



**ST. MARY'S UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

**ASSESSMENTS OF INTERNATIONAL TRADE AND ITS EFFECT ON  
ECONOMIC GROWTH IN ETHIOPIA**

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**ST. MARY'S UNIVERSITY  
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**THE EFFECT OF INTERNATIONAL TRADE ON ECONOMIC  
GROWTH OF ETHIOPIA**

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## DECLARATION

I the undersigned, declared that this thesis is my original work and has not been presented for a first degree or master's degree in any other university, and that all source of materials used for this thesis have been duly acknowledged.

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## ENDORSEMENT

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May 2019

# APPROVAL SHEET

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As members of board of examining of the final MSc thesis open defense, we certify that we have read and evaluated the thesis prepared by Soliyana Teshome under the title “THE EFFECT OF INTERANATIONAL TRADE ON ECONOMIC GROWTH OF ETHIOPIA: A TIME SERIES ANALYSIS” we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Science in Development Economics

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## **ACRONYMS AND ABBREVIATIONS**

ADF	Augmented Dickey Fuller
AIC	Akaike Information Criteria
EAC	East African Community
ECM	Error Correction Method
IMP	Import
EXP	Export
GDP	Gross Domestic Product
IMF	International Monetary Fund
MoFED	Ministry of Finance and Economic Development.
NBE	National Bank of Ethiopia
PP	Phillips - Perron
VEC	Vector Error correction

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## ABSTRACT

*This study assessed the role of international trade and its effects on economic growth in Ethiopia for the period 1979/80-2017/18 by empirically testing the long run and short run relationship and causality between export, import and economic growth, using popular time series econometric techniques of co-integration, Vector Error Correction Estimation and Granger causality test. The results from unit root test show that all variables are order one integrated; and Johansen co integration shows the existence of long run relations among the variables. Furthermore, the Granger causality test conducted indicates that in the short run there is no causality among variables but in the long run there is bidirectional causality among the three variables, including: GDP, Export and import. The short-run dynamic results shows that import have a positive significant effect on the growth of real GDP during the study period. At the same time export has a negative significant effect. Finally the coefficient of equilibrating Error Term (ECM) suggests that the speed of adjustment (feedback effects towards the long run equilibrium) takes few years for full adjustment when there is a shock in the system. In order to sustain long run growth the government or policy makers should design appropriate policies to promoting exports by producing quality goods to be competitive in international market and discourage import like food items and encourage import like raw material and capital goods.*

**Key Words:** *International Trade, Economic Growth, Export, Import, VECM, VAR*

# 1. INTRODUCTION

## 1.1. Background of the study

The relationship between international trade and economic growth has received significant attention in literature (Andersen 2008 and Ulasan 2012). International trade, as a major factor of openness, has made an increasingly significant contribution to economic growth (Sun and Heshmati, 2010). Schneider (2004) argues that imports bring additional competition and variety to domestic markets, benefiting consumers, and exports enlarge markets for domestic production, benefiting businesses. International trade exposes domestic firms to the best practices of foreign firms and to the demands of discerning customers, encouraging greater efficiency. Trade gives firms access to improved capital inputs such as machine tools, boosting productivity and providing new opportunities for growth for developing countries. It thus, difficult to understate economic growth and development. However, some models such as endogenous growth models (Schneider, 2004) have tried to link different channels of international trade with economic growth.

International trade is simply known as the exchange of goods and services between nations of the world. At least two countries should be involved in the activities, that is, the aggregate of activities relating to trading between merchants across borders. Traders engage in economic activities for the purpose of the profit maximization engendered from differentials among international economic environment of nations (Adedeji, 2006).

Theory of comparative advantage make us to understand that countries trade with each other in goods and services because of the concept of differentials in the natural resources, human capital, financial capital and technical capabilities endowment of nations. Some countries are more endowed in these resources than others, even, many countries that are adequately blessed with good resources may not have the ability to manage and channel them to their advantage, hence, denying them the opportunity of achieving the necessary growth, development and good standard of living for their citizenry.

The importance of international trade stems from the fact that no country can produce all goods and services which people require for their consumption largely owing to resources differences and constraints. As a result, this trade relationship suggests that economies need to export goods and services in order to generate revenue to finance imported goods and services which cannot be produced domestically.

In general imports play an important role in the growth process. Import is the source of raw materials not available domestically as well as technology and capital goods for raising productive capacity of the economy. Imports also help in generating economic efficiency as well as price stability (Shirazi and Manap, 2004). Aim of the import liberalization is to promote rapid economic growth through growth of export sector. Import is source of economic growth, especially if it includes hardware and electronic equipment to help and contribute to the increase and improvement of the investment or include products that require a production value of more than imported. However, import is also reflected the weakness of the state in achieving its needs itself and makes them dependent and at the mercy of foreign countries. Imports unlike exports lead to the exit of the local currency and weaken the trade balance, thus weakening economic growth.

Furthermore, in Ethiopia there are many contributors to economic growth. Export is considered as one of the very important contributors among others. In 1950s and 1960s, most of the developing countries followed the IS (import substitution) policy for their economic growth. Since the mid-1970s, in most developing countries, there has been considerable shift towards EP (export promotion strategy). This approach postulates that export expansion leads to better resource allocation, creating economies of scale and production efficiency through technological development, capital formation, employment creation and hence economic growth. The ex-port-led growth has been the focus of Ethiopian economic policy since 1992. This manuscript focuses on two macroeconomic indicators (real GDP and real export) to explain the causality between Ethiopian export performance and economic growth. Since 2003, these macroeconomic indicators trended upward. However, before 2003, the trend was inconsistency for both variables. GDP increased rapidly since 2003. The average 7% per annum economic growth rate caused significant change in GDP value. In Ethiopia in the early 1990s, the export (Hailegiorgis 2012) all rights Reserved growth rate was not stable due to the world price drop at the time. The value of exports, which relied mainly on primary products, was shown sign of change after 2003 when the new government reformed several policies including fiscal, monetary, and trade procedures that diversified exports. The years between 1992 and 2003 could be considered as transitional for the export sector, which moved from reliance on mainly traditional commodities to more diversified commodities. The effect of exports on GDP is not direct and simple to understand [World Bank, 2006].

Today, in many countries, especially the developing ones, the weakening of their currency i.e. the decrease or depreciation of their own currency in terms of foreign currencies has become a central

growth issue. These currency changes can have an expansionary or contractionary effect on economic growth. Many development organizations like International Monetary Fund (IMF) support the idea of devaluation of currency as one means of economic growth besides the financial aid and loans to their member countries for the development of domestic firms. It will increase competitiveness of firms and increase the production of domestic products and output. However, some researchers focusing on developing countries (Krugman & Taylor, 1978) shed light on the negative effect of devaluation on output. Despite ambiguous results from empirical studies devaluation of currency has been used as a growth strategy by many developing countries. Ethiopia, which is one of the sub-Saharan countries, is listed as the least developed countries in the world. Many factors explain the weak economic development of the country. Policies like building up institutions, privatization of the public sector and devaluation of the currency were used in the last twenty years in order to create a sustainable economic development.

The purpose of the paper is to analyze whether Import and export devaluations in Ethiopia have had a positive or negative effect in the short run and in the long run on Economic Growth and also the bi-directional relationships between the variables and Economic Growth. For that purpose, we have made a time series analysis of Ethiopia based on data from 1980 to 2018.

## **1.2. Statements of the Problem**

The importance of international trade on economic growth has awakened interest over the years to both policy makers and economists alike. Although theoretical links between trade and economic growth have been extensively discussed for over two centuries, a lot of controversies still abound concerning their real effects (Obadan& Elizabeth2007). The important ingredients and major components of international trade are exchange rate, imports and exports. Import of capital goods is vital to economic growth. Imported capital goods affect investment directly. This consequently constitutes the engine of economic expansion. Exports on the other hand contribute greatly to GDP. Quite a number of countries have achieved growth through an export–led strategy. Most studies as regards this subject have been done in developed countries and few in the third world countries. International trade has always been a “catalyst of growth” for global economy. In contrast, some economists are against this idea in that they believe only developed countries benefit from international trade at the expense of developing economies.

## **1.3. Objectives of the Study**

The general objective of this research is to scrutinize the effect of international trade on economic growth of Ethiopia, i.e., to determine whether there is bi-directional relationship between export, import and on economic growth.

More specifically, the study attempts:

- To briefly investigate the structures of import and export situation in Ethiopia
- To briefly investigate the trends of import and export situation in Ethiopia
- To identify the short run and long run effect of import and export on Economic growth of Ethiopia.

## **1.4. Significance of the study**

To the best of the author’s understanding, there are limited studies that have examined the impact of international trade on economic growth in Ethiopia. The importance of this paper, thus, lies in contributing to the existing literature and also in contributing to the definitive understanding of how international trade affect economic growth of Ethiopia that could have vast implications to the endeavor to improve the country’s competitiveness and to promote export, and so to formulate



good policy that could help improving the persistent trade deficit and in addition to this will it provide benefits to mega business enterprise.

## **1.5. Scope (Delimitation) and limitations of the study**

### **1.5.1. Scope of the Study**

The effect of international trade on economic growth covers a wide range of International trade form, which encompasses exchange rate, export and import. As the title of this work indicates, the study focuses only on effect of international trade on economic growth by centering on the experiences of international Trade in Ethiopia.

The research study took into account the relationship between International trade and economic growth of Ethiopia and only developing countries. A multiple linear regression model was used to estimate the existing relationship between variables then ordinary least square method was applied. The data for the study runs from 1980 to 2018 for all selected variables. This period is adopted due to the availability of a complete dataset.

### **1.5.2. Limitation of the Study**

The study only covers from the period 1979/80 -2017/18 (Derg regime and EPRDF regime) which covered thirty nine years of time-series data on macroeconomic variable that can affect economic growth in Ethiopian because of the limitation of data before 1979/80. The first greater challenge of this study is the one associated with data availability. The second challenge while doing this study is the inconsistency of data from different organizations. So as to avoid such inconsistency attempts made to stick to the same source of data as much as possible.

## **1.6. Organization of the thesis**

The paper consists five chapters with different sections and sub sections. The rest of the paper is organized as follows: the second chapter presents the theoretical and empirical literature reviews related to economic growth. Chapter three gives insight on the methodological aspect of the study which includes source and type of the data used, model specification, estimation procedure and definition of the variables. Chapter four consists both descriptive and econometric results. It discusses the regression results, main findings and interpretation. Finally, chapter five provides the conclusion and policy implications based on the main findings

## **2. LITERATURE REVIEW**

### **2.1. Theoretical Review of International Trade Theories**

The basic aim of this work is to attempt to advance on those models which basically discuss the static gains of the international trade (IT)

#### **2.1.1. Historical Development of Modern Trade Theory**

Modern trade theory is the product of an evolution of ideas in economic thought. History of economic thought is the study of the heritage left by writers on economic subjects over many years. This historical approach is useful not because one is interested in “history of economic thought” as such but because it is a convenient way of introducing the concepts and the theories of international trade from simple to a more advanced level. In particular, the writings of the Mercantilists, Adam Smith, and David Ricardo have been instrumental in providing the framework of modern trade theory. A major task of modern trade theory is to answer the following questions: 1) What constitutes the basis for trade, that is, why do nations export and import certain products? 2) At what terms of trade (relative prices) are products exchanged in the world market? and 3) What are the gains from international trade in terms of production and consumption?

##### **2.1.1.1. The Mercantilists’ View on Trade**

During the seventeenth and eighteenth centuries, a group of writers who were concerned with the process of nation building appeared in Europe. They wrote essays and pamphlets on international trade that advocated an economic philosophy known as mercantilism. In particular, the advocates of this philosophy appeared in such countries as England, Spain, France, Portugal, and the Netherlands. The doctrine of mercantilism is based on the premise that a nation can regulate its domestic and international affairs so as to promote its own interests. According to this doctrine, the solution lies in a strong foreign sector. If a country could achieve a favorable trade balance (a surplus of exports over imports), it would enjoy payments received from the rest of the world in the form of precious metals, primarily gold and silver. Underlying the mercantilists’ view of international trade was the belief that a country’s wealth was based on the holdings of precious metals (bullion or specie). Such revenues would contribute to increased spending and a rise in domestic output and employment. To promote a favorable trade balance, the mercantilists advocated government regulation of trade. In other words, tariffs, quotas, and other commercial policies were proposed to minimize imports in order to protect a nation’s trade position. This

situation implied that international trade was a zero – sum game, in which one country’s economic gain was achieved at the expense of another.

Mercantilism cannot be classified as a formal school of thought, but rather as a collection of similar attitudes towards domestic economic activity and the role of international trade. The early mercantilists were practitioners rather than theorists, and their interest was in economic policy rather than analysis. Although mercantilism has its own limitations, the doctrine has at least two modern features. First, it was highly nationalistic, giving relative importance to the well – being of the home nation rather than the foreign nation. Today, there are public officials who argue that exports are “good” because they create jobs in a country, and imports are “not good” as they take jobs from the same country. Secondly, mercantilism favored the regulation and planning of economic activity as an effective means of fostering the goals of the nation. This is also manifested in today’s world in different forms.

#### **2.1.1.2. The Classical Trade Theories**

Classical economics refers to the economic thought of the period from the mid-eighteenth to the mid-nineteenth century. The principal exponents of this economic thought were Adam Smith, David Ricardo, Jean Baptist Say, and John Stuart Mill. Classical economic theory was essentially about growth and development and set out to investigate the nature and causes of the wealth of nations and the distribution of the national product among the factors of production. The analysis took place within the framework of growing population, finite resources, and free competition in a private enterprise economy. The emphasis lay on capital accumulation, expansion of markets, and division of labor.

In their methodology, the classical economists fell into two camps. There were those who followed the inductive method (for example, Adam Smith). This group formulated premises on the basis of empiricism, derived empirical laws, reasoned on the basis of these and tested the result against other empirical data. There was a second group who followed the deductive method (for example, David Ricardo). This group was interested in making hypothetical premises, deducing conclusions from them and making no attempt to verify the results.

### **A. Adam Smith's Principle of Absolute Advantage**

Adam Smith (1723 – 1790) was a Scottish philosopher and an economist, educated at the universities of Glasgow and Oxford and subsequently a Professor of Moral Philosophy at the Glasgow University. He wrote over a wide area of which economics was only a part. His main preoccupation was with economic growth, concluding that division of labor and specialization resulted in increased output, technical progress and capital accumulation. He was a leading advocate of free trade on the grounds that it promoted the international division of labor. According to Smith, nations could concentrate their production on goods that they could make most cheaply, with all the consequent benefits of the division of labor. Though he argued for laissez faire, Smith recognized the need for government intervention, particularly to protect infant industries and industries that are important for national defense. Laissez faire is a doctrine that advocated that the economic affairs of society are best guided by the decisions of individuals. The idea has its basis in the writings of the physiocrats, but its analytic foundations lie in the work of Adam Smith and the classical school.

In 1776, Adam Smith published his famous book, *The Wealth of Nations*, in which he attacked the mercantilist view on trade and advocated free trade as the best policy for all nations. According to Smith, trade between two nations is based on absolute advantage. To explain the concept of absolute advantage, he used a simple analogy. He argued that the tailor does not make his own shoes but exchanges a suit for shoes from a shoemaker. Through exchange, both the shoemaker and the tailor gain. In the same manner, a country could gain by trading with other countries. Assuming a two-country and two-product model, international trade and specialization will be beneficial when one country has an absolute advantage (that is, can produce a good using fewer resources) in the production of one product, whereas the other country has the absolute cost advantage in the production of the other product. Smith felt that it was far better for a country to import goods that could be produced overseas more efficiently than to manufacture them at home. In other words, countries would import goods in the production of which they had an absolute disadvantage against the exporting country. On the other hand, countries would export goods in the production of which they had an absolute advantage over the importing country. Thus, according to Smith, trade is a positive – sum game, in which all players can receive a positive payoff in the game.

## **B. David Ricardo's Principle of Comparative Advantage**

David Ricardo (1772 – 1823) was a British economist who is best remembered for his theory of Rent and his theory of Comparative Cost. He started work in his father's stockbroker's office, and then began his own successful career in securities and real estate. His interest in economics was aroused from reading Smith's book, "The Wealth of Nations" in 1799. He is credited for formalizing the concept of comparative advantage. The original idea of comparative advantage dates to the early part of the nineteenth century. Although the model describing the theory is commonly referred to as the "Ricardian model," the original description of the idea can be found in an Essay on the External Corn Trade by Robert Torrens in 1815. David Ricardo formalized the idea by using a simple numerical example in his 1817 book titled, *The Principles of Political Economy and Taxation.* In what follows, attempts are made to present the assumptions of Ricardo's model and the definition of comparative advantage.

### **2.1.1.3. The Neoclassical Trade Theory**

Economists in the Classical school developed the basic propositions regarding the nature and impact of international trade in the late eighteenth and nineteenth centuries. However, their analyses were limited considerably by the labor theory of value and the assumption of constant costs. The development of neoclassical economic theory in the late nineteenth and early twentieth centuries provided tools for analyzing the impact of international trade in a more rigorous and less restrictive manner. The term neoclassical derives from the view that writers were extending and improving on the basic foundations of the classical economists.

In Ricardo's model, it has been shown that mutually beneficial trade can be achieved through the principle of comparative advantage (or comparative cost). In addition to understanding the principle of comparative advantage, one also needs to understand why each country has a comparative advantage or disadvantage in the production of various goods. What determines a country's comparative advantage is of considerable significance since the location of international production facilities and the pattern of trade throughout the world is not random.

### **The Heckscher – Ohlin (H – O) Model**

Eli F. Heckscher (1879 – 1952) was a Swedish economist and economic historian. In 1919, he published a brief article that contained the core idea of what determines nations' trade patterns. A clear overall explanation was developed and publicized in the 1930s by Heckscher's student, Bertil

Ohlin (1899 – 1979). Many elaborations (in terms of mathematical derivations) of the H – O model were provided by Paul Samuelson, an American economist and a Noble price winner in economics in 1976, after the 1930s and thus sometimes the model is referred to as the Heckscher – Ohlin – Samuelson (HOS) model. Eli Heckscher and Bertil Ohlin accepted the fact that international trade is based on differences in comparative costs, but attempted to explain the factors, which make for the differences in comparative costs.

The H – O model (or neoclassical model) is the dominant model of comparative advantage in modern economics. According to David Ricardo and Adam Smith, trade between nations takes place because of the difference in the productivity of labor, the only factor of production. The H – O model, on the other hand, goes further to explain the basis for trade as factor endowment and factor intensity. Specifically, the theory argues that relative price levels differ among nations because they have different relative endowments of factors (that is, supplies of factor of production) of production and that different commodities require differing intensities (that is, degree of factor use) of factor inputs in their production.

There are four main theorems in the H – O model: the Heckscher – Ohlin theorem, the Stolper – Samuelson theorem, the Rybczynski theorem, and the factor – price equalization theorem. The Stolper – Samuelson and Rybczynski theorems describe relationships between variables in the model while the H – O and factor – price equalization theorems present some of the key results of the model. Applications of these theorems also allow one to derive some other important implications of the model.

### **1. The Heckscher – Ohlin Theorem**

Assuming two factors of production, labor and capital, in two countries, the H – O theorem postulates that a labor – abundant (or capital – scarce) country will have a comparative advantage in the production of and export of labor – intensive goods, while a capital – abundant (or labor – scarce) country will have a comparative advantage in the production of and export of capital – intensive goods. Thus, through trade, a labor – abundant country will export labor – intensive goods (because labor is cheap or wages are low) and import capital -intensive goods, while a capital – abundant country will export capital – intensive goods (because capital is cheap or rental costs are low) and import labor-intensive goods.

A labor – abundant country is one that is well endowed with labor relative to the other country. This gives the country a propensity for producing the good which use relatively more labor in the

production process, that is, the labor – intensive good. As a result, if these two countries were not trading initially, that is, they were in autarky, the price of the labor- intensive good in the labor – abundant country would be bid down (due to extra supply) relative to the price of the good in the other country. Similarly, in the capital – abundant country, the price of the capital – intensive good would be bid down relative to the price of that good in the labor – abundant country. Thus, the H – O theorem demonstrates that a difference in resource endowments as defined by national abundances is one reason that international trade may occur.

## **2. The Stolper – Samuelson Theorem**

The Stolper – Samuelson theorem describes the relationship between changes in output, or goods, prices and changes in factor prices such as wage rates and rental rates within the context of the H – O model. The theorem states that if the price of the labor-intensive good rises, then the price of labor (that is, wage rate), the factor used intensively in that industry, will rise, while the price of capital (that is, rental rate) will fall. Similarly, if the price of the capital-intensive good were to rise, then the rental rate would rise while the wage rate would fall. Since prices change in a country when trade liberalization occurs, the magnification effect can be applied to yield an interesting and important result. Thus, a movement to free trade will cause the real return of a country's relatively abundant factor to rise, while the real return of the country's relatively scarce factor will fall.

## **3. The Factor – Price Equalization Theorem**

The factor – price equalization theorem postulates that international trade will bring about equalization (or convergence) in the relative and absolute returns to homogeneous factors across nations. In other words, international trade will cause the return labor (that is, wage rate) to be the same in all the trading nations. Similarly, international trade will cause the returns to capital (rental rates) to be the same in all the trading nations. The theorem derives from the assumptions of the model, that the two countries share the same production technology and that markets are perfectly competitive. In a perfectly competitive market, factors are paid on the basis of the value of their marginal productivity, which in turn depends upon the output prices of the goods. Thus, when prices differ between countries, so will their marginal productivities and hence so will their wages and rents. However, once goods prices are equalized, as they are in free trade, the values of marginal products are also equalized between countries and hence the countries must also share the same wage rates and rental rates. As such, international trade is a substitute for the international

mobility of factors. One should note, however, that factor-price equalization is unlikely because it assumes the same technology between countries, which is unlikely in the real world.

#### **4. The Rybczynski Theorem**

The Rybczynski theorem demonstrates the relationship between changes in national factor endowments and changes in the outputs of the final goods within the context of the H – O model. It states that an increase in a country's endowment of a factor will cause an increase in output of the good which uses that factor intensively, and a decrease in the output of the other good. For example, if the U.S. experiences an increase in capital equipment, then that would cause an increase in output of the capital – intensive good, steel, and a decrease in the output of the labor – intensive good, clothing. The theorem is useful in addressing issues such as investment, population growth and hence labor force growth, immigration and emigration, all within the context of the H – O model.

#### **An Evaluation of the H – O Model**

The gist of the H – O model (or factor – endowment and factor-intensity theory) is that comparative advantage and international trade occur because countries are endowed with different factors and the production of goods requires different proportions of these factors. There are mixed views among economists regarding the validity of this theory. Some economists are of the view that certain refinements are required on the H – O theory in order to explain the current trade patterns. Others are seeking to replace the theory with a different approach. In what follows, attempts are made to present two opposing views on the H – O theory of comparative advantage.

The first view holds that the trade patterns of the 1980s do fit into the H – O theory. For example, Japan had an export advantage in technology – intensive products such as transport equipment, machinery, chemicals, and computers because it had abundant supply of scientific personnel. On the other hand, Japan depended on imports of natural resource –intensive primary products because it had scarce resources for the production of such products. The second view reflects the challenges to the H – O theory of comparative advantage. It argues that, even with identical endowments, technology, tastes, and income distribution, trade can take place owing to increasing returns to the firm. The typical example in this regard is intra-industry trade (or trade in differentiated products). The advocates of these views utilize models of imperfect competition and economies of scale to substantiate their arguments.



Another challenge to the H – O theory was an empirical testing that was done by Wassily W. Leontie in 1954. Leontief received the Nobel in 1973 for his contribution on input – output table. He applied input – output technique to examine the structure of US foreign trade. He examined the factor composition of US exports and US imports. He considered that the US is capital abundant and thus should export capital – intensive products. His surprising conclusion was that US exports were labor-intensive, and US import substitutes were capital – intensive. Thus, his finding appeared to refute the H-O model, resulting in what is now referred to as the “Leontief Paradox.” Leontief’s findings caused considerable dismay among economists, leading to the conclusion that something was either wrong with the empirical test or with the basic theory. It turned out to be both, resulting in a better understanding of how factor abundance influences international trade. The next discussions highlight some of the explanations of the Leontief paradox.

The most important explanation for the Leontief paradox has to do with the skill level of the US workforce and its high technology. Leontief’s test, which found that US exports were labor intensive, was based on the simple two-factor version of the factor - proportions model. This simple model assumes that labor is homogeneous. However, much of the US labor force is highly skilled or possesses human capital (knowledge and skills) compared to other countries. Therefore, what needs to be considered is what constitutes a factor of production? Physical capital can be used as a factor as it was described in the simple version of the H – O theory, but the same cannot be said for labor. In other words, the knowledge and skills that the labor force (human capital) possesses should be treated as a separate factor of production. Thus, it is reasonable to argue that the basic logic embodied in the factor-proportions theory is correct. What is required is to broaden the concept of factors of production in order to include factors other than labor and capital.

#### **2.1.1.4. The New Trade Theories**

The point of departure in discussing the new trade theories is relaxing some of the major assumptions of the H – O theory. In other words, relaxing most of the assumptions of the theory only modifies but does not invalidate the theory. However, relaxing the assumptions of constant economies of scale and perfect competition requires the introduction of new trade theories which explain the significant portion of international trade that have not been explained by the H – O theory. The next discussion focuses on these new trade theories.

##### **A. Trade Based on Differentiated Products (or Intra – Industry Trade)**

There is a substantial portion of trade that the H – O model does not explain. Countries can trade similar goods with one another, known as intra - industry trade or trade in differentiated products. Differentiated products refer to similar, but not identical products such as automobiles, cigarettes, television sets, and typewriters. For example, Canada and the US have a large trading relationship based on exporting and importing automobiles to and from each another. This implies that a country simultaneously has a comparative advantage and a comparative disadvantage in the same good.

There are at least three major reasons for product differentiation. First, many varieties of a product exist because producers attempt to distinguish their products in the minds of consumers in order to achieve brand loyalty. In addition, consumers themselves want a broad range of characteristics in a product from which to choose. Since consumer tastes differ in innumerable way, some intra – industry trade emerges because of product differentiation. Secondly, in a physically large country, such as the US, transport costs for a product may play a role in causing intra – industry trade, especially if the product has large bulk relative to its value. For example, if a given product is manufactured both in the eastern part of Canada and in California, a buyer in Maine (US's state which is closer to Canada) may buy the Canadian product rather the California product because the transport costs are lower. At the same time, a buyer in Mexico may purchase the California product. Thus, the US is both exporting and importing the good. Finally, differing distributions of income can lead to intra – industry trade. For instance, producers may cater to “majority” tastes (in terms of income) within their nation, leaving “minority” tastes to be satisfied by imports.

## **B. Trade Based on Economies of Scale**

One of the assumptions of the H – O model was that both commodities were produced under conditions of constant returns to scale in the two nations. However, with increasing returns to scale, mutually beneficial trade can take place even if the two nations are identical in every respect. Increasing returns to scale refers to the production situation where output grows proportionately more than the increase in the use of inputs or factors of production. For example, if all inputs are doubled, output is more than doubled; and if all inputs are tripled, then output is more than tripled. Increasing returns to scale may occur because at a larger scale of operation, a greater division of labor and specialization become possible. In other words, each worker can specialize in performing a simple repetitive task, resulting in increased productivity. Furthermore, a larger scale of operation may permit the introduction of more specialized and productive machinery than would be feasible at a smaller – scale of operation. Thus, mutually beneficial trade is possible based on increasing returns to scale.

## **C. Trade Based on Technological Gaps and Product Cycles**

According to the technological gap model, trade among industrialized countries is based on the introduction of new products and new production processes. The innovating nation shall have a temporary monopoly in terms of patents and copyrights, which are granted to stimulate the flow of inventions. For example, the US exports a large number of new high - technology products. However, as other countries acquire the new technology, they will be in a position to produce the products at lower labor costs. In the meantime, the US producers may have introduced still newer products and newer production processes and may be able to export these products based on the new technological gap established. One shortcoming of the technological gap model is that it does not explain the reasons for and the size of the gap.

A generalization and extension of the technological gap model is what is referred to as the product cycle model. According to this model, changes in technology and the subsequent introduction of new products can change the pattern of exports and imports. The basic idea behind the product cycle model is that certain countries, primarily industrialized countries, specialize in the production of new goods based on technological innovations, while other countries, mostly developing countries, specialize in the production of the already well – established goods. Furthermore, the model postulates that the introduction of new products usually requires highly skilled labor in the production process. As the product matures and acquires mass acceptance, its

production becomes standardized, requiring less skilled labor. In this process, the comparative advantage shifts from the advanced nation that originally introduced the product to the less advanced nation with relatively cheaper labor. This may be accompanied by foreign direct investment from the innovating nation to the nation with cheaper labor. It should be pointed out that, while the technological gap model emphasizes the time lag in the imitation process, the product cycle model stresses the standardization process.

### **2.1.2. Empirical Literature Review**

There is a wide body of literature analyzing the theoretical links between exports and economic growth. According to this literature, the relationship between exports and economic growth is determined by different factors. There are four thoughts in the export and economic growth (Dritsakis, 2005). The first is the neoclassical export-led growth hypothesis. This theory suggests that the direction of causation is running from exports to economic growth for the following reasons: Export expansion will increase productivity by offering greater economies of scale; Export expansion brings about higher-quality products because of the exporter's exposure to international consumption patterns; Exports will lead a firm to overinvest in a new technology as a strategy for après commitment to a larger scale of output, increasing the rate of capital formation and technological change ;An export-oriented approach in a labor-surplus economy permits the rapid expansion of employment and real wages ; Exports contribute to a relaxation of foreign exchange (Ghirmay, Grabowski and Sharma, 2001;Dritsakis, 2005). The second view is that causality runs from economic growth to exports. Higher productivity leads to a lower unit cost, which facilitates exports growth (Sharma and Dhakal, 1994; Dritsakis, 2005). The third view, which is a combination of the first and the second views, suggests that there can be a bilateral causal relationship between exports and economic growth (Hatemi, 2002; Dritsakis, 2005)

Final, the fourth view is that there is no causal relation between exports and economic growth, namely exports and economic growth are both the result of the development process and technological change (Yaghmaian,1994; Dritsakis, 2005). Based on the above theoretical review, the relationship between exports and economic growth is in the inconclusive way. Due to that, we have reviewed the existing studies to get the cues in the export, import and economic growth through the empirical review in Asian, African, European United States, Japan, China, Iran context.

### **In the Asian Perspective:**

Kogid et al. (2011) analyzed the relationship between the economic growth and the import in Malaysia from 1970 to 2007. Results show that there is no co integration exists between economic growth and import, but there exists bilateral causality between economic growth and import. Results also show that import could indirectly contribute to economic growth, and economic growth could also directly contribute to import. These findings may be vital for future economic growth policy.

Usman et al. (2012) investigated the impact of export on the economic growth in Pakistan. Independent variables in the study include Export, Inflation and Real Exchange Rate. Ordinary Least Square has been used for empirical analysis of relationship of export and economic growth for 30 years (1980-2009). Results show that there is strongly positive and significant effect of export, Inflation and Real exchange rate on economic growth. These results are acceptable because inflation and Real exchange rate have mixed effect on Journal of Economics and Sustainable Development Economic Growth. Research gives policy makers an approach to map out the future policy standards for boosting exports in order to avail the opportunity of economic growth.

Khan et al. (2012) have approached the study on exports, imports and economic growth. The study uses the Granger Causality and Co – integration tests to examine the long run correlation among economic growth, exports, and imports of Pakistan taking time series data for the period 1972-2009. Results indicated that, both exports and imports are considered an essential part for economic growth of Pakistan. Moreover, economic growth has an important impact on exports and import. Further, successful and sustained economic growth requires growth of both exports and imports.

Kimet al. (2007) have Investigated the effect of imports and exports on total factor productivity in Korea during 1980-2003. Researchers found that Granger causality from imports to total factor productivity (TFP) growth, but no causality from exports to TFP growth. Researchers also investigated the impact of trade and other variables on TFP growth. According to the results, imports have a significant positive effect on TFP growth, but exports do not. In addition, results indicated that the positive impact of imports arises not only from the competitive pressures associated with the imports of consumer goods but also from technological transfers embodied in imports of capital goods from developed countries.

International trade, as a major factor of openness, has made an increasingly significant contribution to economic growth. Chinese international trade has experienced rapid expansion together with its dramatic economic growth which has made the country to target the world as its market. In this context, Sun and Heshmati (2010) evaluated the effects of international trade on China's economic growth through examining improvement in productivity. Both econometric and non-parametric approaches are applied based on a 6-year balanced panel data of 31 provinces of China from 2002 to 2007. The study demonstrates that increasing participation in the global trade helps China reap the static and dynamic benefits, stimulating rapid national economic growth. Both international trade volume and trade structure towards high-tech exports result in positive effects on China's regional productivity. The eastern region of China has been developing most rapidly while the central and western provinces have been lagging behind in terms of both economic growth and participation in international trade.

Rahmaddi and Ichihashi (2011) have approached the study on exports and economic growth in Indonesia: A causality approach based on multi – variate error correction model. Study concluded that, significance of both exports and economic growth to economy of Indonesia. In addition, researchers found no supporting evidence of positive causality from intermediate imports to GDP per capital.

### **In the Ethiopian context:**

Senait (2014) has approached the study on exports and economic growth nexus. The study uses the Granger Causality and Co – integration tests to examine the long run correlation among economic growth and exports of Ethiopia taking time series data for the period 1960/61 – 2011/12. Results indicated that, export had important for facilitating economic growth, and economic growth also had an impact on stimulating export growth. In other words, economic growth Granger causes export and import is also the causes for economic growth in Ethiopia in the long-run. While import is negatively related with output and export positively related to output in the short run.

Debel (2002) the study attempted to test whether exports contribute to economic growth or not in the Ethiopian context. An error-correction model and the methodological frameworks that have been employed so far in the literature were used to test the required relationship. The results suggest that exports can substantially contribute to economic growth of the country and the results obtained are not sensitive to the methodology used.

Faye (2001) the study applies the Cobb-Douglas function model to analyze the effects of exports on economic growth in context of Ethiopian economy. To determine the relationship between export and economic growth, an attempt will be made to use econometrics techniques of analysis (co-integration system) by using the RATS software package for the time series data from 1950 to 1986. From the results of the analysis, there is a positive long-run relationship between export growth and economic growth. Depending on the model selection criteria, it can be seen that the growth rate of exports has an insignificant effect on the rate of economic growth of the examined country in short run. This insignificance in short run may imply that the effect of growth in export is a long run effect rather than short run.

Alemayehu (2013) In this study, the effect of GDP growth on import, and the contribution of imported intermediate and capital goods to economic growth during the period 1960/61-1999/2000 in Ethiopia is studied. Cointegration and error correction mechanisms are used so as to separate the long run and short run relationship between import and GDP. The effect of imported intermediate and capital goods on economic growth (measured by real GDP) is also studied using the same procedure. The estimated cointegrating vectors using Johansen's cointegrating approach indicates that the long run elasticity of imports with respect to real GDP is positive but it is insignificant at 5 percent level of significance. On the other hand, real international reserve is found to affect imports positively and significantly. However, the short run elasticity of imports with respect to real GDP is positive and significant.

Those which are mentioned above are the most empirical studies conducted on determinants of economic growth in different countries. Most of Ethiopia studies determine the major source of economic growth and mostly focus on, time series data basis. Thus according to empirical studies of Ethiopia the those researchers country's economic growth is influenced by several macroeconomic variables like, export had long run effect on economic growth rather than short run, and Ethiopian economy import oriented while its export is dominated by primary agricultural products and import has short run positive effect.

### **3. RESEARCH METHODOLOGY**

#### **3.1. Research Design**

The study made use of the quantitative research design because of the quantifiable and the numerical data that is produced in the processes and in order to achieve its objectives. It is the most appropriate design for identifying the causal relationships between the growth of GDP and other major macroeconomic variables. This research deals with the manipulation of the empirical variables from time series data for the period 1980 to 2018.

#### **3.2. Data Types and Sources**

The data used for this study is a quantitative data type which is based on some measurement of characteristics. Because most time series data are quantitative in nature and all the variables used in this model are macroeconomic variables which are expressed in quantitative terms.

To conduct the study fruitful, the researchers used time series data. Time series data source for this study include different annual publications of the National Bank of Ethiopia, International Financial Statistics (IFS) publications, the WTO, IMF and World Bank databases, Ethiopian Macro model data base, Central statistical Agency in Ethiopia, Ethiopian Investment Agency, Ministry of finance and Development in Ethiopia direction of trade publications and other relevant sources and covers a period of roughly 39 years. The employed model is believed to be appropriate and simple to examine the relationship between international trade and Economic growth in Ethiopia.

#### **3.3. Method of Data Analysis**

The study uses both the descriptive and econometric methods of data analysis. Graphs and tables are descriptive statistical methods used to briefly explain the macroeconomic performances and trends of the variables used in the model and descriptive statistics. The econometrics analysis includes testing of important tests, the estimation of the model and interpretation of results based on econometric model results. To analyze the data, the statistical package of E-views software version 8.0 is used. .



### 3.4. Econometric Model Specification

Vector autoregression (VAR) models were introduced by the macro econometrician Christopher Sims (1980) to model the joint dynamics and causal relations among a set of macroeconomic variables. Basic macroeconomic relationship is used in this study to examine the relationship between international trade and economic growth using Vector Autoregressive Model (VAR). The VAR method is powerful in causal analysis of variables, since all the variables in a VAR are systematically treated endogenous by including for each variable an equation explaining its evolution based on its own lags and the lags of all the other variables in the model. Thus, in order to examine the short-run dynamics and long-run relationships among export, import, exchange rate and economic growth, the study employs co-integration and Granger causality test in the VAR form as:  $U(\text{VAR})=(Y \text{ Exp Imp } )$ . Following Lai, (2004), Wong (2007, 2008) and Chimobi and Uche (2010), the model could be specified as:

$$Y=f(\text{Exp, Imp}) \text{-----} (1.1)$$

In an econometric form equation (1.1) can be stated as:

$$\text{LnY}_t = \beta_0 + \beta_1 \text{LnExpt} + \beta_2 \text{LnImpt} + \varepsilon_t \text{-----} 1.2$$

Where,  $Y_t$  is economic growth proxied by GDP, Expt is export (%GDP), Impt is import (%GDP) and  $\varepsilon$  is the white noise error term.

### 3.5. Definition variables

**International trade:** - is simply known as the exchange of goods and services between nations of the world. At least two countries should be involved in the activities, that is, the aggregate of activities relating to trading between merchants across borders. Traders engage in economic activities for the purpose of the profit maximization engendered from differentials among international economic environment of nations (Adedeji, 2006).

**GDP:** -is the total market value or monetary value of all finished goods and services produced in a country borders in a specified time period and calculated on annual basis.

**Export:** - is the goods and services produced in on country and purchased by resident of another country. It doesn't matter what the good or service is. It doesn't matter how it can be shipped, sent by e-mail, or carried in personal luggage on a plane. If it is produced domestically and sold to someone in foreign country, it is an export. Export is one component of international trade. (Kimberly, 2019)

**Export:**-consists of the real values of transactions in goods and services from residents to non-residents .the revenue from exports made the import of inputs possible that are crucial for development purposes there by playing as an engine of growth to other sectors. Exports are expected to have positive impact on economic growth as it is the main source of foreign currency earnings.

**Import:** - is a good or service brought into one country from another. The word import derives from the “port” since good are often shipped via boat to foreign countries. A country import more than it export it runs a trade deficit and if it import less than export, that creates a trade surplus

### **3.6. Estimation Procedure**

Many economic and financial time series exhibit trending behavior or non-stationery in the mean. Therefore, it is necessary to test the stability of the series before identification of the relationship between variables. The regression analysis among the variables would not be consistent and spurious regression problem would occur if unstable data are used. So the data must be transformed to stationary form prior to analysis (the detail description will mention under Econometrics model Result)

### **Diagnostic tests**

Diagnostic tests like serial correlation, functional form, normality distribution of the residuals and hetroscedacity tests are checked because they affect the model’s precision.

### **3.7. Vector Autoregressive Model (VAR).**

In order to estimate the long run and short run relationship between dependent variable (GDP) and independent variables (Export and Import) the study applies the Vector Autoregressive Model (VAR) to co-integration and Vector error correction depending on the degree of stationary levels of the variables. The reasons for using VAR and VECM are that it has a number of advantages over the other methods to estimate the long run relationships among variables. It is ease to implementation and testing for granger causality. An error correction model (ECM) belongs to a category of multiple time series models most commonly used for data where the underlying variables have a long-run stochastic trend, also known as co integration. ECMs are a theoretically-driven approach useful for estimating both short-term and long-term effects of one time series on another. The term error-correction relates to the fact that last-period's deviation from a long-run

equilibrium, the error, influences its short-run dynamics. Thus ECMs directly estimate the speed at which a dependent variable returns to equilibrium after a change in other variables.

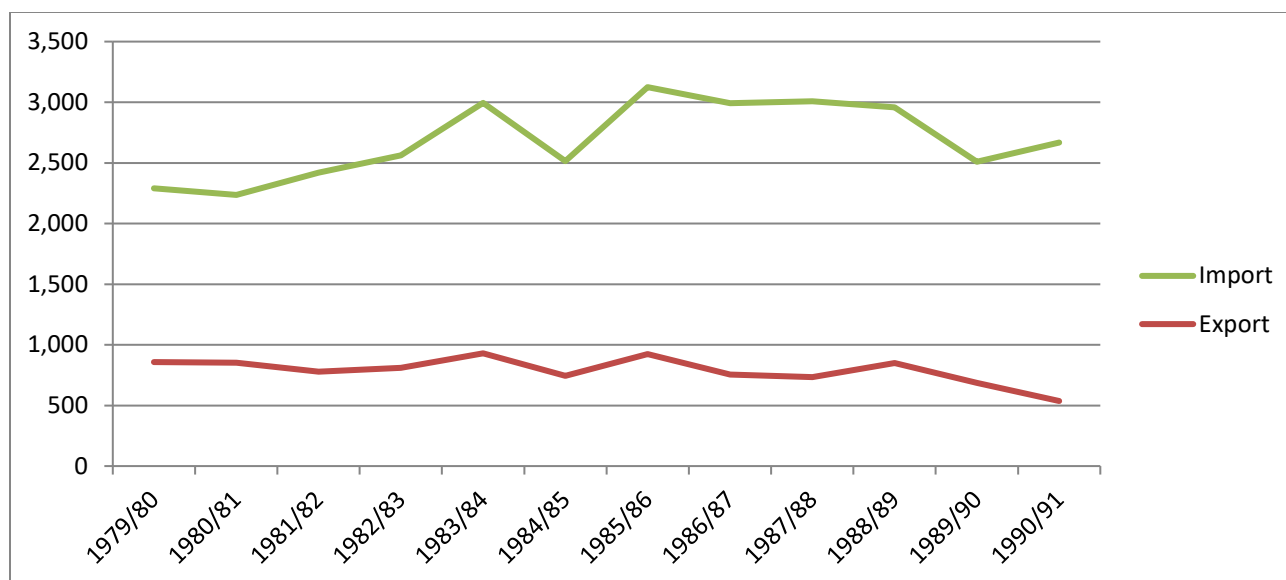
## **4. RESULT AND DISCUSSIONS**

This chapter contains both the descriptive analysis and econometrics analysis. Under the descriptive statistics the trends and overall performances on international trade on Economic Growth. The statistical tools such as tables and graphs are used to describe the variables used in the model. The econometric analysis begins by testing the necessary tests such as stationary tests and diagnostic tests. After passed the necessary tests both the long run and short run models are estimated using VAR and Error Correction respectively. After estimation has been made the interpretation and discussion are continued based on the model results.

### **4.1. Descriptive Statistics Results**

#### **4.1.1. Derg Regime 1974 – 1991**

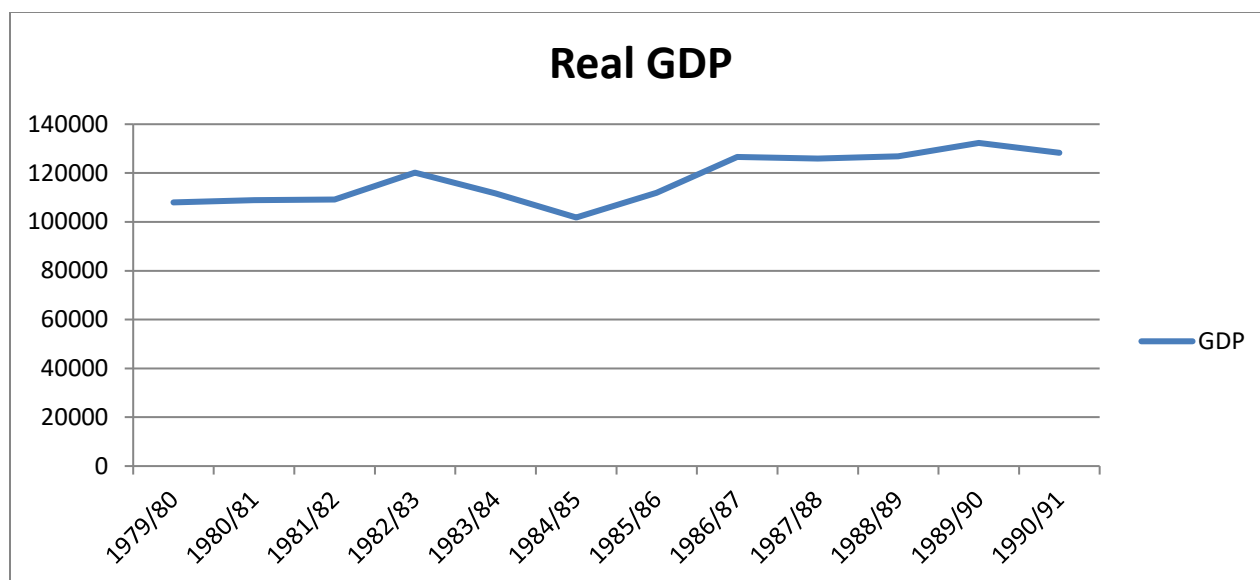
Under military rule during the period that spanned nearly two decades, Ethiopia's economy was excessively regulated and virtually closed to international trade. Ethiopia became isolated and inward-oriented. In advised economic restructuring based on central planning and nationalization of all private enterprises reduced the vibrant private sector virtually to futile small-scale activities. Government controlled marketing establishments that offered poor prices compared to what farmers could have obtained in a free trade did not help. Command economy coupled with prolonged civil war devastated the economy during the dark days of the military. High tariffs as high as 230 percent on certain luxury consumer goods, and a variety of quantitative restrictions including quotas, direct prohibition, strict licensing and foreign exchange rationing constrained the country's import trade. With the military's newly found trading partner in the 1980's, Ethiopia's sent about 5 percent of its total exports to the Soviet Union, while about 16 percent of its imports came from that country. Overall exports declined to 8 percent of GDP, and imports rose to 21 percent. Imports included equipment and machinery, intermediate goods for agriculture and industry such as fertilizer and fuel. Under the military, Ethiopia suffered from chronic droughts and famines and became a net importer of food in the 1980's. The military government ran continuous trade deficit and the country's international trade status was dismal with massive imports and tiny exports. (Yonnas, 2017)



Source: Computed based on NBE data

Figure 1: Trends of Total Export and Import in Ethiopia from 1980-1991

The figure (1) above shows that some fluctuations of total export and import from the beginning up to the year 1991. When considered export from 1980 to 1984 it has been constant, from 1984 to 1985 export decreased and at the same time increased until 1996 then become constant from 1986 to 1989 then the graph shows sharp decrement until 1991. In addition to export there is also high fluctuation for import from 1980 to 1984 the graph is slowly upward indicating higher rate of growth from 1984 to 1985 the graph is sharply decrease and also sharply increase from 1985 to 1986 then it shows relatively constant increment and become decrease in 1989 to 1990 then it shows increment. In general import shows slightly increment on the reverse export shows negative result since 1980 to 1991.



Source: Computed based on NBE data

Figure 2: Trends of Total real GDP in Ethiopia from 1980 to 1991

According to NBE, (2017/2018) the real GDP of Ethiopia was 108023 million birr in 1980 and it reaches 128347 million birr in 1991. However, the annual growth rate of real GDP between the two periods was experiencing both negative and positive growths.

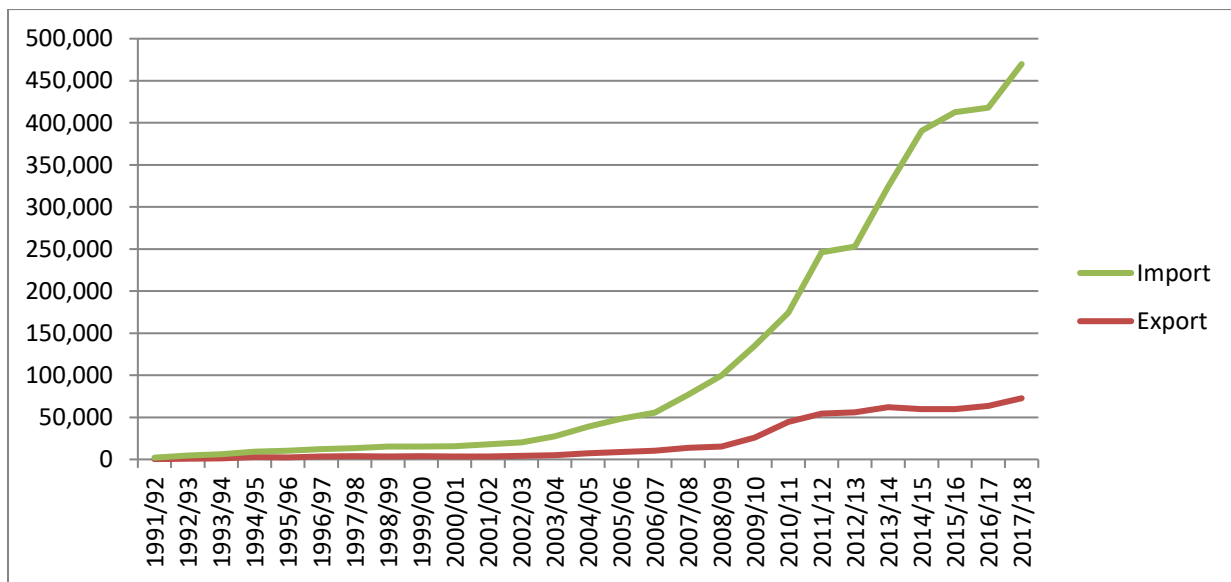
The figure (2) above shows that some fluctuations of total real output from the beginning up to the year 1991 whereas relatively consistent increment from 1980 onwards. In addition to that from 1983 to 1985 onwards the graph is sharply downward indicating lower rate of growth and constantly upward indicating higher rate of growth from 1985 to 1990 then slightly downward. This is due to Command economy coupled with prolonged civil war devastated the economy during the dark days of the military.

From figure 1 and 2 above during the period from 1979/80 to 1990/91 export, import and GDP have downward and low rate of growth and constantly upward rate of growth as a result of war and instability. This same fluctuation indicates import and export have effect to GDP.

#### 4.1.2. EPRDF from 1991 to Present

Fast forward to today, Ethiopia has opened its economy to international trade, though it continues to experience significant deficit in its foreign trade balance. It continues to import most of its machinery and equipment, and its intermediate goods for agriculture and industry. As of 2017, it exports annually a little over USD six billion of goods and services to its trading partners while importing nearly USD 20 billion worth of products and services from them. International trade accounts to 31.5 percent of GDP.

Presently, Ethiopia's leading export goods include coffee, dried vegetables, gold, meat, leather and leather products. More than 40 percent of its exports go to its major export trading partners, United States, Saudi Arabia, Germany Switzerland, and China. Nearly 60 percent of its goods and services are sold to the rest of the world. Ethiopia's major imports are petroleum, motor vehicles, medical machinery and equipment, palm oil, and chemical fertilizers. It also buys most of the consumer goods such as cell phones, computers, radios, televisions, pharmaceuticals, and textiles that have significant local demand. It buys these goods from its major import trading partners, China, United States, India, Kuwait, Japan, and the rest of the world. Now days, nearly a third of Ethiopia's imports come from China (Yonnas, 2017).



Source: Computed based on NBE data

Figure 3: Trends of Total Export and Import in Ethiopia from 1991-2018

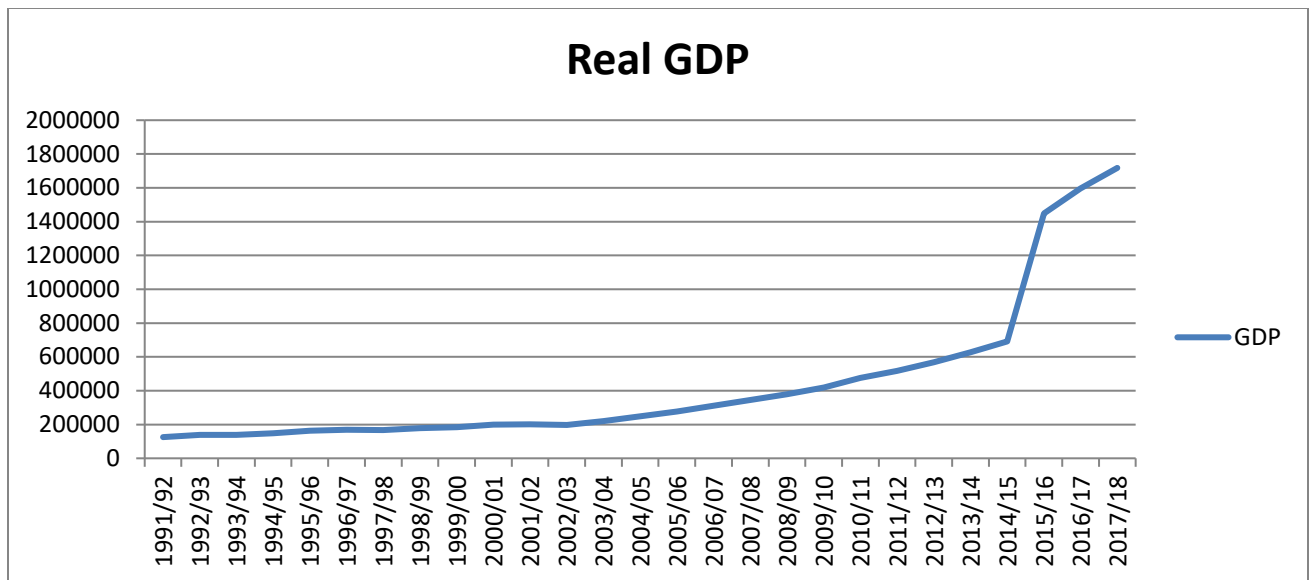
The figure (3) above shows that constant and sharp upward increment of total export and import from the beginning up to the year 2018, whereas relatively consistent increment for export from

1991 to 2008 and slow upward increment from 2008 to 2018. In addition to export there is also constant and high upward increment for import from 1991 to 2018. For both export and import the graph is slowly upward increment indicating positive rate of growth. When comparing the export income and import expense Ethiopia has incurred more import expense than export income that means net income is negative.

According to official Ethiopian trade statistics (2017), imports of agricultural products have grown from just over \$1 billion in 2010 to nearly \$1.8 billion in 2015. Similarly, over this same period, imports by volume increased from 1.9 million to 3 million metric tons. As the country's economy continues to steam ahead and as the population grows from its current level of nearly 100 million inhabitants, imports of agricultural products are expected to continue growing as demand outpaces local production capacity. NBE 2009/10 import bill grew by 7 percent and reached UDS 8.3 billion from UDS 7.7 billion last year. This was attributed to the increase in the value of import items like semi-finished goods (7.6 percent), fuel (4.3 percent), capital goods (16.6 percent) and consumer goods (5.5 percent), offsetting the 40 percent slowdown in raw materials import. As a result, the share of imports in total GDP rose to 26.5 percent from 24 percent a year ago.

In 2016/2017, Ethiopia's major exports included coffee (30%), oil seeds (12%), cut flowers (11%), pulses (10%), gold (9%) and chat (qat) (9%). Ethiopia's total export earnings by value declined by 1% in 2016/2017 from the previous year. Depressed commodity prices are the leading cause of this drop in exports. Concerning the external sector the 2015/16 fiscal year witnessed poor performance in merchandise export which dropped by 5.0 percent over the previous fiscal year due to lower international commodity price of some export item such as oilseed coffee gold chat, leather and leather products (NBE 2015/16)



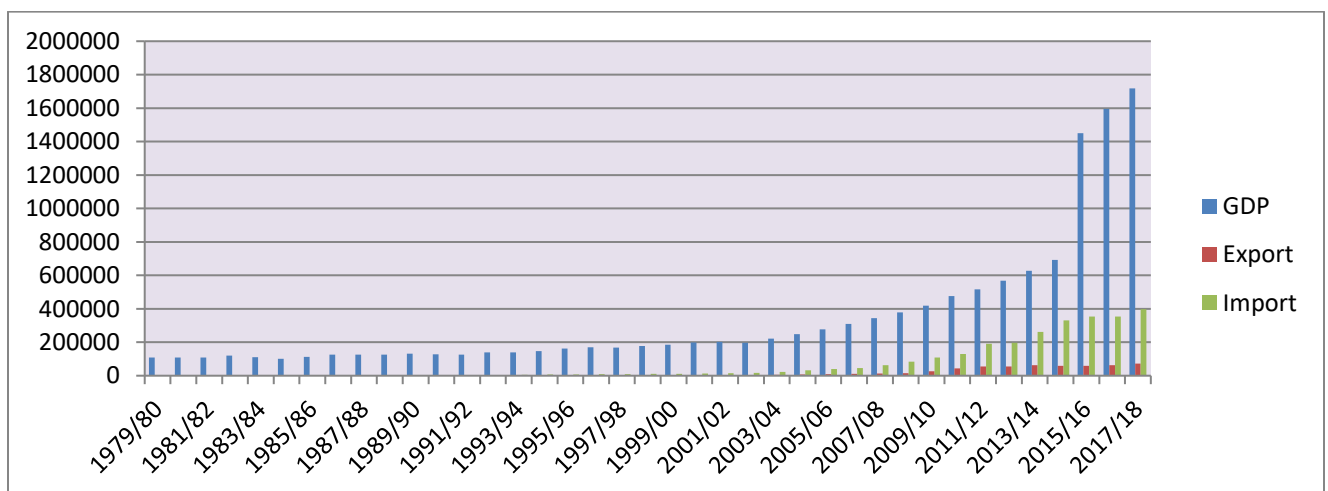


Source: Computed based on NBE data

Figure 4: Trends of Total real GDP in Ethiopia from 1992 to 2018

According to NBE, (2017/2018) the real GDP of Ethiopia was 125406 million birr in 1992 and it reaches 1717795 million birr in 2018. However, the annual growth rate of real GDP between the two periods was experiencing positive growths.

The figure (4) above shows that constantly increment of total real output from the beginning up to the year 2018 whereas relatively consistent increment from 1992 onwards. In addition to that from 2005 onwards the graph is sharply upward indicating high rate of growth.



Source: Computed based on NBE data

Figure 5. Trend on Real GDP Export and Import since 1980 to 2018

According to the time series analysis, researchers utilized the variables as GDP, export and import to explain the trend in Ethiopia since 1980 to 2018. Ethiopia GDP has been increasing since 1980, and also, we observed that, continuous increment. Export income and import expenses have been increased slowly. At the Meantime, Import expenses are higher than the export income in the Ethiopia context over the last 39 years. When compare to effect of import and export to GDP, Import effect is higher than export effect on GDP because the Import volume greater than the export volume.

From the above trend analysis Ethiopia open its economy to international trade since 1903, its export grew by 1.6 percent a year on average throughout the 1960 and rose 8 percent in 1970 and export consisted only a small share to total output. However, between 1950 to 1957 there were annual trade surplus about 0.2 million Ethiopia Birr. After 1958 the country experienced import which was greater than export, as a result in 1960 there was trade deficit During 1973 to 1974 export count 13 percent for while import count 12 percent to GDP. During the military government Ethiopia face trade deficit and export contribute only 8 percent and import 21 percent to GDP. Since 1991 to present Ethiopia face trade deficit. Total merchandise export earnings declined by 2.3 percent over last year due to lower earnings from export of coffee (5.0 percent), pulses (3.7 percent), gold (52.0 percent), live-animals (9.6 percent), chat (3.6 percent) and other export items (2.9 percent). Hence, the ratio of merchandise export to GDP declined to 3.1 percent from 3.6 percent a year ago (NBE 2017/18). In general when compare the effect of import and export to GDP, Import effect is higher than export effect to GDP and International trade have effect on economic growth.

## 4.2. Econometrics Model Result

### 4.2.1. Tests for unit roots: ADF and PP

A time series variable is said to be covariance (weakly) stationary if it has constant mean, time invariant variance and a covariance between any two time period that depends only on the lag between them (Gujarati, 2004). Whereas, a non-stationary series has a different mean at different points in time and its variance increases with the sample size. So, the primary task in an econometric work is to check whether a series is stationary or not. Because using the classical estimation methods to estimate relationships with non-stationary variables results in spurious regression (Wooldridge, 2004 Gujarati, 2004).

The well-known Augmented Dickey- Fuller (1981) and the Phillips Perron (1988) tests were applied to test the existence of unit root and ascertain their order of integration. The primary interest is to determine whether the variables are stationary or not, both of these unit root tests suggest that the variables under examination are a unit root process at levels, and hence, integrated of order one, I (1). The unit root test is undertaken both at the intercept and intercept plus trend regression forms, and the results of Augmented Dickey- Fuller (ADF) and PP unit root tests are given in Tables 1.1 and 1.2 below.

Table 1: Dickey- Fuller (ADF) and PP output A

<b>ADF</b>							
<b>Intercept at Level</b>				<b>Intercept and Trend at Level</b>			
Variable	t-statistic	Critical value at 5%	P value	Variable	t-statistic	Critical value at 5%	P value
GDP	4.203263	-2.945842	1.0000	GDP	4.252055	-3.548490	1.0000
Exp	0.861989	-2.943427	0.9938	Exp	-0.792688	-3.536601	0.9572
Imp	-0.988356	-2.963972	0.7444	Imp	-1.770010	-3.568379	0.6939
<b>PP</b>							
<b>Intercept at Level</b>				<b>Intercept and Trend at Level</b>			
Variable	t-statistic	Critical value at 5%	P value	Variable	t-statistic	Critical value at 5%	P value
GDP	5.552680	-2.941145	1.0000	GDP	2.124282	-3.533083	1.0000
Exp	1.680544	-2.941145	.09994	Exp	-0.303770	-3.533083	0.9877
Imp	4.672680	-2.941145	1.0000	Imp	1.641666	-3.533083	1.0000

Source: Model Result

The result shows that all the variables are non-stationary in levels, this can be seen by comparing the value of T statistic and critical value, as it shows that the value of T statistics is smaller than the critical value which means that all the variables are non-stationary in the levels and the value of probability is also higher than 5% which also prove the variables are non-stationary in level, so in order to make them stationary we have applied the ADF test and PP test at the 1st difference of all variables and the results are presented in below table 2.

Table 2: Dickey- Fuller (ADF) and PP output B

<b>ADF</b>							
<b>Intercept at 1st difference</b>				<b>Intercept and Trend at 1st difference</b>			
Variable	t-statistic	Critical value at 5%	P value	Variable	t-statistic	Critical value at 5%	P value
GDP	3.083054	-2.954021	1.0000	GDP	-5.514874	-3.56601	0.0003
Exp	-2.585560	-2.943427	0.1049	Exp	-3.308344	-3.536601	0.0806
Imp	-1.914405	-2.971853	0.3212	Imp	-2.012216	-3.580623	0.0697
<b>PP</b>							
<b>Intercept at 1st difference</b>				<b>Intercept and Trend at 1st difference</b>			
Variable	t-statistic	Critical value at 5%	P value	Variable	t-statistic	Critical value at 5%	P value
GDP	-4.642903	-2.943427	0.0006	GDP	-5.514874	-3.536601	0.0003
Exp	-2.713255	-2.943427	0.0814	Exp	-3.685090	-3.536601	0.0845
Imp	-3.449812	-2.943427	0.0153	Imp	-5.161566	-3.536601	0.0009

Source: model result

As the results are showing that after taking the 1st difference the values of T statistics are greater than the critical value and probability is also lower than 5% for GDP, import and export which can be interpreted as the variables are stationary at the 1st difference.

Although the individual series could be non-stationary, a linear combination of them might be stationary (Engle and Granger, 1987); which means a well-defined linear relationship exists among them in the long run. So, the subsequent discussion provides a test for co-integration between the variables under investigation in which the null hypothesis claims no co integration.

#### 4.2.2. Vector Autoregressive (VAR)

Optimal lag length determination in vector autoregressive (VAR) model precedes the task of testing co-integration relationship. Hannan-Quinn information criteria (HIC), the Log Likelihood (LL), the Schwarz information criteria (SIC) and the Akaike information criteria (AIC) models are considered for selecting the optimal lag. Empirical literature often suggests the use of the Hannan-Quinn criterion (HQC), Akaike Information Criterion (AIC) and the Schwarz Bayesian Criterion (SBC) to select the lag length of the VAR system especially for small sample size i.e up to 60 or less (Asghar and Abid 2005).

This study determined the optimal lag length according to the VAR lag order selection criteria; and hence, FPE, AIC, SC and HQ information criterion models select the same lag length which is 3. So in this study, the lag length used for co integration test is 3. The result is given in Table 3.

Table 3: Vector Autoregressive (VAR)

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-1804.183	NA	8.04e+39	100.3991	100.5310	100.4451
1	-1667.081	243.7369	6.54e+36	93.28228	93.81012	93.46651
2	-1644.515	36.35710	3.12e+36	92.52858	93.45230	92.85099
3	-1573.463	102.6301*	1.02e+35*	89.08127*	90.40087*	89.54185*
* Indicates lag order selected by the criterion						
LR: sequential modified LR test statistic (each test at 5% level)						
FPE: Final prediction error						
AIC: Akaike information criterion						
SC: Schwarz information criterion						
HQ: Hannan-Quinn information criterion						

Source: Model result

### 4.2.3 Long Run Co-integration Test

Co-integration is an econometric technique used to test the relationship between non-stationary time series variables. “If two or more variables are non-stationary with themselves and become stationary at differenced I (1) series but the linear combination of them is stationary, then the variables are said to be co integrated.” The Johansen co-integration test is used to determine the number of co integrated variables for any given number of non-stationary variables of the same order. This test can be considered as a long run equilibrium relationship among the variables. The objective of the Co-integration test is to investigate that a group of non-stationary variables are co integrated or not. It is mentioned above that most macroeconomic data is non stationary, that is said to be integrated of order one I (1) we proceed to next step which demands that the variables should be co-integrated with each other in order to investigate whether the long run relationship exists between the variables or not.

#### 4.2.2.1. Johansen co-integration test.

Johansen co-integration test we use the maximum Eigen value test under the null hypothesis that no co-integration between the variable. If the probability is less than 5% than we will reject the null hypothesis otherwise fail to reject and the results are presented in the following table 5 & 6.

Table 4: Unrestricted Co integration Rank Test (Trace)

Hypothesized No. OF CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	p- value
None *	0.691624	129.0428	29.79707	0.0000
At most 1 *	0.332426	43.40376	15.49471	0.0089
At most 2 *	0.159809	20.42589	3.841466	0.0136

Source: Model result

Table 5: Unrestricted Co integration Rank Test (Maximum Eigen value)

Hypothesized No. OF CE(s)	Eigen Value	Trace Statistic	0.05 Critical Value	p- value
None *	0.691624	41.17525	21.13162	0.0000
At most 1 *	0.332426	14.14370	14.26460	0.0522
At most 2 *	0.159809	6.094413	3.841466	0.0136

Note: \* indicates the rejection of null hypothesis

Source: Model result

Both Trace and Max-Eigen test statistic are greater than their respective critical values, and the p-values of both tests are significant at 5 per cent significance level. This implies that there are three co-integrating equation, and thus conclude that there is a long-run relationship between the variables. Thus, the four variables of the study (i.e., GDP, export, import, exchange rate) have long run equilibrium relation between them. But in the short run there may be deviations from the equilibrium.

#### 4.2.3. Vector Error Correction Model (VECM)

After the existence of co-integration among variables is confirmed, the next step demands the construction of error correction mechanism to indicate the speed of adjustment from the short run equilibrium to the long-run equilibrium state. In order to estimate the dynamic short run model, the first difference of all variables are estimated using VECM by including one period lag of the vector error term saved from the long run equation.

Table 6: Result of VECM estimate

Variables	Coefficient	St. Error	t- value	P- value
C(1)	-0.326787	0.093887	-3.480655	0.0019
EXPC(5)	-0.016881	0.002496	-6.763608	0.0000
EXPC(6)	-0.016931	0.005971	-2.835605	0.0091
EXPC(7)	-0.026015	0.003307	-7.867509	0.0000
IMPC(8)	0.006849	0.001040	6.583287	0.0000
IMPC(9)	0.007481	0.000701	10.67226	0.0000
IMPO(10)	0.003364	0.002249	1.496216	0.1476
Log likelihood	-392.5176			
F-statistic	116.7764***			

Source: Model result

In the result, the term C (1) is known as the error correction term or the speed of adjustments towards equilibrium and it shows the long run relationship between the variable. If the value of C(1) is negative we can say there is a long-run relationship and probability less than 5% therefore we can say that there is significant relationship that means there is long run relationship from export, and import to GDP and the relationship is also significant. However, the effect of import is positive and significant in the short run. This is consistent with the Kim, et al.(2007) and Alemayehu (2013) and contradicts from the findings of Senait (2014) in the case of Ethiopia. The effect of export is negative and significant in the short run contradict with the finding of Senait (2014).

Generally, the magnitude of export and import in the long run are much higher and significant than the short-run effect indicating that the effect of change in those variables on economic growth are much stronger in the long-run than in the short run.

#### 4.2.4. Granger Causality Test

VECM can tell us only about the long run and short run relationship between the variables but it doesn't show the direction of causality that either export import and exchange rate causes the GDP or GDP causes the export, import and exchange rate so to check the direction of causality we estimate the Granger Causality Test with the null hypothesis that export import and exchange rate cannot cause GDP and vice versa. Now by considering GDP as a dependent variable and export, import and exchange rate as independent variable, the results are presented below

Table 7. Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
LNEXPORT does not Granger Cause LNGDP	36	4.09320	0.0154
LNGDP does not Granger Cause LNEXPORT		5.64258	0.0036
LNIMPORT does not Granger Cause LNGDP	36	12.3461	2.E-05
LNGDP does not Granger Cause LNIMPORT		27.4674	1.E-08
LNIMPORT does not Granger Cause LNEXPORT	36	7.19039	0.0009
LNEXPORT does not Granger Cause LNIMPORT		16.8933	2.E-06

Source: Model result



In the long run the causality test indicates that exports and imports influence the GDP. On the other hand, the GDP does influence exports, imports and there is also causal relationship between exports and imports. In general there is bidirectional relationship between export, import and GDP.

#### **4.2.5. Residual Diagnostics Tests**

##### **4.2.5.1. Heteroskedasticity and Autocorrelation Test**

To verify that our empirical work is acceptable and that our estimate is well treated, we use a set of tests called residual diagnostic tests.

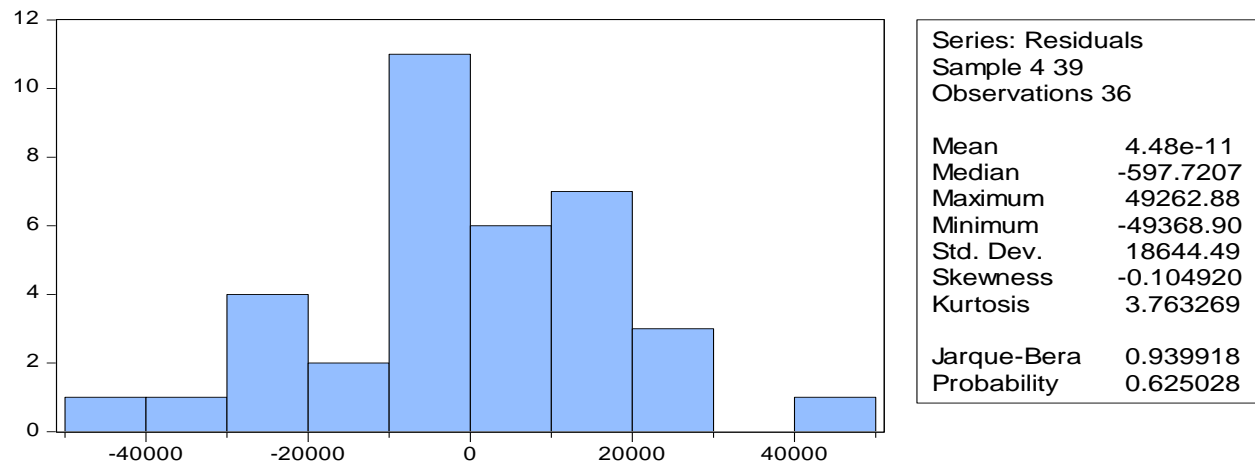
Table 8: Residual Diagnostics Tests

R-squared	0.978340
Adjusted R-squared	0.968413
F-statistic	98.54964
Probability (F-statistic)	0.000000
Breusch-Godfrey Serial Correlation LM Test:	0.1130
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.6110

Source: model results

All residual diagnostic tests are satisfactory and assert that our model is acceptable and well treated ( $R^2$  is greater than 60%, Fisher statistical probability is less than 5%, Breusch-Godfrey Serial Correlation LM Test and Heteroskedasticity Test are superior to 5%).

#### 4.2.5.2. Normality test

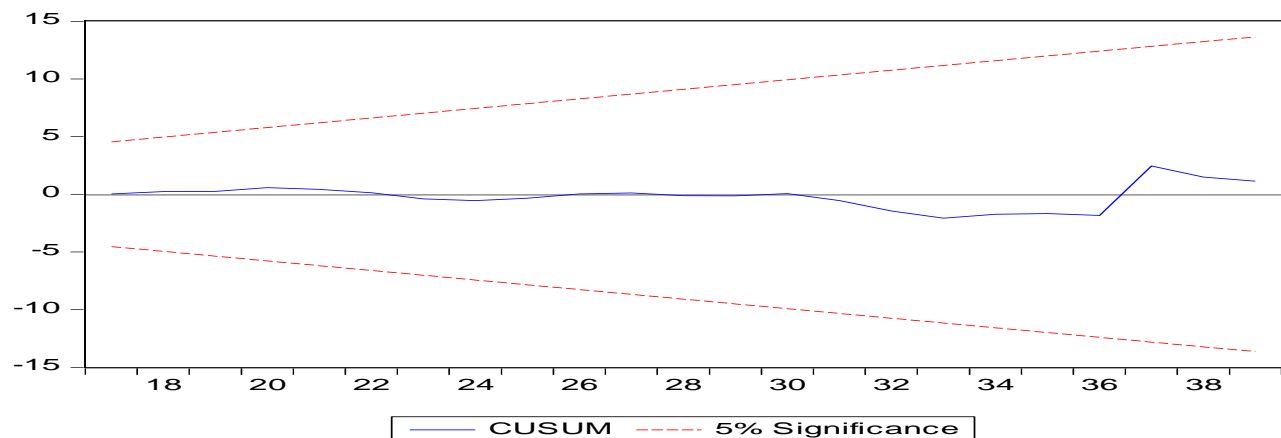


Source: model result

Figure 6: Normality test

Residual of this model is normally distributed and that is desirable probability value is more than 5% critical value

#### 4.2.6. Stability Diagnostics



Source: Own estimation using Eviews 8.0

Figure 7. Stability test

The model is stable it lies between the two sets that is 5% critical value boundary

## 5. CONCLUSION AND POLICY IMPLICATIONS

### 5.1. Conclusion

The study examined the contribution of export and import in economic growth of Ethiopia from 1979/80 to 2017/2018 from using annual time series data. In empirical analysis, Augmented Dickey Fuller (ADF) and Phillips Perron (PP) unit root test were used in testing the stationarity of the variables. The study result shows that all variables (i.e GDP export and Import) are found to be integrated of order one  $I(1)$ ). Therefore, the study proceeds to determine the existence or otherwise of co-integrating vectors in the variables. The result of Johansen co-integration test shows that GDP, export and import are co-integrated (i.e., they have long-run equilibrium relationship).

In the short-run import positively and significantly affect economic growth of Ethiopia, while export is negatively related with output. The result of Granger causality test shows a long-run bidirectional causality that goes from export and import to economic growth; from economic growth and import to export; and from economic growth and export to import. The existence of bidirectional causality between export and economic growth necessitate the formulation of both export oriented and import substitution policies.

Generally, export and import are important for facilitating economic growth, and economic growth also has an effect on stimulating export and import growth. In other words, economic growth Granger causes export and import while export and import are also the causes for economic growth in Ethiopia in the long run. Export and import have effect on economic growth and on the reverse economic growth also has effect on export and import, they have bidirectional relationship.

## 5.2. Policy Implications

Despite the focus on export diversification in the development plans of the country, the export pattern is still dominated by traditional produces whose world price has been fluctuating. The findings of the study suggest that:-

- The country needs to strengthen promotion and expansion of domestic industries which concern on the quality and international market competitive product,
- Strengthen export capacity to promote diversification by using different media for both in the export and domestic industrialization sector to fully exploit the benefits of those sectors and achieve a sustainable growth.
- Designing export promotion strategies by conducting Information on the market availability, size and potential of the markets policies and support services conducive towards stimulating competitiveness,
- Designing import substitution promotion strategies, by emphasize on discourage import like food items and encourage import like raw material and capital goods. Reduce the dependence on imports of consumer goods from the industrialized countries by manufacturing these goods at home. But in order to protect these relatively high-cost industries at home, Ethiopia must establish very high protective tariffs. These policies would be more advantageous for achieving an accelerated economic growth.

Generally, focus on quality product and using different media for promotion of export and focus on import raw material and capital goods will facilitate the economic growth of Ethiopia.

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## APPENDIX

Appendix A: Real data entered to the regression GDP, export and import variables are measured in millions birr

<b>Periods</b>	<b>GDP</b>	<b>Export</b>	<b>Import</b>
1979/80	108023	857	1,433
1980/81	108920	852	1,384
1981/82	109170	778	1,642
1982/83	120202	810	1,753
1983/84	111616	930	2,065
1984/85	101803	745	1,770
1985/86	111910	923	2,201
1986/87	126611	754	2,237
1987/88	125936	734	2,275
1988/89	126868	849	2,110
1989/90	132336	686	1,824
1990/91	128347	537	2,130
1991/92	125406	300	1,811
1992/93	139412	932	3,619
1993/94	139480	1,404	4,740
1994/95	147455	2,737	6,546
1995/96	162373	2,500	7,708
1996/97	169247	3,635	8,505
1997/98	167917	4,019	9,338
1998/99	178513	3,437	11,702
1999/00	184881	3,755	11,439
2000/01	198595	3,379	12,314
2001/02	201840	3,373	14,485
2002/03	197604	4,137	16,067
2003/04	220782	5,178	22,296
2004/05	248698	7,331	31,434
2005/06	277396	8,685	39,873
2006/07	310115	10,458	45,126
2007/08	344775	13,644	63,147
2008/09	379362	15,218	84,677
2009/10	419218	26,115	108,956
2010/11	475648	44,526	129,693
2011/12	517027	54,495	191,587
2012/13	568432	56,124	196,871
2013/14	626977	62,243	261,837

2014/15	692222	59,860	330,794
2015/16	1449397	59,726	353,014
2016/17	1595316	63,686	354,271
2017/18	1717795	72,713	397,115