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
The 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.

![GDP Per Capita Growth Rate](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](image)

**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.

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 Comparative Advantage
According to Letiche (1960), a country can boost its economic growth by focusing on industries where it has a comparative advantage, suggesting that trading with other nations enhances asset efficiency. This highlights the importance of imports, allowing nations to acquire goods more efficiently through foreign trade rather than producing them domestically. Schumacher (2013) further emphasizes the interdependence and complementarity of imports and exports. Comparative advantage, the ability of a nation to produce a certain good efficiently, underpins this notion.
Neoclassical theories of foreign trade, particularly comparative advantage, propose that nations gain from specializing in labor-intensive goods, especially in countries with ample labor resources like emerging economies. David Ricardo's concept suggests that even if one country is more efficient in producing every product, trade can still benefit both parties. Wealthier nations are advised to focus on goods they excel at manufacturing to benefit from trade with less-developed countries, leading to mutual progress (Tavakkol, A., 1975).

2.1.2 The theory of absolute advantage

Adam Smith's concept of absolute advantage revolves around a nation's ability to produce goods and services more efficiently, utilizing fewer resources compared to competitors. This leads to increased output and explains why a country exports certain product—it can produce them at a lower cost or possesses absolute superiority in their manufacture (Marbun, 2023).

Schumacher (2012) notes that Adam Smith proposed the idea of utilizing commerce to exploit a division of labor in production, facilitating economic growth. This suggests that the key factor driving international trade is economies of scale in industrial processes. Therefore, nations should concentrate on producing goods for which they possess unique skills.

Similarly, according to Seretis and Tsaliki (2016), a nation holds an absolute advantage over another when it can produce a good or service using fewer real resources, resulting in greater output with the same input. While the concept of absolute advantage extends to other macroeconomic entities, such as cities, geography, or businesses, this article concentrates on countries due to their output decisions and global trade patterns. However, equating cost-benefit analysis with absolute advantages is a recurring source of uncertainty, as natural resources may be valued differently in various nations, leading to disparities between them.

Heckscher-Ohlin theory posits that foreign trade is influenced by two main factors: the availability of inputs to the firm and the intensity of their utilization. The proportions of production ingredients vary depending on the product, and technology plays a role in integrating multiple manufacturing elements, leading to differences in production (Tambunan, 2009).

2.1.3 Neoclassical International Trade Theory

According to Lam (2015), as a counter to the older views of classical economists, neoclassical ideas developed in the 1900s. According to neoclassical economics, demand and supply are the main factors influencing the creation, setting of prices, and consumption of products and offerings. Ricardo's theory of comparative advantage was to be replaced with numerous variables in the 1930s by Heckscher and Ohlin, two Swedish economists. Their idea was called factor endowment theory. This theory is referred to as the H-O model, factor endowment theory, or neoclassical foreign trade theory. Foreign business, based on the HO model, was mostly caused by the differing resource endowments of various nations. If nations that participate in free trade have similar value for their output items, then those same nations will possess similar value for their input resources.

A rise in the value of awareness leads to a boost in the cost of the item that is heavily utilized in that sector and a drop in the cost of the corresponding factor. Foreign trade occurs as a result of variations in the relative costs of the elements of output that emerge from either an abundance or a shortage within nations. To put it another way, through foreign trade, nations may focus on producing a certain good while also importing goods from different nations in which they have expertise (Verter, 2015; Hill et al., 2015). Heckscher-Ohlin-Samuelson, or H-O-S, theory of trade was created by Stolper and Paul Samuelson (1998), according to Ramrattan, L., and Szenberg, M. (2019), building on the neoclassical foundations of trade science. According to the Samuelson theorem, when the proportionate value of an item rises, the exact pay of the source that produces the commodity intensely decreases and that of the corresponding source rises.

2.1.4 Traditional Trade Theory

There are two main schools of thought when it comes to traditional trade concepts: classical and neoclassical. Some examples of classical economic thought are mercantilism, the doctrine of absolute advantages, and comparative advantage. In the mercantilist era, ideas about international trade first emerged. During the sixteenth and mid-eighteenth centuries, the Netherlands, Spain, France, and Britain had the most developed economies on a worldwide scale. The governments of these states meddled heavily in the economy.

The nation's main focus was maintaining control and financial resources. A phrase used to describe these goals in theoretical economics is mercantilism. By allowing exports to far outstrip imports, mercantilism boosts the movement
of valuable goods, with governmental limitations on trade that aim to achieve a favorable trade balance. It asserts that the difference between imports and exports determines a nation’s prosperity. According to mercantilist theories of foreign trade, countries ought to encourage as well as subsidize their exports in order to promote exports and deter imports. The primary goal of mercantilists was to maximize national wellbeing while limiting that of other countries. This point of view held that a country’s gains from international commerce were equal to the costs incurred by other countries (Verter, 2015).

Nonetheless, a country’s ability to produce products and services is determined by the amount of organic, artificial, and intellectual assets it possesses. felt any effort by a nation to create a long-term positive trade equilibrium was bound to be defeated given the open market for metals of high value. A short-term trade gain is conceivable, according to Hume’s argument.

2.1.5 The New Trade Theory

A single theory is insufficient to describe trade across borders. Multiple academics develop fresh business ideas over time. H.O. Model through a scientific examination by Wassily W. Leontief in the beginning of the 1950s. He paid great attention to US trade and concluded that since the country had an abundance of capital, it ought to export more resource-intensive items. He nevertheless discovered that the USA was importing greater amounts of capital-intensive commodities, which was contrary to what his study had shown. According to Jeyarajah, S. (2020), the HO hypothesis posits that labor-intensive items were being exported by the United States, although they should have been imported by the country. There are thus some questions regarding the application of H-O theory.

Several academics have contested traditional trade assumptions, which has given rise to the emergence of different interpretations of foreign trade. According to Rassekh (22015), Furthermore, when global corporations grew in size during the post-World War II era, firm-based concepts developed as well. The rise of several large corporations made it difficult for traditional trade conceptions to account for the changing dynamics of worldwide trade.

According to Salvatore (2013), a considerable amount of the current state of world trade remains unaddressed by the Heckscher-Ohlin theory-based comparative advantage on disparities in endowing factors hypothesis. In order to shed light on the emerging trends in worldwide commerce, academics at business institutions have developed fresh concepts of foreign trade centered on firms. A modern theory of trade was developed in the latter part of the 1970s to account for international commerce. These business theories, which are based on the idea of comparative advantage, permit growing returns on dimension, world economies, unique product offerings, and the corresponding weakly competitive marketplace architectures. It is demonstrated that trade occurs even when economies have a similar wealth of resources and levels of technological expertise.

2.1.6 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.
Stage 1: Introduction

This is the point when an invention is introduced to the marketplace; buyers are not familiar with it yet. For the purpose of creating demand, firms promote the new goods to increase sales. At this juncture, earnings are not very high, but nevertheless, they start to climb while there are not many competitors. The commodity naturally moves up to the subsequent stage as extra volumes are sold.

For instance, a new type created in the US for domestic consumers is first produced there, as that is where the need is, and producers like to stay close to the field to gauge client response. During this phase, operational attributes and production methods are modified as firms familiarize themselves with the commodity as well as the marketplace.

Stage 2: Growth

At this point, the item's desire drives higher sales. As a result, production costs decrease while returns grow. The item gains popularity, prompting competitors to enter the marketplace with various versions. The company that developed the initial commodity increases its promotional spending in an attempt to capture as many buyers as practicable. While a large percentage of possible new customers have purchased the good, it moves on to the next stage. For instance, the latest product created in the US for domestic consumers is first produced there, as that is where buyer interest is; therefore, producers like to stay close to the industry to gauge client response. During this phase, the system's characteristics and production processes are modified as firms familiarize themselves with the good and its marketplace.

Stage 3: Maturity

During the mature phase of the product life cycle, a large number of buyers possess and identify the commodity. During the product's development era, demand levels out and sales quantity increases more slowly. The first supplier may lower pricing to maintain its market position and orders at this time because there are several competitors. Higher output and lower costs for advertisements and studies keep the firm attractive even when revenue margins are declining.

Moreover, because the product meets the expectations of affluent consumers, interest in it is rising internationally, although it is mainly associated with other developed nations. In this regard, in the case of the recently created goods, the United States adds worth to its ultimate exports to other wealthy countries as a response to rising global demand (facilitated by economies of scale). During the mature output period, there are more alterations.
As the manufacturing phase matures, more modifications take place. After selling to other wealthy countries, the American corporation would start to think about whether it would be possible to manufacture outside of the West as well. An American firm might not be able to assist other European countries like France if it were a French industry. Therefore, after the first export explosion in the United States, there is expected to be a decline in US exports as well as in US commodity manufacture.

Stage 4: Decline

At this stage of development, the makers are comfortable with the production procedure, and consumers can easily identify the distinctive characteristics of the good; manufacturers are also experienced with the properties of the goods. This is the result of a good's sales peaking during its senior phase and then beginning to drop. State income finally reaches a degree where manufacturing the goods is no longer economical.

The amount spent is minimized. It would be simple to stage out the goods or sell them to rival companies. Trade could shift to developing countries. Another time, manufacturing costs play a significant role, and developed countries are working constantly to create new products. For instance, the nature of trade suggests that the item is one that affluent country like the United States have only recently started purchasing from underdeveloped 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

In the last few decades, there has been significant growth in regional and bilateral trade deals. Neoclassical and later evolved endogenous growth concepts contend that free-market economies would expand more quickly and rapidly as a result of better utilization of resources and externality allocation. Econometric analyses validate this notion in a number of emerging nations. Trade with other countries is one of the factors that helps an economy thrive and expand. Assuring a sustainable future requires entering international markets, which is crucial. With a couple of notable exceptions, all nations attempted to execute a growth plan that relied on international trade in the 1980s as a means of reducing the well-being gap between the wealthy and the poor nations. Export-oriented initiatives had begun to be suggested earlier in the decade. Economies that are relatively open to international commerce also do better in terms of growth, as several research investigations have demonstrated. The correlation between growth and international trade has demonstrated the significance of commerce in the stage of emerging nations’ development Gafowa, S. M. H. (2022).

With its economy steadily expanding, Somalia is currently emerging from a 25-year civil conflict. The main industries in operation are the agricultural sector, cattle, and the service industry, which has had tremendous growth in recent years and includes industries like telecommunications, banking, construction, hotels, and transportation. The role of trade agreements in the country’s economy is growing. The trade imbalance is caused by a large difference between imports and exports. According to the drought that affected the nation in late 2016, which reduced agricultural output and raised food prices, growth was 1.8% in 2017 as opposed to 2.4% in 2016. This was caused by a jump in inflation from 4.2% on average to 5.2%, which was a result of rising imports and decreased exports (IMF, 2018).

According to the World Bank (2017), the nominal GDP of Somalia grew from 5% in 2015 to 6% in 2016. According to estimates, urban regions will create 70% or more of the increase, meaning that communities as well as towns will host the business activity that drives this expansion. Due to the high expenses of the disagreements, there is a shortfall in the balance of payments of approximately 15% of GDP, which is greater than the country's exports of services and products, which are still quite low. Grants, FDI, and transfers can all help significantly cover the current account shortfall.

Long-term problems in Somalia are impeding the country's ability to build its export industry. First, there have been many droughts that have severely impacted farming and cattle, the two largest industries. These two industries were the only ones with excess to export after meeting demand locally and having significant economic activity. Regrettably, though, a string of severe droughts, little rainfall, and the drying of rivers led to a reduction in the output of these industries, and their work force was displaced, with most of them living in camps established by NGOs in Mogadishu and neighboring countries as refugee settlements. In the event that obstacles are effectively removed, the sector’s significance and export participation may rise considerably. There is no geographical restriction on the consequences of the famine. It affected every region of the nation and led to a decline in Somalia's total economic output.
Second, issues with politics and instability are important (Isak & Mohamed, 2017). Throughout Somalia’s last 25 years of civil conflict, there have been issues with local and maritime fear, which have had both a direct and harmful effect on economic output and trade. In light of the presence of pirates in the Indian and Red Seas, transportation services traveling to and from Somalia have substantially dropped due to the high risks involved. Because of the facilities, social contacts have decreased, and corporate entities are unable to engage with the nation due to anxiety.

When firms can invest in a conducive climate and there is sufficient technology to link people in diverse places, the market can generate excess production for export. Thus, the commercial society in Somalia migrated to other states with more favorable investment climates, such as the UAE and other African nations, where they felt secure enough to put their fortune.

Third, there was a dearth of funding for the business sector to engage in manufacturing and exporting. Independent financial institutions were unable to provide Letters of Credit to enable trade reduction, and there were no government corporate banks available to support trade deals. Due to this, only a small number of merchants are able to import and export goods into and out of Somalia, creating a dominant position in the trade sector.

Fourth, there also appeared to be a problem with other methods of quality control. In several instances, it was said that Somalia’s cattle were not in excellent health. Somalia livestock were stated to have the Riff Valley Virus sickness. As a result of the restriction on only one significant export, the trade equilibrium of the nation suffered. Some academics attribute this to a geopolitical concern. Live livestock make up the majority of Somalia’s exports, with only a few major counterparties. The rationale is that, at the point of slaughter and delivery, they carry out their own inspections for quality (UNECA, 2016).

Lastly, a major concern is the government entities’ vulnerability. As a result of the inadequate structures, there is a deficiency of subsidies, along with assistance for agriculture and animals. The government and state ministries of farming and livestock are unable to provide the necessary funding to support the industries’ core functions and increase output. Additionally, neither the federal nor state sectors of trade have any plans or policies in place to encourage the export of goods that are highly desired locally. The nation’s borders are not under the Customs Agency’s jurisdiction. This may clarify the likelihood of unreported and unofficial export activity. The Somali Federal State is having difficulty establishing a strong state, and it takes a while to boost the nation’s output. Nevertheless, it ought to set up the tools necessary to address or even mitigate these difficulties. Somalia’s trade sector is actively involved in international markets, leveraging its vast experience and expertise to facilitate trade and investment.

2.2.2 Import and Economic growth

In order to connect imports and economic growth, Uğur (2008) concentrated on Turkey. The vector autoregressive model approach was used, and raw materials and investment items were used as import substitutes. Imports and a nation’s economic progress have been found to be significantly correlated.

In order to show an empirical relationship between imports and economic development, Mishra (2012) concentrated on India. The research was influenced by the reality that, for emerging nations such as India, commerce with other countries was vital. The research also recognized the importance of the export-led hypothesis in the majority of scientific investigations. The investigation’s temporal scope included the years 2009 through 2020. The investigation showed that there is a reciprocal connection between exports and a nation’s economic expansion.

Research by Ebrahimi (2017) examined the relationship between imports and Iran’s economic expansion. Cointegration was the approach used in this investigation. The analysis included statistics on Iran’s total imports along with its GDP in practical measures. The research’s timeframe included the years 1961 until 2010. The findings showed that there was no clear cointegration link between GDP and exports. This is especially true if exports are considered independent, whereas GDP, in its actual structure, is considered dependent.

Kim, Lim, and Park's (2007) research in Korea was primarily concerned with determining the extent to which exports contributed to economic development. The research period encompassed the years 1980 until 2003. The business is greatly shaped and grows as a consequence of imports, while exports do not have an equal effect. This was clarified by pointing out that imports cause innovative technology to be transferred and products for consumers to enter the market. According to this research, freeing up imports could consequently greatly boost overall economic development.
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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Measurement</th>
<th>Data collection</th>
</tr>
</thead>
<tbody>
<tr>
<td>Export</td>
<td>Export/ GDP</td>
<td>World Bank Indicators</td>
</tr>
<tr>
<td>Import</td>
<td>Import/GDP</td>
<td>World Bank Indicators</td>
</tr>
<tr>
<td>Trade openness</td>
<td>Exp + Imp/GDP</td>
<td>World Bank Indicators</td>
</tr>
<tr>
<td>Economic Growth</td>
<td>Economic Growth</td>
<td>GDP Growth Rate</td>
</tr>
<tr>
<td></td>
<td></td>
<td>World Bank Indicators</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Variables</th>
<th>Mean</th>
<th>Median</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Std.Dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Growth</td>
<td>1.9365</td>
<td>0.0000</td>
<td>30.073</td>
<td>-18.266</td>
<td>6.4392</td>
</tr>
<tr>
<td>Export</td>
<td>9.9166</td>
<td>12.049</td>
<td>33.179</td>
<td>0.0000</td>
<td>8.6866</td>
</tr>
<tr>
<td>Import</td>
<td>27.970</td>
<td>22.573</td>
<td>88.487</td>
<td>0.0000</td>
<td>26.745</td>
</tr>
<tr>
<td>Trade Openness</td>
<td>37.886</td>
<td>36.411</td>
<td>121.66</td>
<td>0.0000</td>
<td>34.5066</td>
</tr>
</tbody>
</table>


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.

Figure 4: indicates how the economic growth of Somalia changed over the study period. The highest rate of economic growth was reported in 1980, whereas the lowest rate of economic growth was reported in 1970. 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.
Figure 4 Economic Growth in Somalia

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 1980 and 1991, 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 167th and 140th, 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.
Figure 6: illustrates how imports to Somalia have fluctuated over time. The highest and lowest import values were reported in 1980 and 1970, 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.

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 1978 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**

<table>
<thead>
<tr>
<th>Dependent Variable: GDP</th>
<th>Method: Least Squares</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date: 03/24/24 Time: 13:17</td>
<td></td>
</tr>
<tr>
<td>Sample (adjusted): 1961-2022</td>
<td></td>
</tr>
<tr>
<td>Included observations: 62 after adjustments</td>
<td></td>
</tr>
<tr>
<td>Variable</td>
<td>Coefficient</td>
</tr>
<tr>
<td>C</td>
<td>1.13E-15</td>
</tr>
<tr>
<td>Export</td>
<td>1.000000</td>
</tr>
<tr>
<td>Import</td>
<td>9.89E-16</td>
</tr>
<tr>
<td>Trade Openness</td>
<td>-7.72E-16</td>
</tr>
<tr>
<td>R-squared</td>
<td>1.000000</td>
</tr>
<tr>
<td>Adjusted R-squared</td>
<td>1.000000</td>
</tr>
<tr>
<td>S.E. of regression</td>
<td>3.82E-15</td>
</tr>
<tr>
<td>F-statistic</td>
<td>5.86E+31</td>
</tr>
<tr>
<td>Prob(F-statistic)</td>
<td>0.000000</td>
</tr>
</tbody>
</table>
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](image-url)
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.

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

<table>
<thead>
<tr>
<th>Export</th>
<th>Import</th>
<th>Trade openness</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXPORT</td>
<td>1.000000</td>
<td>0.131775</td>
</tr>
<tr>
<td>IMPORT</td>
<td>0.131775</td>
<td>1.000000</td>
</tr>
<tr>
<td>TRADE OPENNESS</td>
<td>0.129575</td>
<td>0.991983</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Heteroskedasticity Test: Breusch-Pagan- Godfrey</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null hypothesis: Homoskedasticity</td>
</tr>
<tr>
<td>F- statistic</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
<tr>
<td>Scaled explained SS</td>
</tr>
</tbody>
</table>

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 03/25/24
Time: 11:58
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

<table>
<thead>
<tr>
<th>Breusch-Godfrey Serial Correlation LM Test:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Null hypothesis: No serial correlation at up to 3 lags</td>
</tr>
<tr>
<td>F- statistic</td>
</tr>
<tr>
<td>Obs*R-squared</td>
</tr>
</tbody>
</table>

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 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.
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.

**Recommendations**

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.

**Compliance with ethical standards**

**Disclosure of conflict of interest**

The authors declare that no conflict of interest exists.
References


