



(REVIEW ARTICLE)



## The impact of international trade on economic growth in Somalia

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### Abstract

The main objective of this study was to examine the impact of international trade on economic growth in Somalia. This objective was accomplished with the support of four distinct objectives. To investigate the impact of exports on economic growth in Somalia. To examine how imports impact economic growth in Somalia. To discover how the trade openness phenomenon effects economic growth in Somalia. To establish a solid foundation for public policy founded on an innovative international trade approach that considerably boosts the country's economic growth over the long term.

In Somalia, international trade has become increasingly important, driven by imports surpassing exports, which underscores the primary objective of this study. Therefore, the study employed the least squares (OLS) method to analyze the determinants of international trade in Somalia from 1960 to 2022. Our analysis predominantly centered on explanatory variables such as exports, imports, and trade openness.

According to the study's findings, exports and imports have a positive relationship and have a statistically significant impact on economic growth. This means that a one-unit increase in exports and imports leads to an increase in economic growth in Somalia. The exports and imports have revealed a number of characteristics that are positive for economic growth.

Moreover, the study's findings indicate an adverse relationship between trade openness and economic growth. Trade openness has a probability that it is statistically significant with a negative coefficient within the parameter estimation model. A negative coefficient suggests that the dependent variable tends to decrease with an increase in the independent variable.

In conclusion, the study's findings contributed to the policy recommendations, which should be taken into account by decision-makers.

**Keywords:** Trade openness; Exports; Imports; Economic growth; Ordinary Least Squares (OLS) Somalia

### 1. Introduction

International trade, also known as foreign trade, encompasses the exchange of goods and services across borders. Economists emphasize its significance since the mercantilist era, when governments regulated trade to bolster gold reserves and economic output through exports and imports. Today, a nation's GDP heavily relies on its engagement in international trade (Sujová et al., 2021).

According to Gül and Kamaci (2012), globalization, by removing trade barriers, makes foreign trade significant for all countries. Developing countries often possess advantageous labor and natural resource conditions relative to industrialized nations. Adam Smith contends that all nations engaging in international trade can benefit. The historical

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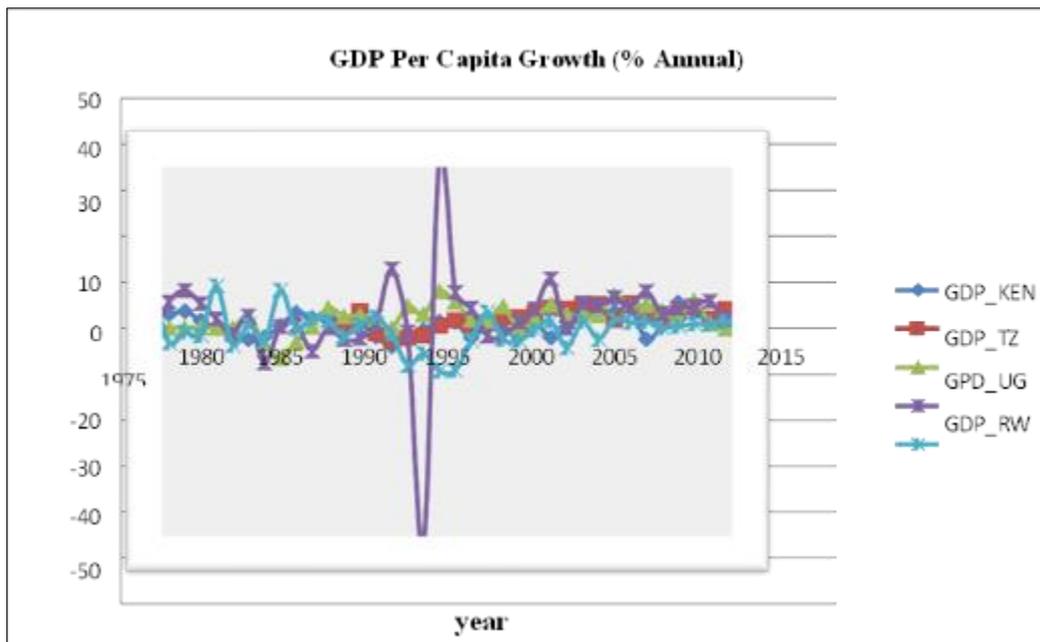
relationship between growth and foreign trade underscores the interconnectedness of global trade in exchanging goods and services. Moreover, classical economists generally support the view that trading with other countries fosters economic growth.

According to Yüksel, (2018), free trade agreements are anticipated to stimulate long-term economic growth. Engaging in trade with other nations enables countries to access goods and services that are not available domestically and concentrate on producing items where they excel competitively. This specialization and increased productivity drive economic expansion and improve living standards. Additionally, trading with other countries diversifies economies, reducing dependency on specific sectors or regions. Overall, international trade is closely intertwined with economic growth, and efforts to promote trade in a free market context are expected to positively impact GDP growth.

Since the inception of multilateral trade agreements (MTAs) under the World Trade Organization (WTO), nations worldwide have sought to enhance trade, particularly between regions like South-South and North-South. Despite efforts, the precise impact of MTAs on economic growth remains complex and not entirely clear. Supporters argue that MTAs promote free trade by gradually removing barriers and expanding international trade freedoms, leading to increased global imports and exports. Krugman, P. R. (2000) advocate for free trade as a means to improve economic well-being and efficiency, emphasizing the role of competition, both domestic and foreign, in driving economic development over strict government regulations.

Johnson (1976) argues that certain countries should focus on promoting open commerce rather than entering into agreements to regulate employment. Agreements aimed at enhancing the benefits of international trade among multiple nations are suggested to ultimately decrease trade efficiency and intensity. The study emphasizes a sense of aimlessness and predicts the long-term failure associated with this approach.

The Horn of Africa, according to Van den Bosch, J., & Raubo, J. (2017), faces numerous challenges including armed conflicts, state collapses, famine, drought, poverty, and piracy. Countries in the region vary greatly in size, population, climate, resources, and socio-economic factors, influenced by colonial legacies. Ethiopia, Sudan, and Kenya enjoy abundant resources and economic growth, while Djibouti, Somalia, and Eritrea struggle economically due to limited resources. These differences impact their relationships and ability to engage in regional economic integration initiatives.



Source: World Economic outlook Database, 2015.

**Figure 1** Outlines the annual GDP per capita growth rate for the East African Community (EAC) and its member countries

Conversely, the East African Community (EAC) is a regional organization comprising eight partner countries, headquartered in Arusha, Tanzania. With over 30% residing in urban areas, it spans 4.8 million square kilometers and employs English, Kiswahili, and French as official languages. Anami, A. K. (2023) reports its combined GDP at US\$ 305.3 billion. The establishment and functioning of the EAC carry significant strategic and geopolitical implications, offering promising prospects for its revitalization.

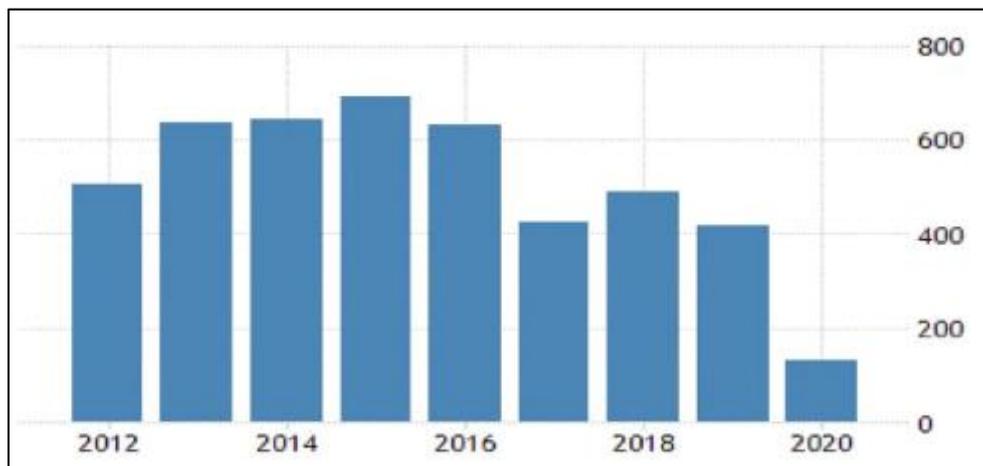
The East African Community (EAC) is a key regional economic institution within the African Union (AU), distinguished by its goal of establishing a political federation. Inadequate infrastructure hinders Africa's development, despite its abundant resources. The EAC is currently prioritizing the universal availability of energy across its member countries. However, it also emphasizes the importance of territorial integration and aligning energy regulations and legislation to ensure fair treatment and remove internal barriers within the EAC (Tharani, 2017: 486).

Some regions have successfully used integration to enhance their economies, while others experience lower per capita income, capital inflows, GDP growth, and living standards.

In Figure 1: Rwanda experienced its most significant decline in GDP growth, dropping to -47.3142%, attributed to political upheaval, notably the genocide of 1994. In contrast, Rwanda experienced the most significant GDP growth within the East African Community (EAC) in the following year, reaching 36.76702%.

### 1.1 Overview of Somalia's Economic Performance

Exports are essential for economic growth, especially in developing countries reliant on natural resources. When a nation's currency depreciates, its exports become cheaper, potentially increasing demand. Conversely, a fall in currency value makes imports more expensive, leading to trade imbalances. In 2019, Somalia's exports accounted for 16.9% of its GDP, with projections indicating a 6% increase in export value. Key exports include cattle, wheat, and forest goods, with the livestock sector dominating at 61% and forestry goods at 17.4%.



Source: Trading Economics

**Figure 2** Export trade of Somalia

Since 2019, Somalia has experienced a decline in its primary exports due to factors such as floods and the COVID-19 pandemic, which have had a negative impact on the country's economy. Cattle, a major export, faced challenges in 2019 and 2020 due to the pandemic, leading to decreased animal exports. Figure 2 illustrates the decreasing trend in exports over the past three years.

### 1.2 Problem Statement

Somalia's economic growth has been stunted by its limited global partnerships, impeding its path to macroeconomic self-sufficiency. Warsame (2014) attributes this to Somalia's isolation from international trade due to prolonged conflict. The classical view, exemplified by scholars like Adam Smith, underscores the importance of international trade in enhancing specialization and production efficiency. However, Somalia's GDP growth, especially in foreign trade, has suffered due to the absence of effective governance. Challenges such as inadequate governance, banking infrastructure, and trade measurement systems confine Somalia's international trade role mainly to livestock exports.

The existing literature highlights deficiencies in studies that prioritize economic development over economic growth, especially in analyzing the effects of exports and imports independently. This study seeks to bridge these gaps by investigating the specific impact of international trade on economic growth in Somalia through a comprehensive analysis.

### 1.3 Objectives of the Study

#### 1.3.1 General objective

The main objective of this study is to investigate the impact of international trade on economic growth in Somalia.

#### 1.3.2 Specific objectives

The study was driven by the following study goals:

- To investigate the impact of exports on economic growth in Somalia.
- To examine how imports impact economic growth in Somalia.
- To discover how the trade openness phenomenon effects economic growth in Somalia.
- To establish a solid foundation for public policy founded on an innovative international trade approach that considerably boosts the country's economic growth over the long term.

### 1.4 Scope, significance, and limitations of the study

The study's scope is limited to Somalia at the national level. In addition, the study data covers the period from 1960 to 2022.

For the government: The study's conclusions will be critical for the government and trade policymakers. This research will give insights that will encourage the exports and imports of Somalia's international trade. In order to encourage trade openness, the study will shed light on the macroeconomic performance since Somalia recently joined the East Africa Community (EAC) and signed other bilateral trade agreements.

For academics: First, it gives scientific knowledge of empirical research regarding the subject of the study. Secondly, it provides policy recommendations and contributes to future academic perspectives on foreign trade and economic growth.

As a result, while writing this study, the research ran into a number of issues, including dispersed data from multiple sources. Therefore, users of the study results should take those constraints into account.

### 1.5 Research Hypothesis

The study examined the following research hypothesis:

- H1: Exports have a strong and significant impact on economic growth in Somalia.
- H2: Imports have a strong and significant effect on economic growth in Somalia.
- H3: Trade openness has a strong and significant effect on economic growth in Somalia.

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## 2. Literature review

### 2.1 Theoretical Literature

According to the literature and previous research conducted, there is a link between international trade and economic growth. To include further theoretical foundations and practical analyzes. This study examines the effectiveness of international trade on Somalia's economic growth indicators.

#### 2.1.1 The theory of absolute advantage

The theory of absolute advantage, introduced by Adam Smith in 1776, provides a foundational explanation for international trade. Adam Smith posited that trade between countries is driven by the principle of absolute advantage. According to this theory, a country can produce a specific commodity more efficiently than other countries, making it advantageous to produce that commodity. Conversely, the same country may be less efficient at producing other commodities. By specializing in the production of goods where they hold an absolute advantage and importing goods

where they are less efficient, countries can mutually benefit. This specialization allows each country to maximize its production efficiency and economic gains. As a result, both countries involved can enjoy a higher overall level of production and consumption by focusing on their strengths and trading for their weaknesses Schumacher, R. (2012).

The theory of absolute advantage explains why a country might choose to export certain goods. It asserts that a country has an absolute advantage if it can produce goods more efficiently and at a lower cost than others. This efficient use of resources reduces production costs and increases overall production. By leveraging its ability to produce more efficiently, a country can enhance its export potential and strengthen its economic position globally (Marbun, 2015).

Sampoerna University (2022) identifies key assumptions of the theory of absolute advantage: (1) Production factors are limited to labor, (2) Goods exchanged are of uniform quality, (3) Trade focuses solely on physical goods without financial considerations, and (4) There are no shipping costs. These assumptions simplify the theory and provide a basis for understanding how absolute advantage functions in international trade. The concept extends beyond simple transactions to include the exchange of commodities.

Importer countries benefit from trade by obtaining goods more cheaply from exporters than producing them domestically. Adam Smith argues that nations should specialize in producing goods where they have an absolute advantage and import goods where they have an absolute disadvantage. This specialization ensures efficient use of production resources, maximizes global output, and enhances national wealth. According to Adam Smith (1776) absolute advantage views trade as a positive-sum game, in contrast to mercantilism, which sees trade as a zero-sum game (Smith, 2010).

While the concept of absolute advantage has significantly contributed to our understanding of international trade and served as a foundational model, it has limitations. One key limitation is the assumption that labor is homogeneous within a country. Additionally, the idea that a country should always export goods in which it has an absolute advantage does not apply to many real-world trade situations and may not always be beneficial. To address these issues, Thus, David Ricardo (1819) introduced the concept of "comparative advantage" to the international trade literature, offering a more nuanced explanation of trade dynamics.

### 2.1.2 *The Theory of Comparative Advantage*

On the other hand, Ricardo (1819) argues that absolute advantage is a specific condition of comparative advantage and claims that countries should import some goods even though they have an absolute advantage in producing those goods. The principle of comparative advantage, proposed by Ricardo in 1817, suggests that a country will export goods or services where it has the highest comparative advantage and import those where it has the lowest comparative advantage. Ricardo's concept of opportunity cost involves the trade-off of producing one quantity of a good in favor of producing another, as elucidated by Fletcher (2011).

This principle underscores the basis for comparative advantage, where a country can produce a good at a lower opportunity cost relative to another nation (Suranovic, 2010). Consequently, even if a country lacks an absolute advantage in producing certain goods, it can still gain by specializing in those goods where it holds a comparative advantage and subsequently exporting them. This strategic approach to trade allows countries to optimize their production efficiencies, allocate resources more effectively, and capitalize on international trade opportunities based on comparative advantage principles.

Therefore, if countries focus their specialization on products where they possess comparative advantage rather than solely absolute advantage, it could lead to enhanced efficiency in allocating factor endowments and greater economic welfare (Acharya, 2008). This strategic alignment with comparative advantage principles allows nations to optimize their use of resources, foster economic growth, and potentially improve overall welfare outcomes through international trade.

Comparative advantage does not fully explain intra-industry trade, which is common among developed countries, and overlooks factors like economies of scale, imperfect competition, and demand-side dynamics. It also assumes labor is the only cost determinant and ignores international disparities in labor productivity. John Stuart Mill later introduced the concept of reciprocal demand and supply as key factors in determining the value of domestic goods, shifting the focus from production costs alone (Suranovic, 2010; Mill, 2009).

David Ricardo's theory suggests that locations benefit by focusing their resources on goods where they have a comparative advantage, or higher relative productivity. However, comparative advantage patterns are not fixed and

have evolved over time. The work of Marshall (1890) and subsequent studies have emphasized the importance of sector and regional relatedness in this evolution. This approach offers insights into industry requirements and regional endowments, and proposes a measure of counterfactual or implied comparative advantage to explain changes in comparative advantage over time.

The Ricardian theory of trade suggests that a location's production intensity in an industry depends on its relative productivity compared to other industries within the same location and to other locations, rather than its absolute productivity. While recent multi-location, multi-product models have been developed and tested, they can only infer productivity in a product if that product is already produced. These models also assume productivity across different industries is uncorrelated, overlooking the potential interdependence between industries (Hausmann et al. 2007).

The Ricardian model is based on several strict assumptions: identical fixed resources, free movement of factors within countries, immobility between countries, a labor theory of value, constant technology and production costs, full employment, perfect competition, no economic barriers, negligible transportation costs, and a simplified two-country, two-commodity framework. These assumptions help explain how countries specialize based on comparative advantage and achieve efficient resource allocation. However, these conditions limit the model's real-world applicability, where factors like technological progress, varying resource endowments, and government interventions are significant (Siggel, E. (2006)).

The theory of comparative advantage offers advantages over the theory of absolute advantage by explaining exchange rates and quantifying trade gains. Unlike absolute advantage, which focuses on overall efficiency, Ricardo's theory highlights opportunity costs and suggests that countries should specialize in goods with the lowest relative production costs. This approach enables countries to benefit from trade even if they are less efficient in producing all goods, leading to mutually advantageous trade relationships (Ibrahim and Halkam, 2021).

At last at the end of the 20th century, a small group of developing world became successful in achieving higher economic growth trimming the gap between them and the advanced economies. Japan, Hong Kong, China Singapore and Taiwan are the major examples of countries which performed very well in achieving higher annual growth. Recently in some large developing economies, China, Brazil and India for instance growth rate is quite high and turned them into global growth poles (The World Bank 2011).

### 2.1.3 Theory The Heckscher-Ohlin theory

This theory was introduced in the 1920s by Swedish economic historian Eli Heckscher and his student Bertil Ohlin. Commonly referred to as the proportional factor theory, the Heckscher-Ohlin theory posits that countries will import goods whose production demands resources that are scarce and expensive locally. (Ibrahim and Halkam, 2021) According to the theory, countries export goods that they can produce more abundantly and cheaply due to their available production factors. Trade patterns are determined by a country's relative resource endowments, leading them to specialize in and export goods that use their abundant and inexpensive resources while importing goods that require resources they lack.

The Heckscher-Ohlin theory posits that international trade arises from differences in the availability and intensity of production inputs, such as labor and capital. Countries produce and export goods that utilize their abundant resources and import goods that require resources they lack. Technology influences how these inputs are combined in production, leading to variations in production methods and trade patterns (Tambunan, 2009).

Heckscher-Ohlin's theory suggests that international trade benefits countries by increasing income or wages for labor and lowering interest rates on capital in nations rich in labor but poor in capital. This occurs because trade allows countries to specialize in producing goods that use their abundant resources, leveraging their comparative advantage. The theory highlights that trade patterns are influenced by a country's resource endowments and technological capabilities, leading them to export goods that use their abundant factors and import those requiring scarce resources (Salvatore, 2013). According to Lestari (2022), several factors contribute to the creation of buying and selling transactions in international trade, including:

#### 1. The Information Revolution and Transportation

Globalization has spurred swift advancements in technology and information over time, profoundly influencing international trade. These advancements have streamlined trade processes, simplifying countries' participation in export and import activities. The widespread adoption of information technology has bolstered communication and

international relations, while enhanced transportation infrastructure has expedited the movement of goods and services (Azizah, 2021). Consequently, globalization enhances the efficiency and effectiveness of global trade through these technological and logistical innovations.

## 2. Interdependence of Needs

Countries possess varying strengths and weaknesses across human resources, natural resources, and information technology, fostering interdependence to fulfill domestic needs (Setiawan and Lestari, 2011). Developed nations typically lead in information technology, contrasting with developing countries that depend on them for access to advanced technologies. This mutual reliance highlights global trade's interconnections, where nations trade to offset shortcomings and leverage distinctive strengths.

## 3. The principle of comparative advantage

A country's superiority is typically shown through exclusive assets or resources that are not found elsewhere. These unique advantages can lead to substantial increases in state revenue (Thabroni, 2021). For example, a nation might have abundant natural resources, advanced technology, or skilled labor that is scarce elsewhere. These distinct characteristics enable the country to earn more from international trade, using its strengths to gain a competitive advantage globally.

## 4. Economic liberalization

Economic liberalization is a crucial policy that fosters economic growth and boosts competitiveness. By opening up significant opportunities for international business activities, it encourages countries to engage in trade with one another. As a result, nearly everyone embraces this policy to capitalize on the opportunities created by cross-border trade (Thabroni, 2021).

## 5. The country's foreign exchange needs

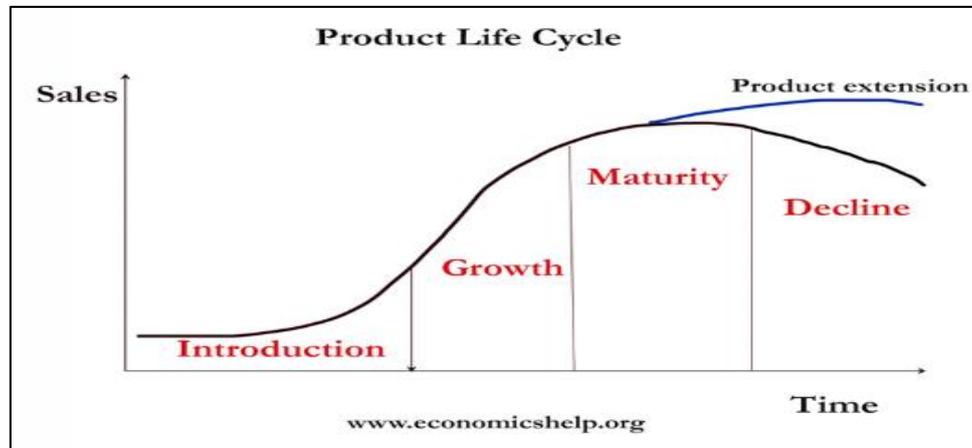
The primary aim of engaging in international trade for a country is to acquire foreign exchange reserves, which are essential for its economic development and stability. Foreign exchange reserves play a crucial role in building and advancing a nation's infrastructure and economy. Therefore, international trade is vital for a country to accumulate foreign exchange reserves, which serve as a critical monetary indicator reflecting the economic strength or weaknesses of the nation's fundamentals (Sayoga et al., 2017).

Sukirno and Seregar (2009) identified eight factors influencing international trade:

1. Meeting domestic demand for goods and services.
2. Generating revenue and increasing government tax income.
3. Varying capabilities in mastering science and technology for economic resource management.
4. Seeking new markets to benefit from domestic products.
5. Factors such as natural resources, climate, labor, culture, and population diversity influencing production capacities and output levels.
6. Consumer preferences favoring specific products.
7. Expanding political and diplomatic relations and receiving aid from other nations.
8. The era of globalization has rendered isolationism impractical for any nation, emphasizing interconnections.

### 2.1.4 Product Cycle Theory

Vernon (1992) proposes the product cycle theory to demonstrate how technological advances, economies of volume, misinformation, and ambiguity have impacted the changing nature of business practices. According to the paradigm, (1) the creation of novel products happens with distinction among both industrialized and developing nations, and (2) enterprises in wealthy states are homogenous with respect to the availability of scientific competence and skill to analyze integrated innovative information. In light of these hypotheses, the framework forecasts which nations export as well as import.



Source: Vernon (1992)

Figure 3 Product Life CycleStage

#### 1: Introduction1:

At the introduction stage of a new invention, buyers are unfamiliar with the product. Firms promote the product to create demand and increase sales, although earnings are initially low. As sales grow and fewer competitors exist, the product moves to the next stage. For example, a new product developed in the US is first produced domestically to meet local demand and allow producers to monitor customer responses. During this phase, companies refine operational features and production methods as they learn about the product and the market.Stage

#### 2: Growth

As demand for the item increases, sales rise and production costs fall, boosting returns. The item's popularity draws competitors who offer different versions. The original company intensifies its marketing to attract more buyers. Once a significant number of new customers have bought the product, it moves to the next stage. For example, a new US-developed product is initially produced domestically to meet local demand and gather customer feedback, leading to refinements in the product and production processes as the company gains market experience.

#### Stage 3: Maturity

In the mature phase of the product life cycle, the product is well-known and widely owned, but demand stabilizes and sales growth slows. The original supplier may reduce prices to stay competitive, while increased production and lower advertising costs help maintain appeal despite shrinking profit margins. As international interest, especially from wealthy countries, rises, the U.S. boosts exports and benefits from economies of scale. During this phase, companies may make further modifications and consider manufacturing in other regions. Eventually, U.S. exports and production may decline due to market saturation.

#### Stage 4: Decline

At this stage, manufacturers are familiar with the production process and product details, but sales have peaked and are starting to decline. As production becomes less economical, costs are cut, and the product may be phased out or sold to competitors. Trade may shift to developing countries, and manufacturing costs become more important. Developed countries focus on new product development, with affluent nations like the U.S. possibly importing the product from less developed countries.

## 2.2 Empirical Review

The empirical review of trade openness imports and exports in connection to economic growth is the main topic of the following sections.

### 2.2.1 Exports and Economic growth

The causal relationship between exports and economic growth in an open economy can be explained by four hypotheses. One key hypothesis, the Export-Led Growth (ELG) hypothesis, suggests that exports drive economic growth in a unidirectional manner. This theory asserts that exports boost income and indirectly enhance economic growth through a multiplier effect. As exports rise, resources move from less efficient non-trading sectors to more efficient export sectors, resulting in productivity gains and overall economic growth (Taştan, 2010).

Increasing exports enhances productivity by fostering international competition, which encourages the adoption of new technologies, accelerates research and development, and improves management and entrepreneurial practices. These elements lead to skill development and experiential learning, supporting economic growth. Additionally, higher export volumes improve a country's ability to import essential capital and intermediate goods needed for industrial production, further contributing to economic expansion (Berg & Lewer, 2007).

The second hypothesis, known as "Growth-Oriented Exports," posits that economic growth drives an increase in exports. This view holds that as economies grow, they embrace new technologies and enhance productivity, which boosts their export potential and provides a comparative advantage in global markets (Giles & Williams, 2010).

The third hypothesis suggests a reciprocal relationship, where higher exports foster economic growth, and increased income from that growth in turn promotes further trade, creating a reinforcing cycle (Taştan, 2010).

The fourth hypothesis proposes that there may be no direct causal relationship between economic growth and exports (Taştan, 2010).

These hypotheses represent the main theories discussed in the literature, with most research findings aligning with one of these primary viewpoints.

According to Sannasse et al. (2014) and Mandel and Müller (1974), export-oriented growth is vital for countries seeking to interact with and benefit from global markets. The relationship between exports and economic growth is a key focus in economics, highlighting the significant role exports have played in the development of advanced economies. Export-driven growth emphasizes the importance of exports in promoting economic expansion, aligning with principles of free trade and economic openness, and underscores the advantages of integrating national economies into the global market.

Globalization has greatly increased the opportunities for international trade by bridging the economic gaps between countries. This has particularly benefited developing nations, leading to significant economic growth through greater trade opportunities. The effect of foreign trade on economic growth has been a topic of discussion since classical macroeconomic theories and continues to be relevant in current Neo-Liberal Economic policy debates (Acet et al., 2016). This ongoing discussion underscores the lasting importance of foreign trade in influencing economic outcomes in today's global economy.

From classical growth theories to modern economic models, various factors have been identified as key determinants of economic growth, including wages, interest rates, savings levels, human and physical capital, technological progress, and natural resources (Rebelo, 1991). Among these, exports have consistently been recognized in the literature as a major driver of economic growth. This highlights the crucial role that export activities play in promoting and sustaining economic development.

Mohamed Mire Mohamed (2015) found that cattle were prevalent across regions of two major rivers in Somalia despite severe weather, political unrest, and uncertainty. The cattle industry provides most jobs for rural and nomadic communities and generates 80% of the nation's export revenue. The study focused on the impact of agricultural and animal production on export profits and concluded that there is a positive relationship between exports and economic growth.

Long-term issues in Somalia are hindering the development of its export industry. Frequent droughts have severely impacted farming and cattle, the country's primary sources of export surplus. Reduced output and workforce

displacement to NGO camps in Mogadishu and neighboring countries have resulted from severe droughts, low rainfall, and drying rivers. If these obstacles are overcome, the sector's significance and export participation could significantly increase. The famine affected every region, leading to a decline in Somalia's overall economic output.

Political instability has significantly impacted Somalia's economy (Isak & Mohamed, 2017). Over 25 years of civil conflict have led to local and maritime security issues, negatively impacting economic output and trade. Pirate activity in the Indian and Red Seas has reduced transportation services and discouraged business engagement with Somalia. Many businesses have moved to more stable investment climates, such as the UAE and other African nations, where they feel safer investing. If firms could invest in a stable environment with good technology, it could lead to an export surplus.

Third, there was a dearth of funding for the business sector to engage in manufacturing and exporting. Independent financial institutions couldn't provide Letters of Credit, and there were no government corporate banks to support trade deals. Consequently, only a few merchants could import and export goods, creating a dominant position in Somalia's trade sector.

Fourth, there also appeared to be a problem with other methods of quality control. Somalia's cattle have faced health issues, including the Rift Valley Virus, impacting the trade equilibrium due to reliance on a single major export: live livestock. This reliance has led to trade imbalances, with few major trading partners. These partners conduct their own quality inspections at the point of slaughter and delivery (UNECA, 2016).

Lastly, a major concern is the government entities' vulnerability. Somalia faces challenges due to inadequate support and subsidies for agriculture and livestock, with the government unable to fund necessary improvements. There are no policies to promote the export of locally desired goods, and the Customs Agency does not control the borders, leading to potential unreported exports. While the Somali Federal State struggles to strengthen its institutions and boost output, the trade sector remains active internationally, leveraging its expertise to facilitate trade and investment.

### *2.2.2 Import and Economic growth*

No country can produce all the goods it needs, so nations focus on producing goods where they have a comparative advantage and trade for what others produce more efficiently. Differences in resources, technology, and preferences among countries have broadened the scope of international trade (Adedeji, 2015). This global trade network enables countries to benefit from each other's strengths, promoting economic growth, development, and stability. By specializing based on comparative advantage, nations improve production efficiency, fostering a more interconnected global economy, innovation, and cultural exchange.

Due to limited local production, Somalia relies heavily on imports through its main ports and customs points, including Muqdisho, Berbera, Bosaso, Kismaayo, Beled-xaawo, Wajaale, and Muqdisho Airport. Major food imports are sugar, rice, and wheat flour, while significant non-food imports include fuel, clothes, and vehicles. This dependence on imports underscores the importance of these entry points for the economy. Enhancing local production and diversifying import channels could improve economic stability and self-sufficiency (Ministry of National Planning and Development, 2015).

Somalia's economy is highly open, with imports and exports making up 91.5% of its GDP, ranking 7th in Sub-Saharan Africa and 45th globally (World Bank & Ministry of National Planning and Development, 2014). Its tariffs are consistent with Sub-Saharan Africa standards, with import tariffs at 4.15% and export tariffs at 3.34%. Berbera Port is the key economic hub, managing all import and export activities (Berbera Port Authority, 2016). International trade, driven by government policies, economies of scale, technological advancements, resource differences, and varying demand, fosters a complex global trade network that promotes economic growth, cultural exchange, and technological innovation.

### *2.2.3 Foreign Trade, Taxation and Economic Growth*

According to Beck and Chaves (2011), they performed research on taxes and how they affect trade performance. The theory under consideration was that the business would become less productive as taxes rose. In the future, this would result in a decline in the worth of exports. We looked for information from 25 OECD countries. It was observed that a tax hike would have the opposite effect on the nation's business growth by means of imports.

Gnangnon (2019) conducted research on tax adjustments and how they affect the nation's trade freedom. Between 1980 and 2014, 92 developing nations were included in the analysis. Trade accessibility as well as tax changes were shown to be directly and significantly correlated. Owens and Zhan (2018), conducted a taxation and economic study. In practice, it was shown that taxes are a significant factor influencing the nation's business. It also became clear that tax

breaks and other subsidies are important tools for strategy that may be used to increase exports and draw in foreign investment.

### 3. The methodology of the study

This chapter covers a description of the study's methodology, data sources and data type, methods of data analysis, model specifications, and theoretical framework. It also explains how estimation techniques and diagnostic tests will be analyzed and interpreted.

#### 3.1 Data Type and Data Source

Secondary data from the World Bank indicators covering the years 1960–2022 was collected for this study. According to Remler and Van-Ryzin (2021), data is a term that describes unprocessed evidence that is obtained in secondary form based on the purpose of the response to specific study objectives and the hypothesis for which it was collected. Somalia is the subject matter of the study.

#### 3.2 Methods of Data Analysis

Examining the relationship between dependent and independent variables comprises three core components and econometric methods, among which are descriptive statistics, model parameter estimations, and modal diagnostics.

#### 3.3 Model Specification

In this study, the ordinary least squares (OLS) method was utilized to analyze the fundamental determinants of international trade in Somalia. Consequently, the functional relationship between international trade and its determinants can be explained as follows:

$$GDP_t = \beta_0 + \beta_1 EXP_t + \beta_2 IMP_t + \beta_3 TOP_t + \epsilon_t$$

(+) (+) (-)

Where: -

Economic Growth, Exports, Imports, and Trade openness are denoted by GDP, EXP, IMP, and TOP, respectively.

The intercept  $\beta_0$  signifies that if we hold all other independent factors constant, economic growth will also remain constant. •  $\beta_1$  to  $\beta_3$  denote the slope coefficients of the independent variables. •  $t$  indicates the time period, while  $\epsilon$  is the error term.

#### 3.4 Description of the Variables

**Table 1** Operationalization of Variables

Variables	Measurement	Data collection
Export	Export/ GDP	World Bank Indicators
Import	Import/GDP	World Bank Indicators
Trade openness	Exp + Imp/GDP	World Bank Indicators
Economic Growth	GDP Growth Rate	World Bank Indicators

#### 3.5 Estimation Technique

In this study, to determine the relationship between economic growth and the explanatory factors, ordinary least squares (OLS) was utilized. Therefore, in order to employ OLS, the assumptions of the standard linear regression equation have to be met.

#### 3.6 Diagnostic Tests

The study used diagnostic tests, which we will further describe in the following chapter.

#### 4. Results and discussions

This chapter examines the data obtained in its secondary form. The chapter examines economic growth employing descriptive statistics, trend analysis of trade openness, exports and imports, model parameter estimation, and diagnostics.

##### 4.1 Descriptive Statistics

Descriptive statistics is a form of statistical analysis that combines massive amounts of quantitative data. Descriptive statistics are categorized into central tendency and variability measurements. Central tendency statistics measure the mean, median, and mode, whereas variability measures the standard deviation, minimum and maximum variables, kurtosis, and skewness. The mean shows the lowest value among a set of statistics.

**Table 2** Descriptive Statistics

Variables	Mean	Median	Maximum	Minimum	Std.Dev.
Economic Growth	1.9365	0.0000	30.073	-18.266	6.4392
Export	9.9166	12.049	33.179	0.0000	8.6866
Import	27.970	22.573	88.487	0.0000	26.745
Trade Openness	37.886	36.411	121.66	0.0000	34.5066

Source: World Bank Indicators (1960–2022)

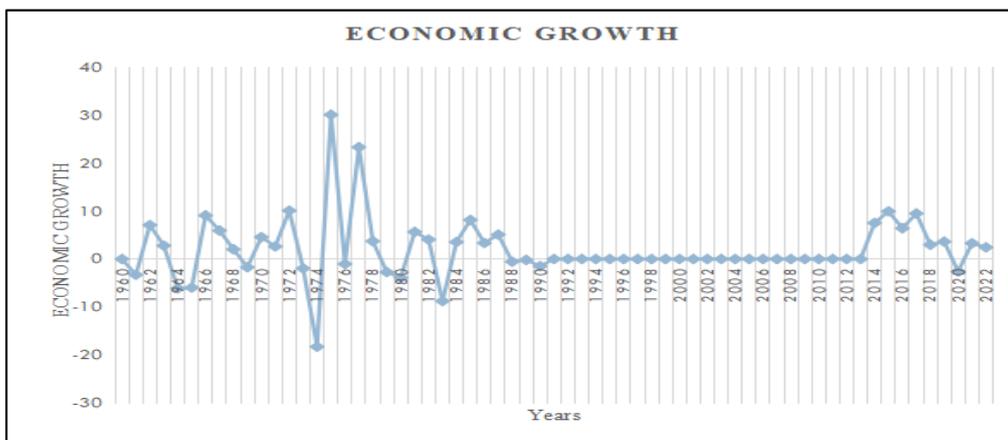
Table 2: The dependent as well as independent variables are depicted in the descriptive results. Between 1960 and 2022, the dependent variable of economic growth had an average mean value of 1.9365 and a maximum value of 30.073, with a standard deviation of 6.4392. The average mean of Somali exports is 9.9166, with a maximum value of 33.179 and a standard deviation of 8.6866.

The average mean of Somali imports is 27.970, with a maximum value of 88.487 and a standard deviation of 26.745. The average mean value of trade openness is 37.886, with a maximum value of 121.66 and a standard deviation of 34.5066.

Therefore, economic growth has the lowest average mean, with a value of 1.9365, whereas trade openness has the highest average mean, with a value of 37.886.

##### 4.2 Trend Analysis on the Variables of the Study

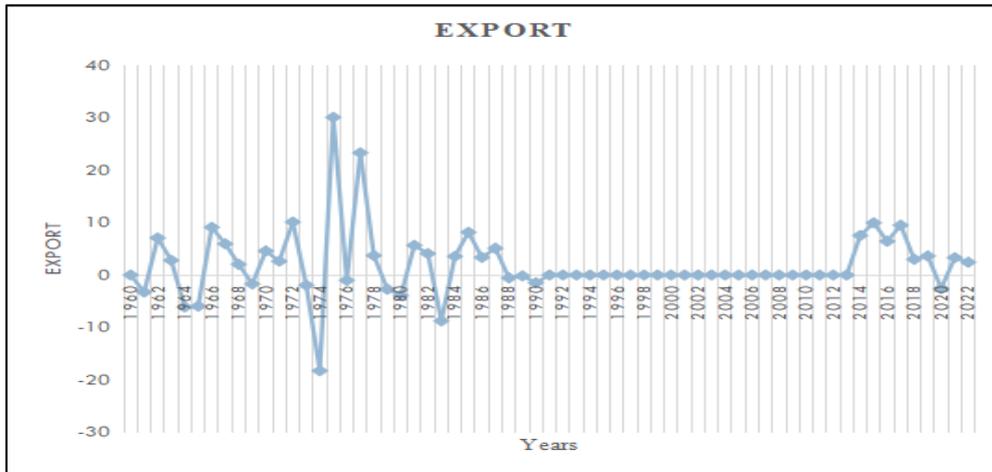
The study used trend analysis to show how the variable changed and present a figure of the variable’s shift across the period.



Source: World Bank Indicators (1960–2022)

Figure 4 Economic Growth in Somalia

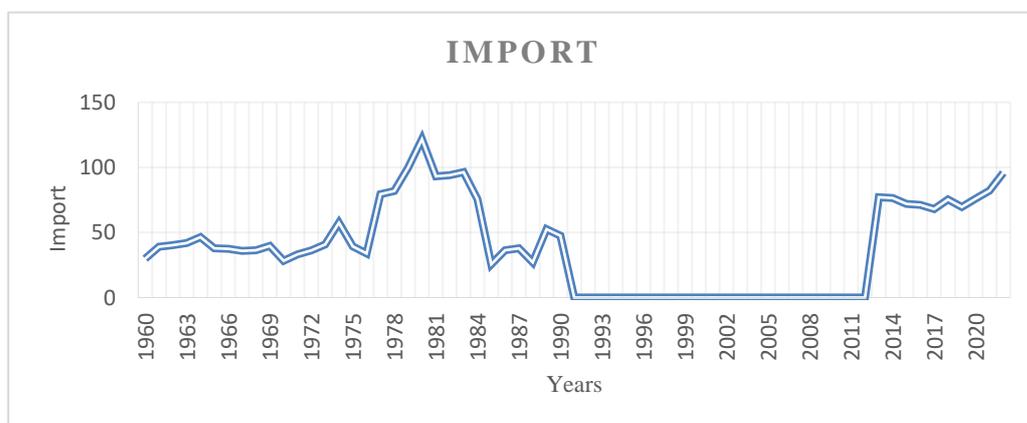
Figure 4: indicates how the economic growth of Somalia changed over the study period. The highest rate of economic growth was reported in 1974, whereas the lowest rate of economic growth was reported in 1973. Recently, Somalia’s fragile economy experienced a negative impact from COVID-19 in 2020, which caused an aggregate of supply and demand shocks that affected real GDP growth. Real GDP growth declined to 1.7% in 2022 from 2.9% in 2021. Large-scale, protracted civil conflict, state collapse, and budget imbalances contributed to Somalia’s ongoing severe impoverishment. Somalia’s social programs are still scarce. Access to education is among the lowest in the world, with almost two-thirds of school-age children not attending school because their families cannot afford to send them to school.



Source: World Bank Indicators (1960–2022)

**Figure 5** Export of Somalia

Figure 5: demonstrates that Somalia’s exports were erratic and not stable. The years with the highest and lowest rates of Somalia’s exports were reported in 1974 and 1973, respectively. Exports have increased over the past ten years, and livestock was the country’s main export. The graph line declined when the country experienced either a drought or when Gulf states and other trading partners-imposed sanctions on Somali livestock exports. According to total exports and total imports, Somalia’s economy ranked 167<sup>th</sup> and 140<sup>th</sup>, respectively, in the world in 2022. Sheep and goats are Somalia’s sectors of significant specialization. While the United Arab Emirates, Oman, and Kuwait are the top destinations for Somalia’s exports. However, Somalia already has some degree of success in exporting two goods: sesame seeds and full frozen fish, for which there is a substantial global market and significant untapped revenue potential. The primary source of income in Somalia, accounting for 45% of the country’s GDP and 80% of the agricultural GDP, is livestock.



Source: World Bank Indicators (1960–2022)

**Figure 6** Import of Somalia

Figure 6: illustrates how imports to Somalia have fluctuated over time. The highest and lowest import values were reported in 1980 and 1990, respectively. Now, Somalia’s economy and government revenue are heavily dependent on imports, driven predominantly by market demand for foreign goods.

The combination of booming imports and impoverished exports indicates that Somali consumers spend more money on foreign goods than Somalia’s locally produced goods. However, if one import or export grows faster than the other, it can have a negative impact on the economy.

The significant level of foreign goods has an impact on the country’s GDP, interest rates, inflation rate, and exchange rate. In addition, the Somali shilling has depreciated against the US dollar. Prices of local goods have risen, while imported commodities have become more affordable for households and business entities as they have become more economical.



Source: World Bank indicators (1960–2022)

Figure 7 Trade openness of Somalia

Figure 7: indicates the trend of trade openness in Somalia. The initial period, which ran from 1960–1976, shows a short-term decline and small growth caused by elasticity and demand. Furthermore, the trend shows the maximum boost in trade openness from 1976 to 1980. Between 1982 and 1990, Somali trade dramatically declined; however, Somali trade openness has gradually improved in recent years.

The outbreak of civil war in Somalia in 1993 led to significant economic ramifications, such as a substantial decrease in exports and a reduction in gross domestic product (GDP) caused by disruptions in trade routes and infrastructure damage. This decline was compounded by an increase in the population's dependence on imported goods as local production capacities suffered amidst the conflict. Despite the emergence of numerous small-scale enterprises amid these adversities, their resilience was constrained by the war-affected economic landscape. Additionally, Somalia's economic prospects were hindered by a growing foreign debt burden, limiting its capacity to draw foreign direct investment and impeding domestic investment and development.

Consequently, Somalia encountered economic vulnerability exacerbated by a negative balance of payments and restricted access to external resources. These obstacles underscored the necessity for collaborative endeavors to bolster economic resilience, attract investment, and facilitate sustainable development.

The research formulates the following hypothesis:

- **Null Hypothesis (H0):** The data conforms to a normal distribution.
- **Alternative Hypothesis 1:** The data does not conform to a normal distribution, suggesting possible skewness or heavy tails.

The null hypothesis assumes the data adheres to a normal distribution, a common condition for statistical methods. Conversely, the alternative hypothesis posits deviations from normality, which could indicate skewed or heavy-tailed distributions. Testing these hypotheses estimates the validity of assuming normality, which is essential for reliable

statistical analyses. Rejecting the null hypothesis implies a significant deviation from normality, potentially affecting analysis reliability.

#### 4.3 Model Parameter Estimation

To determine if there is a correlation between the variables, the study estimated the method coefficients after establishing the stability and normality of the time series variables.

**Table 3** Model parameter Estimation

Dependent Variable: GDP				
Method: Least Squares				
Date: 03/24/24 Time: 13:17				
Sample (adjusted): 1961 2022				
Included observations: 62 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1.13E-15	7.43E-16	1.518496	0.1343
Export	1.000000	7.61 E-17	1.31E+16	0.0000
Import	9.89E-16	1.44E-16	6.874238	0.0000
Trade Openness	-7.72E-16	1.11E-16	-6.930752	0.0000
R-squared	1.000000	Mean dependent var		1.913540
Adjusted R-squared	1.000000	S.D. dependent var		6.489169
S.E. of regression	3.82E-15	Sum squared resid		8.48E-28
F-statistic	5.86E+31	Durbin-Watson stat		0.539135
Prob(F-statistic)	0.000000			

According to the model parameter estimation, exports and imports have a positive coefficient and a statistically significant relationship with economic growth, revealing that a one percent increase in exports and imports yields a 1.0 percent and 9.89 percent increase in economic growth, respectively. Conversely, trade openness has an inverse relationship with economic growth and is statistically significant in the estimated model, indicating that trade openness does not adequately estimate economic growth.

The study findings indicate that exports play a positive role in driving economic growth in Somalia. Export earnings are crucial for maintaining economic stability and balancing payments. Industries such as agriculture, livestock, and fishing serve as vital sources of income for many Somali citizens, which provide employment and sustenance. Despite obstacles such as political uncertainty and trade barriers, fostering export-oriented development is crucial for Somalia's enduring economic prosperity and resilience.

Similarly, Somali imports are crucial for both the local economy and international trade. In the local economy, imports supply essential consumer goods, industrial inputs, and materials for infrastructure development. Imports also contribute to technology adoption, healthcare provision, and economic growth. In international trade, imports diversify Somalia's trade portfolio, support export processing, and cater to consumer preferences. It also facilitates economic growth, fosters diplomatic relations, and promotes integration into the global economy. Overall, imports play a vital role in sustaining Somalia's economy and its participation in the international trade arena.

Conversely, an adverse relationship between trade openness and economic growth suggests that increasing international trade engagement may harm economic growth. Overreliance on foreign markets can leave the country vulnerable to downturns, causing economic decline. Persistent trade deficits can drain foreign reserves and lead to debt accumulation, weakening the currency and sparking inflation, further hindering growth. Inadequate institutional frameworks may impede the benefits of trade, fostering inefficiencies and corruption. Additionally, exposure to external shocks like financial crises or pandemics can disrupt trade and investment, curtailing economic activity. Despite the

benefits of trade, careful policy and planning are essential to maximize gains and mitigate the risks of international trade.

The values of the R-squared factors explain 1.0 percent of the variance in the variable that is dependent. To analyze adjusted R-squared, the independent factors, which are exports, imports, and trade openness, determine 1.0 percent of the dependent variable.

Furthermore, the F-statistic of 5.86, which corresponds to the prob (F-statistic) of less than 5%, demonstrates that the whole model utilized in predicting the model of the dependent variable, which is economic growth, is adequate and acceptable. The dependent variable is simplified jointly by the three independent factors. The Durbin-Watson stat is 0.53, thus there is a positive autocorrelation.

#### 4.4 Model Diagnostics

##### 4.4.1 Normality Test

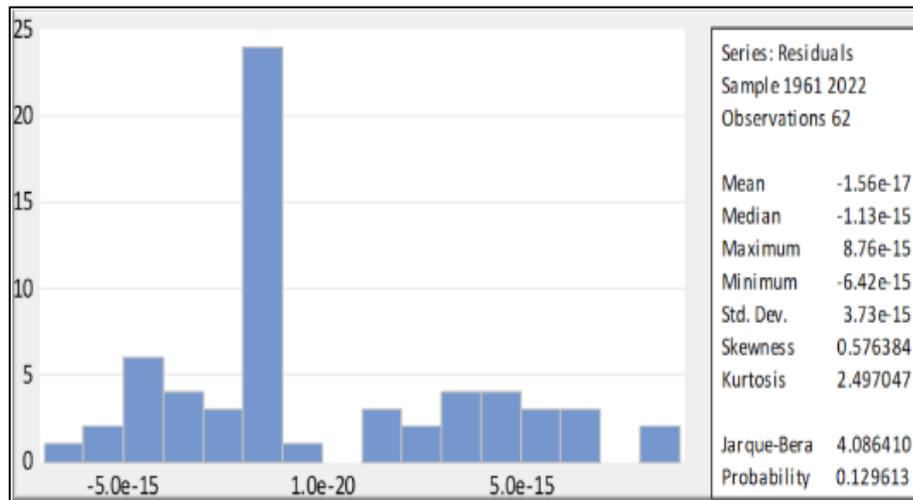


Figure 8 Normality Test

The study conducted the normality test to determine that the error term is normally distributed. The model tested in this study is presented in the figure below to verify that the distribution of the data is normally distributed. As a conclusion, the model has validity since the probability is greater than 5%. Therefore, the null hypothesis was approved by the proposed model.

##### 4.4.2 Stability Test

The residual is found between the two horizontal lines, confirming that the model is properly explained, and the figure exhibits 5% crucial limits, indicating that the dependent variable, which is economic growth, is a stable variable.

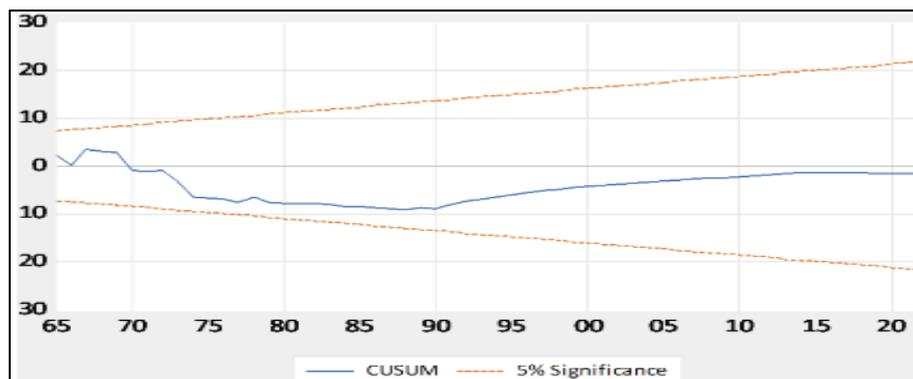


Figure 9 Stability Test

4.4.3 *Multicollinearity Test*

Multicollinearity occurs when two independent factors have a strong correlation. Multicollinearity undermines the significance of an insignificant indicator by raising its standard error. As the standard error grows, the t-value lowers, leading to a high p-value. The assessment of correlation in the table below demonstrates that import and trade openness have the highest correlation coefficient (0.99), while trade openness and export have the lowest correlation coefficient (0.12), indicating no significant correlations between all independent variables. Thus, Table 4 reveals no series multicollinearity between variables.

**Table 4** Correlation Matrix

<b>Export</b>		<b>Import</b>	<b>Trade openness</b>
EXPORT	1.000000	0.131775	0.129575
IMPORT	0.131775	1.000000	0.991983
TRADE OPENESS	0.129575	0.991983	1.000000

4.4.4 *Heteroskedasticity Test*

Heteroskedasticity variance occurs when the variances of the error terms are not similar or consistent. Table 5 indicates that the model is functioning properly and has no heteroscedasticity, as the probability value is not statistically significant at the 5% level. This implies that the model has been approved as a null hypothesis and homoscedasticity, demonstrating a useful regression analysis model.

**Table 5** Heteroskedasticity: Breusch Pagan Godfrey

<b>Heteroskedasticity Test: Breusch-Pagan- Godfrey</b>			
Null hypothesis: Homoskedasticity			
F- statistic	0.223504	prob. F (3,36)	0.8794
Obs*R-squared	0.731391	prob. Chi-Square (3)	0.8658
Scaled explained SS	1.765928	prob. Chi-Square (3)	0.6224
Test Equation:			
Dependent Variable: RESIDA2			
Method: Least Squares Date:			
03/25/24 Time: 1 1 :58			
Sample: 1960 2022			
Included observations: 40			

4.4.5 *Autocorrelation Test*

Autocorrelation is an indication of the similarity of the independent variables or occurs when an error term is attached. Since the diagnostic test p-values are higher than 5% and the model accepts the null hypothesis, Table 6 reveals no autocorrelation, indicating the model's acceptance. Therefore, the model's estimated variables are accurate and may contribute to international trade policy recommendations.

**Table 6** Autocorrelation Test

<b>Breusch-Godfrey Serial Correlation LM Test:</b>			
Null hypothesis: No serial correlation at up to 3 lags			
F- statistic	1.138193	Prob. F (3,33)	0.3480

Obs*R-squared	3.750782	Prob. Chi-Square (3)	0.2897
Test Equation:			
Dependent Variable: RESID			
Method: Least Squares			
Date: 03/25/24 Time: 12:01			
Sample: 1960 2022			
Included observations: 40			
Presample and interior missing value lagged residuals set to zero.			

#### 4 Conclusion

The main objective of this study was to examine the impact of international trade on economic growth in the Somali economy. This objective was accomplished with the support of four distinct objectives. To investigate the impact of exports on economic growth in Somalia. To examine how imports impact economic growth in Somalia. To discover how the trade openness phenomenon affects economic growth in Somalia. To establish a solid foundation for public policy founded on an innovative international trade approach that considerably boosts the country's economic growth over the long term.

Therefore, the study employed time series data from 1960 to 2022. Both descriptive and econometric methods concentrated on explanatory variables, including exports, imports, and trade openness. According to OLS estimates, a number of indicators show that both exports and imports have a positive impact on economic growth. The research findings show that exports and imports have a statistically significant influence on economic growth, showing that a one-unit increase in exports and imports results in an increase in economic growth.

The study also found a negative relationship between trade openness and economic growth. Trade openness has a statistically significant probability, but it has a negative coefficient for this regression analysis. A negative coefficient indicates that the dependent factor tends to drop as the independent variable increases. Therefore, it is fundamentally contingent upon international trade gains or losses. In addition, the study conducted the normality test to determine whether the error term is normally distributed. The study found that normality is normally distributed since the probability is greater than 5%. Therefore, the null hypothesis was approved by the proposed model.

The study examined the stability modal using diagonal testing methods. The study indicated that residuals fell within a defined range between two horizontal lines, which means that the dependent variable, which is economic growth, is a stable variable. Furthermore, no evidence of heteroscedasticity was observed. The study's conclusion states the absence of autocorrelation within the model, supported by diagnostic test p-values exceeding 5%, and the acceptance of the null hypothesis, affirming the validity of the estimated model.

The study's findings contributed to the policy recommendations listed below, which should be taken into account by decision-makers.

Somalia has experienced trade deficits since it imports more goods than it exports. Therefore, the government of Somalia should begin export-oriented policies that stimulate exports and economic growth. This can be done by developing agricultural and livestock production and trade zones.

The government of Somalia should explore new markets for exports to reduce its reliance on a few trading partners. Conduct market research to discover emerging opportunities and consumer preferences in diverse regions. Develop trade agreements with countries offering growth potential for the country's exports.

The government should develop infrastructure to support export activities, such as ports, roads, and logistics networks. Invest in technology and innovation to improve productivity and reduce production costs for export-oriented industries. Support education and training programs to develop a skilled workforce capable of driving export-led growth.

The government of Somalia should identify sectors where domestic production can substitute for imports. Offer incentives to domestic industries, like the agricultural sector, which should be modernized and industrialized as a way to become a more market-driven economy. The government should implement import tariffs or quotas on goods that can be produced domestically to protect local industries.

The government of Somalia should Invest in research and development to enhance product quality and innovation. Provide subsidies or tax incentives to export-oriented industries. Facilitate access to financing for exporters, which will boost Somalia's economic progress.

In conclusion, the government of Somalia should address structural issues in the economy that may hinder export competitiveness, such as regulatory burdens, corruption, and inefficiencies in the business environment. Implement reforms to improve governance, transparency, and the rule of law to create a conducive environment for trade and investment.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

The authors declare that no conflict of interest exists.

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