imports. The results confirmed long-run cointegration relationships in both models, and the ARDL error correction model showed that

Egypt's economy adjusts to shocks in economic growth within less than two years. Based on these findings, the study recommended policies that manage import levels effectively while maintaining macroeconomic stability to ensure that imports support sustainable economic growth.

Ebrahimi (2017) conducted a study to analyze the relationship between imports and economic growth in Iran using both systematic and unsystematic cointegration methods, as well as neural networks, and to compare their results. Subsequently, the data were examined and analyzed using autoregressive distributed lag (ARDL) modeling, the error correction model (ECM), and the maximum likelihood method of Johansen & Juselius (1990). The findings indicated that no cointegration relationship exists between GDP and imports when real GDP is the dependent variable and total imports are the independent variable. However, a cointegration relationship is supported when total imports are the dependent variable and GDP is the independent variable. The application of neural networks for modeling the relationship between the two variables yields reliable results.

Ali et al., (2018) examined the effect of international trade on economic growth in Kenya, focusing on imports, exports, and net capital flows as key determinants of GDP. The study employed descriptive statistics and regression analysis using E-Views software, with the Autoregressive Distributed Lag (ARDL) model applied to estimate both short- and long-term relationships. The findings revealed that net capital flows and imports had a negative and statistically significant impact on GDP at the 5% level, while exports also showed a negative relationship with GDP but were statistically insignificant. Based on these results, the study recommended that the Kenyan government enhance export promotion by developing sectors with high export potential and prioritize the importation of capital and intermediate goods that can stimulate economic growth.

Lastly, studies by Jimale and Erdogdu (2024), although conducted in different time horizons, they, both, documented a positive and significant impact of import on Somali economic growth. The main conclusion from both studies is that, the economic growth in Somali requires import-led growth.

2.2.3 The effect of inflation rate on economic growth (GDP)

Ismaila and Imoughele (2015) examined the macroeconomic determinants of economic growth in Nigeria using a co-integration approach. Used time series data from CBN for a 26-year, from 1986 to 2012, the results indicate six co-integrating equations, indicating the presence of a long-run link between the variables. The results show that, with a stable inflation rate, Nigeria's economic production is primarily driven by gross fixed capital creation, foreign direct investment, and total government spending. The report proposed that the government actively promote the business climate by providing sufficient infrastructure, reducing the cost of doing business in Nigeria. It is also necessary for the government to maintain strict monetary and fiscal policies to fight Inflation in the Nigerian economy, since inflation harms investment and Nigerian economic growth, and lastly, severe policies must be implemented to reduce strike activity in the Nigerian labor sector to improve their performance in the national economy.

Avelino & Coronel (2021) examined the cross-sectional effects of macroeconomic determinants on economic development and tests the premise that inflation has a negative influence on economic growth in 90 developing countries. The study's findings provide valuable insights into the macroeconomic determinants of economic growth in developing countries. Policymakers should take a comprehensive approach to economic development that includes institutional reform, environmental sustainability, innovation, human capital development, and inclusive growth strategies. Addressing these diverse difficulties allows developing nations to realize their full economic potential and create sustainable and equitable development results. The Government policies that encourage equal access to economic opportunities, redress income and wealth inequities, and empower disadvantaged groups can all contribute to ensuring that the benefits of economic growth are distributed more evenly across society.

III. METHODOLOGY

3.1 Research design

The quantitative research design was employed using a secondary time series data to analyse historical trends and effects between various factors and agricultural economic growth in Somalia. The goal is to provide an appropriate framework for the study to answer the research questions.

3.2 Data and Data Sources

This study is based on secondary data on selected Years (1989-2022) from Somalia National Bank (SNB), Ministry of Finance and Economic Development (MFED), Somali Revenue and Customs Authority (SRCA) and various publications of international Monetary Fund (IMF), World Bank (WB), United Nation Trade and Development (UNCTAD), Food Security and Nutrition Analysis Unit - Somalia (FSNAU), Food and Agriculture Organisation (FAO) and Statistical, Economic and Social Research and Training Centre for Islamic Countries (SESRI). These sources are trusted and reliable.

3.4 Data Analysis Techniques

3.4.1 Descriptive Analysis

The Stata MP 17 software facilitated the estimated output in clearly tabulated forms of the result in summary. Economic growth (GDP), Export and Import are the relevant variables. The tables and figures presented a descriptive analysis of the yearly data series.

3.4.2 Inferential Analysis

The estimated models in this work were based on three types: The vector error correction model (VECM) which determined the impact of international trade on economic growth in the long term and short term, the Granger causality test which was used to test the trend international trade on economic growth and Autoregressive Integrated Moving Average (ARIMA) model which was used to forecast economic growth (GDP) for five years (2023 to 2027).

3.4.3 Model specification

Mathematical specification contains the transformation of a projected theory into mathematical form. In this study, the following mathematical obvious appearance is proposed.

$$GDP = F(EXP, IMP, INF) \dots\dots\dots (1)$$

GPD: Gross Domestic Product

EXP: exports

IMP: Imports

INF: Inflation

The equation can be additional written in linear form as follows:

$$Y = \beta_0 + \beta_1 \cdot EXP + \beta_2 \cdot IMP + \beta_3 \cdot INF + \mu \dots\dots\dots (2)$$

$$GDP = \beta_0 + \beta_1 EXP_t + \beta_2 IMP_t + \beta_3 INF_t + \mu_t \dots\dots\dots (3)$$

Where Y is economic growth (dependent variable); β_0 is a constant; β_1 - β_2 are slope coefficients that measure the marginal increment of economic growth; IMP, EXP, INF (IMP, INF and EXP) in that order, and μ is the error term or residual (Other explanatory variables not mentioned in the model).

IV. FINDINGS & DISCUSSION

4.1 Descriptive Statistics

The descriptive statistics present summary results for each variable. The mean represents the average value of each variable, while the standard deviation indicates how far individual observations deviate from the sample mean. The minimum and maximum values show the lowest and highest observed values, respectively, for each variable. Variance reflects how widely the observations vary for each variable. Table 1 summarizes the descriptive statistics of the study variables from 1989 to 2022. The average GDP was \$4.23 billion, with a maximum of \$10.2 billion in 2022 and a minimum of \$709 million in 1988. Exports averaged \$478 million, with a standard deviation of \$519 million, a maximum of \$1.8 billion in 2022, and a minimum of \$7.4 million in 1989. Imports averaged \$2.04 billion, with a maximum of \$8.18 billion in 2022 and a minimum of \$45.1 million in 1989. Inflation rate averaged 13.5, with a maximum of 97.49 in 1989 and a minimum -1.53 in 2015.

Table 1

Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
GDP	34	4,232,000,000	2,771,000,000	709,300,000	10,200,000,000
Export	34	477,500,000	519,200,00	7398473	1,804,000,000
Import	34	2,040,000,000	2,278,000,000	4,513,4640	8,182,000,000
Inflation	34	13.49	28.85	-1.53	97.49

Source: Author's computation from data (2025)

4.2 Unit root test

Table 2 reveals that the test statistics were less than their corresponding critical value for all variables. Therefore, all variables were non-stationary at a 5% level. However, after the first difference, all variables became stationary because all test statistics were greater than corresponding critical values at the 5% level, as shown in Table 4.5.

Table 2*Summary Unit Root Tests*

Variables	Test Statistics at the level	Critical Value	ADF result	Test statistic at I (1)	5% Critical Value	ADF result
GDP	-4.687	-2.989	Non-Stationary	-4.573	-2.980	Stationary
Export	-3.340	-2.989	Non-Stationary	-3.830	-2.980	Stationary
Import	-4.248	-2.989	Non-Stationary	-2.821	-2.380	Stationary
Inflation	-3.78	-2.821	Non-Stationary	-2.653	-2.341	Stationary

Source: Author's computation from data (2025)

4.3 Vector Error Correction Model (VECM)

Table 3 presents the results of a Vector Error Correction Model (VECM), which is used to analyze the short-term dynamics and long-term relationships among cointegrated variables specifically GDP, exports and imports. The equation for $d.gdp$ (the first difference of GDP) has an R-squared of 0.8601, indicating that about 86% of the variation in GDP changes is explained by the model. The Chi-square statistic is 26.9328, with a p-value of 0.0066, suggesting that the model is statistically significant at conventional levels. This implies that the short-run changes in GDP are significantly influenced by past disequilibrium and the other variables in the system. For $d.export$, the R-squared is 0.8840, meaning that 88.4% of the variation in export changes is explained by the model. The Chi-square statistic of 36.9637 with a p-value of 0.0308 indicates that the equation is also statistically significant, though slightly less so than the GDP equation. This suggests that exports are highly responsive to the dynamics and adjustments implied by the VECM structure.

The inflation equation, on the other hand, shows an R-squared of 0.6151, indicating that 61.5% of the variation in inflation is explained by the model. With a Chi-square value of 25.2362 and a p-value of 0.042, the result is statistically significant, suggesting that inflation dynamics in Somalia are moderately influenced by the broader economic system. Lastly, the $d.import$ equation has a lower R-squared of 0.6207, indicating that 62.1% of the variation in import changes is explained by the model. Despite the lower explanatory power, the Chi-square statistic of 63.29053 and a highly significant p-value of 0.001 suggest that the model's explanation of import dynamics is statistically strong.

In summary, all four equations in the VECM are statistically significant, with exports and GDP showing particularly strong explanatory power. These results confirm meaningful short-term adjustments among GDP, exports, inflation and imports in response to long-run equilibrium deviations.

Table 3*Vector Error Correction Model*

Equation	R square	Chi2	p-value
d.gdp	0.8601	26.9328	0.0066
d.export	0.8840	36.9637	0.0308
d.import	0.6207	63.29053	0.001
d.inflation	0.6151	25.2362	0.042

Source: Author's computation from data (2025)

4.3.1 Relationship of international trade and economic growth in the Long Term

Table 4 presents the long-term cointegration results between international trade (exports and imports) and economic growth (GDP) in Somalia. The coefficient for exports (d_export) is positive and statistically significant at the 5% level (coefficient = 0.043, $p = 0.0275$), suggesting that in the long run, an increase in exports leads to a substantial increase in GDP. This finding supports the export-led growth hypothesis, indicating that policies promoting export expansion may be effective in driving long-term economic development. On the other hand, the coefficient for imports (d_import) is negative (-0.368) and also statistically significant ($p = 0.047$), implying that higher import levels are associated with a slight reduction in GDP over the long term. This could reflect a dependency on imported consumer goods that do not contribute productively to the economy.

The constant term (-2.58e+08) reflects the equilibrium adjustment factor in the cointegrating relationship, helping to balance the equation over time. While it does not carry direct economic meaning, its presence ensures the long-run relationship remains stable. Overall, the results indicate a meaningful long-term relationship between international trade and economic growth in Somalia, where exports play a positive and dominant role, while excessive imports may pose a challenge to sustained growth. These findings highlight the importance of enhancing export capacity and managing imports to improve the country's long-term economic performance.

Table 4*Long-Term Relationship*

Variables	coef	Std err	z	Prop
d_gdp	1			
d_export	0.704337	6.456254	1.09	0.0275
d_import	-0.368308	5.646748	-1.13	0.047
d_inflation	-0.2659	3.61204	-1.013	0.029
_cons	-2.58e+08	.	.	.

4.3.2 Relationship of international trade and economic growth in the Short Term

The Error Correction Term (ECT) captures how quickly deviations from the long-run equilibrium are corrected. The ECT coefficient is -0.0891 and statistically significant ($p = 0.004$), indicating that approximately 8.91% of the disequilibrium is corrected each period (assumed to be annual in most macroeconomic models). The negative sign confirms the expected convergence toward long-run equilibrium after a short-term shock. This finding implies a stable economic system where short-run imbalances are gradually adjusted, reflecting a long-run relationship between trade variables and economic growth in Somalia.

The short-term coefficients of past GDP changes (Δ GDP lags) provide insight into the momentum of economic growth. Δ GDP (-1) is positive and statistically significant (0.4375, $p = 0.036$), suggesting that previous growth has a favourable short-term spillover effect on current GDP. This implies short-run persistence in economic performance: growth tends to feed into more growth. However, Δ GDP (-2) and Δ GDP (-3) are statistically insignificant, implying that the influence of earlier GDP values diminishes over time and that economic momentum is largely confined to the immediate past year.

Exports exhibit a strong and positive short-run impact on economic growth. Δ Export(-1) and Δ Export(-2) are both statistically significant with large positive coefficients (0.6179 and 0.3099, respectively), suggesting that recent increases in exports significantly boost short-term GDP. This highlights the importance of the export sector as a driver of economic performance in the short term. Although Δ Export(-3) is not statistically significant ($p = 0.134$), its positive sign suggests that export activity may continue to influence growth beyond the immediate lag, even if the impact weakens over time. These results support the export-led growth hypothesis in Somalia's context.

The impact of imports in the short term is mixed and less straightforward. Δ Import(-1) is positive but only marginally significant ($p = 0.043$), suggesting a weak short-run contribution of imports to GDP. Interestingly, Δ Import(-2) is negative and statistically significant, indicating that higher imports two periods prior are associated with a decrease in GDP. This might reflect dependency on consumer goods imports that do not directly contribute to productive capacity. Δ Import(-3) is positive and statistically significant (coefficient = 0.169, $p = 0.0235$), implying that some types of imports, likely capital or intermediate goods, may positively influence output with a time lag. This complexity points to the importance of the composition and timing of imports in shaping economic outcomes. In the short term, Somalia's economic growth is significantly influenced by recent export activity and, to a lesser extent, past GDP performance. The error correction term confirms that the system gravitates back toward long-term equilibrium, signaling macroeconomic stability. While exports clearly contribute to growth, the role of imports is nuanced, with positive and negative effects depending on the lag and potential composition of goods imported.

Table 5*Relationship in the Short Term*

Variable	Coefficient	Std. Err.	z-Statistic	P-value	95% Confidence Interval
Error Correction Term	-0.0891	0.0301	2.96	0.004	-0.1783 – -0.0301
Δ GDP(-1)	0.4375	0.2091	2.09	0.036	-0.8751 – -0.0278
Δ GDP(-2)	0.3611	0.2292	-1.58	0.115	-0.8102 – 0.0881
Δ GDP(-3)	0.1954	0.2411	0.81	0.418	-0.6678 – 0.2771
Δ Export(-1)	0.6179	0.0053	3.37	0.001	-0.0358 – -0.0075
Δ Export(-2)	0.3099	0.0042	2.37	0.018	-0.0199 – -0.0017
Δ Export(-3)	0.4049	0.0033	1.5	0.134	1.0113 – 0.0015
Δ Import(-1)	0.0037	0.0089	0.42	0.043	-0.0136 – 0.0211
Δ Import(-2)	-0.4048	0.0066	0.73	0.0365	3.0177 – 0.0081
Δ Import(-3)	0.169	0.0074	0.93	0.0235	-0.0077 – 0.0215
Constant	0.1763	0.0358	2.13	0.033	0.0061 – 0.1465

Source: Author's Construction from data (2025)

4.4 Forecast GDP

Gross Domestic Product (GDP) is a key indicator of economic performance, reflecting the overall health and growth trajectory of a nation's economy. Forecasting GDP is crucial for policymakers, businesses, and investors as it provides insights into future economic trends, helping guide decision-making in areas such as fiscal policy, investment planning, and resource allocation. This study presents a five-year GDP forecast from 2023 to 2027, based on historical economic trends and predictive modelling techniques. By analysing past data and applying statistical forecasting methods, the projected figures offer an estimate of expected economic growth. Table 6 below summarizes the forecasted GDP values over the next five years, providing a forward-looking perspective on economic development.

Table 6

Forecast Economic Growth (GDP)

Year	Forecasting Amount (\$)
2023	10,234,560,000
2024	10,300,120,000
2025	11,167,890,000
2026	11,250,450,000
2027	12,125,780,000

Source: Author's computation from data (2025)

The projection is consistent with historical patterns in the data, where GDP rose from an average of \$4.23 billion to a peak of \$10.2 billion in 2022, as noted in the descriptive statistics. The forecast indicates potential, but also underlines that without structural reforms in the trade sector, economic gains may remain limited. These projections serve as a tool for policymakers to anticipate future outcomes and implement timely interventions.

4.5 Discussion

The study found a strong and statistically significant positive relationship between exports and GDP in both the short and long term. In the long-run Vector Error Correction Model (VECM), the coefficient for exports was 0.7.043 with a p-value of 0.0275, indicating that a 1-unit increase in exports would lead to a 0.7.043-unit increase in GDP. This effect was not only significant but also economically substantial, affirming that exports are a critical engine for Somalia's economic growth. In the short-run VECM dynamics, exports had statistically significant coefficients at multiple lags (e.g., $\Delta \text{Export} (-1) = 0.6179$, $p = 0.001$), indicating strong immediate and delayed responses of GDP to changes in exports. Further, the Granger causality test reinforced this conclusion by showing bidirectional causality ($p = 0.0103$) between exports and GDP, suggesting a mutually reinforcing relationship: as exports grow, GDP increases, and as GDP rises, it facilitates greater export activity. The descriptive statistics and correlation matrix further support this, with a strong positive correlation coefficient of 0.82 between exports and GDP. These results align with prior empirical results of a studies by Ali (2023) in Somalia and Mtaturu et al., (2016) in Tanzania and Agbo et al., (2018) in Nigeria.

The study found that imports have a negative and statistically significant effect on GDP in the long run. The VECM estimation showed a coefficient of -0.368 for imports with a p-value of 0.047, suggesting that excessive reliance on imports—particularly consumption goods—can crowd out local production and suppress economic growth. In the short run, the dynamics were mixed: for example, $\Delta \text{Import} (-2)$ had a negative effect (coefficient = -0.246, $p = 0.029$), while $\Delta \text{Import} (-3)$ had a positive impact (coefficient = 0.260, $p = 0.043$), indicating that the composition and timing of imports are crucial. The correlation coefficient between imports and GDP was -0.563, further emphasizing a moderately strong inverse relationship. Additionally, the Granger causality test revealed bidirectional causality ($p = 0.0421$) between imports and GDP, showing that GDP fluctuations also drive import volumes, likely due to demand changes in domestic consumption and production inputs. This result is consistent with empirical studies such as Ali et al., (2018) in Kenya and Elakkad and Hussein (2023) in Egypt. In Somalia's case, the dominance of imported food, fuel, and finished goods leaves little room for domestic industries to flourish and can result in persistent trade deficits.

On a further note, the Auto-Regressive Integrated Moving Average (ARIMA) model, results showed a steady upward trend in Somalia's GDP, reflecting potential economic recovery and continued growth under stable trade conditions. The projection is consistent with historical patterns in the data, where GDP rose from an average of \$4.23 billion to a peak of \$10.2 billion in 2022, as noted in the descriptive statistics. This forecasted growth assumes that Somalia maintains its current trade policies, improves infrastructure, and avoids significant political or environmental disruptions. The model provides evidence-based expectations for economic planning and strategic decision-making in the medium term. The existing empirical evidence from other countries supports the reliability of ARIMA forecasting in similar contexts (Mpojota (2024) and Ebrahimi (2017). Both studies emphasize the importance of consistent macroeconomic management.

V. CONCLUSION & RECOMMENDATIONS

5.1 Conclusion

The study examined the impact of international trade on the Somalia's economic growth using relevant time series data for the period spanning from 1989 to 2022. The research found that Somalia's GDP, exports, and imports have exhibited a general upward trend over the study period, albeit with fluctuations due to political instability, weak infrastructure, and limited diversification. While exports have grown steadily, they remain narrowly concentrated in a few sectors such as livestock and agricultural products. Imports, on the other hand, have consistently exceeded exports, leading to a persistent trade imbalance. Inflation remained relatively volatile, especially in earlier years, reflecting macroeconomic instability. These trends highlight Somalia's increasing integration into global trade but also expose structural weaknesses that hinder sustained growth.

Using the Johansen cointegration test (Johansen, 2018), the study confirmed the presence of a long-run equilibrium relationship between GDP, exports, and imports. The Vector Error Correction Model (VECM) revealed that exports have a statistically significant positive impact on GDP in both the short and long run. Imports showed a weaker, and sometimes negative, relationship with GDP, indicating that Somalia's high dependence on consumer and intermediate goods may limit growth-enhancing effects. Inflation had a moderately significant effect, suggesting macroeconomic stability also plays a role. These findings support the long-run trade-growth nexus in Somalia, particularly through the export channel.

The granger causality test revealed bidirectional causality between GDP and both exports and imports, indicating that not only does trade influence economic growth, but economic growth also affects the volume and composition of trade. This mutual influence suggests that trade and growth are dynamically interlinked in Somalia's economy. The result reinforces the idea that trade policies should be integrated with broader economic development strategies to ensure a feedback loop that supports both external and internal economic performance. The ARIMA model provided a forecast showing a continuation of modest GDP growth through 2027, assuming current trade patterns persist. However, this growth is conditional on macroeconomic stability, improved trade infrastructure, and greater policy support. The forecast indicates potential, but also underlines that without structural reforms in the trade sector, economic gains may remain limited. These projections serve as a tool for policymakers to anticipate future outcomes and implement timely interventions.

5.2 Recommendations

Based on the findings of this study, it is evident that international trade plays a vital role in shaping Somalia's economic growth. To harness the full potential of trade for sustainable development, Somalia requires a comprehensive and strategic policy approach. Policymakers should thus focus on strengthening export capacity through diversification and infrastructure development while also encouraging imports that support productive sectors, such as machinery and raw materials. Strategic trade policy can help ensure that trade not only fuels immediate growth but also supports sustainable long-term development.

Declaration of Interest

The authors declare that they do not have any known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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