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ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

**AGRICULTURAL AND MANUFACTURING GOODS EXPORT
PERFORMANCE AND ITS EFFECT ON ECONOMIC GROWTH IN
ETHIOPIA**

BY

BELETE NIGUSSIE

**JUNE, 2019
ADDIS ABABA, ETHIOPIA**

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ETHIOPIA**

**A THESIS SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF
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**IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF DEVELOPMENT ECONOMICS (MDE)**

**BY
BELETE NIGUSSIE**

**JUNE, 2019
ADDIS ABABA, ETHIOPIA**

THE BOARD OF EXAMINERS

As members of Board of the Final Master of Development Economics thesis Open Defense, we certify that we read and evaluated the thesis prepared by Belete Nigussie, entitled “Agricultural and Manufacturing Goods Export Performance and Its effect on Economic Growth in Ethiopia” and recommend that it be accepted as fulfilling the thesis requirement for the Degree of: Master of Science in Economics (Development Economics).

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DECLARATION

I, the under signed, declare that this thesis entitled with: “Agricultural and Manufacturing Goods Export and Its Effect on Economic Growth in Ethiopia” and submitted in partial fulfillment of the requirements for the Degree of Master of Development Economics (MDE) complies with the regulations of the University and meets the accepted standards with respect to originality and quality and all source of materials for this have been duly acknowledged. The paper has never been presented in this or any other university for the award of any academic degree, diploma or certificates.

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ENDORSEMENTS

This thesis has been submitted to St. Mary's University School of Graduate studies for examination with my approval as a university advisor.

Advisor

St. Mary's University, Addis Ababa

Signature

May, 2019

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LIST OF ACRONYMS

ADF	Augmented Dickey-Fuller
CSA	Central Statistical Agency
ECT	Error Correction Term
EIC	Ethiopian Investment Commission
FDI	Foreign Direct Investment
GTP	Growth and Transformation Plan
H.O.S	Heckscher-Ohlin-Samuelson
LDCs	Least Developed Countries
MLR	Multiple Linear Regressions
MOFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
OLS	Ordinary Least Squares
PCT	Product Cycle Theory
TOT	Terms of Trade
VEC	Vector Error Correction Model
VIF	Variance Inflation Factor

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ABSTRACT

The structure of Ethiopian foreign trade sector is dominated by a few primary products that account for a lion's share of the country's export earnings, while the share of non-agricultural products in total merchandise exports is almost insignificant effect on economy. For the past three decades, primary agricultural products accounted the majority share of the merchandise export earnings of Ethiopia. Export of Ethiopia is increasing by average growth rate of 21% but has insignificant effect on economic growth of Ethiopia and the balance of payment is in deficit. The trend also reveals that Ethiopia's export sector is mainly dominated by few primary commodities, where manufacturing exports account for less than 15% of merchandise exports on average. 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. The result further explained that agricultural export commodities are the dominant factors of external income of Ethiopian export growth is at infant level and has insignificant effect on economic growth and however, growth stimulate export in the long run. The significant and negative coefficient indicates the relative speed of adjustment to achieve the long run equilibrium. In all the cases Ethiopian export performance has affected with the variables of gross domestic product, exchange rate, infrastructure and share of trade have significant positive effect on the improvement of export performance on both agricultural and manufacturing export performance and have long run relationship. Whereas, foreign direct investment, inflation rate and terms of trade has negative effect on Ethiopian export performance. Based on the findings the agricultural and manufacturing goods has low share to real GDP of Ethiopia, hence the government should strengthen the two main sectors for economic growth of the country.

Keywords: *Agricultural and manufacture export, VECM and Ethiopia*

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Economic growth is one of the major objectives of every Country in the world. There are many variables that give to economic growth, off which the main components and it is measured as one of the significant accelerators of economic growth. Export is an activity in which products are made or grown domestically but shipped and sold abroad (Griffin, and Ebert 1995). The economics literature supports the argument that development requires economic growth to improve poverty, and superior right of entry to world markets is supposed as a necessary condition for more rapid growth.

To this end many developing countries have performed to increase their share in international trade sustainably. For example (Bacchetta M. , 2007) indicated that many developing countries gradually increased their share in international trade from just less to high volume in terms of both quantity and income. Asia and particularly China account for most of the change, which has been facilitated by diversification of exports. The same writer also explained that while developing Asia's share in total world exports increased from 11.7% in 1985 to 21.5% in 2005, Africa's share decreased from 4.3% to 2.9% over the same period. Different reasons have been justified for the main reasons of Africa's poor export performance. For example, (Alemayehu, 2006) and (Biggs, 2007) stressed that the structure of African exports, which is characterized by dependence on primary commodities, as the main reason.

As in the case of many least developing countries, Ethiopia's export has been limited to few primary products, which are mainly agricultural commodities. According to the World Bank (World, 2018), the share of Ethiopia's manufactures export in the total export is only 9.0 percent (implying primary agricultural commodity to be 91 percent) while that of China is 94 Percent. When we look at the last 34 years data, the export structure of Ethiopia has been characterized by greater concentration on few agricultural exports such as coffee, hides and skins and oilseeds and pulses, flower recently, cereals,

chat, and from more recently; manufacturing goods and electricity are the list (MOFED, 2017). In 2016/2017, Ethiopia's major exports included coffee (34%), oil seeds (23%), , pulses (11%), , gold (10%), chat (qat) (10%), Cut flowers (8%)and Ethiopia's total export earnings by value declined by 3% in 2016/2017 compared to the previous year (NBE, 2018). A miserable commodity price is the leading cause of this drop in exports. Though Ethiopia's total exports have been growing at an average rate of 15.23 per cent during the year 1970/71 to 2010/11, Ethiopia's export sector is still small; evidenced by the lower export/GDP ratio and the declining share of exports in import financing. Exports of goods in Ethiopia are only about 7.73 per cent of GDP, compared to an average of near 30 percent of GDP in Sub-Saharan Africa (World Bank, 2017).

Study by (Wondaferahu M. D., 2013), attests that the governments make an effort to increase the country's foreign exchange earnings by pursuing tangible policy measures and incentive schemes calls for specific case studies concerned with systematic identification of factors constraining for export growth. Thus identifying and examining the factors that significantly affect Ethiopia's export performance helps us to know what explains variation in Ethiopian export performance that should facilitate the design of policies to improve the performance and ultimately overall economic growth.

(Yishak, 2009), in his study indicated that Ethiopia's export performance, since 1995, Ethiopia has taken different measures for the development of the external sector. Due to these measures, some improvements in export performance have been registered during the post reform period. However, Ethiopia's share in the world total exports is still very low and has low contribution to economic growth.

Following the potential and good opportunity cost of the country compared to other African's countries, the researcher is inspired to determine why export performance of Ethiopia still low in spite of the fact that different policies for international trade were implemented but not successful yet. Accordingly, the study attempts to examine the long run determinants and short run dynamics of both agricultural and manufacturing export performance so as to identify possible policy intervention areas for export growth.

1.2. Statement of Problem

Improving export performance is one of the macroeconomic objectives of many countries, both in developed and developing countries. This is because export plays a fundamental role in economic growth and the means for improving the current account balance especially for the countries under deficit balance of payments. The study result of (Alemayehu, 2006) and (Biggs, 2007) stressed that the structure of African exports, which is characterized by dependence on primary commodities, as the main reason for the low performance of export in general. Rwenyagila (2013) and Wondaferahu (2013) , explained that export is one of the components in the aggregate demand and, thus, low export implies low level of income in terms of GDP. Accordingly, Senait (2014) and Sisay (2010) Ethiopian external trade is characterized by persistent trade deficit, domination of primary agricultural export revenue (MOFED,2017) were highly dependent on few primary commodities, like Coffee, Chat, Oil Seeds, Hide Skin and Flower accounted for 78% and limited manufacturing products (MOFED, 2018) and characterized by domination of manufacturing goods in the import basket.

Manufacturing exports are showing a low growth rate in Ethiopia where their share in total exports declines from 14% in 1981 to 4.6% in 2004 Sisay (2010). The growth in manufacturing exports is weak while in non-manufacturing exports, primary products, is high with low income and again manufacturing products are still deteriorating. Observing insignificant earning from export of Ethiopia is planned to improve the status using different growth transformation plan-I and II especially agricultural and industrial sectors (MOFED, 2005), however the plan has failed because of different factor.

The dependence of export revenues on few commodities has made Ethiopia's export performance highly unpredictable depending on the performance of the major commodities with lower share of manufacturing exports that implies the sector doesn't play enormous role in on economic growth Ethiopia.

There are different factors that affect for the poor performance of export in Ethiopia. Of the factors that frequently observed are Low Real GDP of annual growth, Effective Exchange rate, , Inflation (price index), low Share of trade in GDP, lack of effective FDI,

terms of trade, domestic infrastructure and dependence on primary export goods are the main factors that affect the export performance. There are different studies conducted on the export performance and such studies have not been reached on consistence conclusion as regard to the significant factors of export performance. Secondly some of the studies of (Ngeno, 1996), (Santos-Paulino, 2004), (Nimrod, 2006), Yishak (2009) applied cross country analysis whose results lack generality to the specific country context.

Ethiopia has registered low export performance in both agricultural and manufacturing products as compared to African countries with similar features of economic structure and other features. This study differs from the previous empirical study in that some of empirical studies were only focused on Ethiopian agricultural export commodities especially coffee export but, this study combines over all export performance by identifying the key determinants of export performance in Ethiopia covers from the period of 1992-2018 to come up with recent and reliable information that bring up to date for responsible bodies and appropriate recommendation based on the determinants of the export performance identified.

1.3. Objectives of the Study

The study will have the following general and specific objectives:-

1.3.1.General Objective

The main objective of this study is to assess status and export performance and its effect on Ethiopian economy.

1.3.2. Specific Objective(s)

The specific objectives are:

- ❖ To assess the status and trend of agricultural exports and manufacturing exports over time and its relation with economic growth; and
- ❖ To analyze the effect of manufacturing and agricultural goods export on economic growth in short and long run relation for the period of 1992 to 2017/18

1.4. Significance of the Study

Export instability affects the overall performance of the economy leading to balance of payment in surplus/deficient. Identifying the determinants of export growth rate will help and provide information to policy makers to enable them come up with the suitable policy regarding the growth of the sector in particular and the economy as a whole. This study is expected to add update and new knowledge to the existing literature, as it comes from Ethiopia. Therefore, apart from getting current research findings, the study also provides the opportunity for comparison with the previous research findings for further studies.

1.5. Scope and limitation of the Study

The study covered a period of twenty seven years (1992-2017/18) mainly focused on agricultural and Manufacturing export of goods as it affects the growth and development of Ethiopian economy. Because these two sectors are expected to the thematic areas of the government to design appropriate policy in the short run and long run for the improvements of external trade to be at the level of competitive for export growth. This study also focused on the following variables to be examined trend of export (significant Manufacturing and agricultural export goods), effective Exchange rate, Inflation (price index), GDP, Share of trade in GDP (Openness), Foreign direct investment, terms of trade, domestic infrastructure.

During the research period the researcher encountered the following challenges; lack of inconsistent macroeconomic data on the selected secondary official source like WB, IMF, Federal Reserve Data, NBE, CSA, and MOFED. Accordingly to analyze the data the official data source of the country are NBE, CSA, and MOFED are used. In addition budget constraints and power interruption was stressed the researcher.

1.6. Organization of the study

This study has organized into five chapters. Chapter one will present the introduction in which brief introduction of the topic, research problem, research questions, objective of study, and scope and limitations of the study will be addressed. Chapter two will discuss literature review in which previous theories and empirical findings regarding work related export will be explained. Chapter three will explain the research design and methodology that intends to make use of (i.e. Model specification, data source and description, estimation techniques). Chapter four will briefly discuss the results and findings of the study. Finally, section 5 will presents conclusion and policy implication based on the estimated results.

CHAPTER TWO

2. LITRETURE REVIEW

2.1.Theoretical Literature Review

2.1.1. Definitions and concepts of Export

As cited on the study of Nega Muhabaw (2013), a conceptual definition of export performance addresses two parts: export and performance. Export is the international marketing related decisions and activities of internationally active firms (Nevin, 1981). The over-tone of the word performance, in the literature sense, does not pose any problem for it is the act of carrying out or accomplishing something such as a task or action. When it comes to economics, this word has been defined in many ways and no unifying principle has underlined its quantification. However, in the context of current study, Export performance is defined as: (i) the success or failure of the efforts of a nation to sell domestically produced goods and services in other nations markets (Shaoming Zou, 1998); (ii) the export effectiveness, export efficiency and continuous engagement in exporting (Shoham, 1991); (iii) the composite outcome a nation's international sales (Shoham, 1996); and (iv) the three sub-dimensions which encompasses sales, profit and growth (Madsen, 1987).

The performance of the country's exports highly dependent on its exchange rate regime and more specifically the real exchange rate. Different studies have shown that the demand for the county's exports increase when its export prices fall in relations to the world prices. The depreciations of its currency compared to other currencies particularly, the dollars makes its exports cheaper on the international market. For example (Sharma, 2001) discovered that the demand for Indian exports increased when its export prices fell. He also said that the appreciations of the Indian rupee at one time adversely affected Indian exports.

In theory, Marshal-learner condition, real effective exchange rate movements are positively related with the growth in exports performance in long run. An increase in the real effective exchange rate means a real depreciation of the domestic currency, which

makes exportable items cheap. It is well known that exports of LDCs are price inelastic in the international market due to nature of the product that LDCs produces.

2.1.2.Trade Theories /Export/

The main objective of any theory of international trade is to examine the cause and pattern of trade. Two other objectives of a theory of international trade are to explain the composition and volume of external trade. International trade is the exchange of capital, goods and services between countries. The scarce resource and more recently globalization phenomenon is both a consequence and a cause of international trade. International trade studies which countries engage in trading amongst each other, why they do so, what goods they exchange, analyses the benefits and costs of it and reasons and effects of government policies that limit or promote international trade. There are different trade theories developed by different authors of which, two theories dominate international trade analysis: namely the classical and Neo-classical theory.

2.1.2.1.The Classical Theory of International Trade

David Ricardo, the 18th century British economist, was the author of the classical theory of international trade and the doctrine of comparative advantage. Ricardo was the first to demonstrate that external trade arises not from difference in absolute advantage but from difference in comparative advantage. By “comparative advantage” is meant by “greater advantage” Thus, in the context of two countries and two commodities, trade would still take place even if one country was more efficient in the production of both commodities (provided the degree of its superiority over the other country was not identical for both commodities).

The theory assumed the existence of two countries, two commodities and one factor of production, labor. Labor was fully employed and internationally immobile and that the product and factor prices were perfectly competitive. There are no transport costs or any other impediments to trade. According to Ricardo, differences in climate and environment tend to result in differences in comparative advantage; differences in comparative advantage lead to trade. In the context of a model of two countries, two

commodities and one factor of production, Ricardo obtained the result that a country will tend to export the commodity in which it has a comparative advantage and to import the commodity in which it has a comparative disadvantage. Since comparative costs are the other side of comparative advantage, the classical theory is easily couched in terms of comparative costs. Specifically, the theory now states that a country will tend to export the commodity whose comparative cost is lower in autarky and import the product whose comparative cost is higher in pre-trade isolation.

2.1.2.2. Neo-Classical Theory of International Trade

The Neo-classical theory of trade evolved in an attempt to modify some assumption of the classical theory. The, Neo-classical theory, also called the modern theory, advanced a more satisfactory explanation for the existence of comparative cost differences between countries. The theory introduced capital as a second factor of production; and allowed for international differences in the pattern of demand. The Neo-classical theory is therefore a 2*2*2 model, that is, it assumes the existence of two countries, two commodities, and two factors of production.

The introduction of a second factor of production turns out to its important as it explains the relationship between factor allocation, income distribution and international trade. For example, the basic insight of the Heckscher-Ohlin-Samuelson H.O.S Model is that traded commodities are really bundles of factors (land, labor, capital).The exchange of commodities internationally is therefore indirect factor arbitrage, transferring the services of otherwise immobile factors of production from the locations where these factors are abundant to a location where they are scarce. Under some circumstances, this indirect arbitrage can completely eliminate factor price differences. The most important implication of the H.O.S Model is that option to sell factor services externally (through the exchange of commodities) transforms a local market for factor services into a global market. As a result derived demand for inputs becomes much more elastic and also more similar across countries Appleyard, Field and Cobb. (2010).

The framework of trade proposed by Heckscher (1919) and Ohlin (1924) departs from the Ricardian model in that it emphasizes the roles of land, labor and capital in both

agricultural and industrial production and attempts to explain how variations in the availability of these factors of production determine a country's nature of specialization and patterns of trade. Paul Samuelson added elegance to this framework by developing a two-factor, two-sector and two country version of the Heckscher-Ohlin model that became the cornerstone of modern theory of international trade.

According to the Heckscher-Ohlin-Samuelson theory of trade, a country should specialize in and export a product that uses more intensively the factor of production with which the country is well endowed. Therefore, a capital-rich country like the United States should export the capital-intensive products while a labor-rich country like Bangladesh should export various labor-intensive products. While this theory offers a more logical way to think about trade among nations than the Ricardian approach, it also exclusively focuses on the supply side of the economy and suggests that differences in factor endowments can explain specialization patterns and the volume of trade between countries. The demand side is muted through the assumptions of and homothetic preferences of consumers and that countries trade in homogeneous products. The refinement of the H-O-S trade model continues along with the development of empirical implications of the factor content of net trade flow. (Helpman 1999)

Therefore based on this theory, it is expected that since Ethiopian has plenty of land and above 80% portion of its people are employed in agriculture sector in order to expand its trade it should produce and export labor intensive commodities. In turn it should import capital intensive commodities including machines to be used in construction of processing industries which will add value on agriculture commodities to be exported. Hence it will further increase GDP and excess of it to be exported.

2.1.2.3. Post – Heckscher-Ohlin Theories of Trade

The imitation Lag hypothesis in international trade theory was formally introduced in 1961 by Posner. The theory relaxes the assumption of the Heckscher-Ohlin theory about identical technology. It assumes that the same technology is not always available in all countries and that there is a delay in the transmission or diffusion of technology from one

country to another. Consider countries I and II. Suppose that a new product appears in country I due to the successful efforts of research and development teams. According to the imitation lag theory, this new product will not be produced immediately by firms in country II. Incorporating a time dimension, the imitation lag is defined as the length of time (For instance, 15 months) that elapses between the product's introduction in country I and the appearance of the version produced by firms in country II. The imitation lag includes a learning period during which the firms in country II must acquire technology and know-how in order to produce the same products. In addition, it takes time to purchase inputs, install equipment, process the inputs, and introduce the finished products to market, and so on Appleyard, Field and Cobb. (2010).

In this approach, a second adjustment lag is the demand lag, which is the length of time between the product's appearance in country I and its acceptance by consumers in country II as a good substitute for the products they are currently consuming. This lag may arise from loyalty to the existing consumption bundle, inertia, and delays in information flows. This demand lag also can be expressed in a number of months, say, four months.

A key feature in the Posner theory is the length of the imitation lag with the length of the demand lag. For example, if the imitation lag is 15 months, the net lag is 11 months that is, 15 months less 4 months (demand these 11 –months) period. Country I will export the product to Country II. Before this period, country II had no real demand for the product; after this period, firms in country II are also producing and supplying the product so the demand for country I's product diminishes. Thus, the central point of importance in the imitation lag hypothesis is that trade focuses on new manufactured products. How can a country become a continually successful exporter? By continually innovating! This theory has considerable relevance for present-day concerns about the global competitiveness of U.S. firms. Further, it seems to be capable of handling “dynamic” comparative advantage than are the Heckscher-Ohlin and Ricardo models Appleyard, Field and Cobb (2010).

2.1.2.4. The Product Cycle Theory

Vernon (1966) developed the Product Cycle Theory (PCT) of trade which builds on the imitation lag hypothesis in its treatment of delay in the diffusion of technology. The PCT relaxes several other assumptions of traditional trade theory and is more complete in its treatment of trade patterns. The PCT is concerned with the life cycle of a typical “new product” and its impact on international trade. Vernon emphasizes that manufactured goods and the theory begins with the development of a new product in the United State. The new product will have two principal characteristics: (i) it will cater for high-income demands because the United State is a high-income country; and (ii) it promises, in its production process, to be labor-saving and capital-using in nature (It is also possible that the product itself e.g. a consumer durable such as a micro ware oven-will be labor saving or the consumer). The reason for including the potential labor-saving nature of the production process is that the United States of America is widely regarded as a labor-scarce country. Thus, technological change will emphasize production process with the potential to conserve this scarce factor of production Appleyard, Field and Cobb. (2010).

The second stage of the life cycle is called the maturing-product stage. In this stage, some general standard for the product and its characteristics begin to emerge, and mass production techniques start to be adopted. With more standardization in the production process, economies of scale start to be realized. This feature contrasts with Heckscher - Ohlin and Ricardo, whose theories assumed constant returns to scale. In addition, foreign demand for the product grows, but it is associated particularly with other developed countries, because the product is catering to high-income demands. This rise in foreign demand (assisted by economies of scale) leads to a trade pattern whereby the United States of America exports the product to other high-income countries. Other developments also occur in the maturing-product stage.

Once U.S firms are selling to other high-income countries, they may begin to assess the possibilities of producing abroad in addition to producing in the United States of America. If the cost picture is favorable (meaning that production abroad coasts less than production at plus transportation costs). Then U.S firms tend to invest in production

facilities in the other developed countries. If this is done, export displacement of U.S.-produced output occurs.

The final stage is the standardized-product stage. By this time in the product life cycle, the characteristics of the product itself and of the production process are well known; the product itself and the production process to producer. Vernon (1996) hypothesized that production may shift to the developing countries. Labor costs again play an important role, and the developed countries are busy introducing other products. Thus, the trade pattern is that the United States of America and other developed countries may import the product from the developing countries Appleyard, Field and Cobb. (2010)

In summary, the PCT postulates a dynamic comparative advantage because the country source of exports shifts throughout the life cycle of the product. At the early stages, the innovating country exports the goods but then it is displaced by other developed countries-which are ultimately displaced by developing countries. A casual glance at product history yields this kind of pattern in a general way. For example, electronic products such as television receivers were for many years a prominent export of the United States of America. But Europe and especially Japan emerged as competitors, causing the U.S. share of the market to diminish dramatically. More recently, Japan has been threatened by South Korea and other Asian producers. The textile and apparel industry is another example where developing countries (especially China, Taiwan, Malaysia, and Singapore) have become major suppliers on the world market, displacing in particular the United States of America and Japan. Automobile production and location also relatively from the United States of America and Europe to Japan and later still to countries such factor mobility and economies of scale, make the product cycle theory an appealing alternative to the Heckscher-Ohlin model (Appleyard, Field and Cobb. (2010).

2.1.2.5.Porter's National Competitive Advantage Theory

In the continuing evolution of international trade theories, Michael Porter of Harvard Business School developed a new model to explain national competitive advantage in 1990. Porter's theory stated that a nation's competitiveness in an industry depends on the capacity of the industry to innovate and upgrade. His theory focused on explaining why

some nations are more competitive in certain industries. To explain his theory, Porter identified four determinants that he linked together. The four determinants are (1) local market resources and capabilities, (2) local market demand conditions, (3) local suppliers and complementary industries, and (4) local firm characteristics.

2.1.2.6.Theories of Economic Growth

As cited Tewodros Gebru (2015) the process of economic growth and the sources of differences in economic performance across nations are some of the most interesting, important and challenging areas in modern social science. The analysis of the process of economic growth was a central feature of the work of the classical economists, as represented chiefly by Adam Smith, Thomas Malthus, David Ricardo, and Karl Marx were all concerned with the growth of the economy (I.e., the increase in the production of goods and services over time).

The interest of these economists in problems of economic growth was rooted in the concrete conditions of their time. Specifically, they were confronted with the fact of economic growth and social changes taking place in contemporary English society as well as in previous historical periods. According to A. Smith (1776), the importance of ‘invisible hand’ (the force of supply/demand in a competitive market), specialization/division of labor, accumulation of physical capital (investment) and technological progress were the most determinants of economic growth in the long term and hence the prosperity of nations. A wide range of studies have investigated the factors underlying economic growth. Using different conceptual and methodological viewpoints, these studies have placed emphasis on a different set of explanatory parameters and offered various insights to the sources of economic growth.

The broad consensus highlighted in these studies is that a country’s growth over a long period is basically determined by three factors, namely: (1) the efficient utilization of the existing stock of resources, (2) the accumulation of productive resources such as human capital, and (3) technological progress (Dewan and Hussein, 2001, Ndambiri *et al.*, 2012). Moreover, research and development, economic policy and macroeconomic

condition, export performance and institutional framework are among the most important determinants of economic growth. There have been two periods of powerful work on growth theory, the first was in the 1950s and 1960s, and the second (30 years later) in 1980s and 1990s. In the first period, the neoclassical theory of growth was best known contribution by Robert Solow (1956).

2.2. Empirical Literature Review

2.2.1. Overview of Export

An export is a function of international trade whereby goods produced in one country are shipped to another country for future sale or trade. The sale of such goods adds to the producing nation's gross output. Ethiopia is the 117th largest export economy in the world. In 2016, Ethiopia exported \$3.13B and imported \$17.9B, resulting in a negative trade balance of \$14.8B. In 2016 the GDP of Ethiopia was \$72.4B and its GDP per capita was \$1.73k. The top exports of Ethiopia are Coffee (\$763M), Other Oily Seeds (\$470M), Gold (\$397M), Dried Legumes (\$247M) and Cut Flowers (\$173M), using the 1992 revision of the HS (Harmonized System). The top export destinations of Ethiopia are China (\$424M), Switzerland (\$345M), the Netherlands (\$313M), Saudi Arabia (\$287M) and the United States (\$231M).

The top import origins are China (\$5.46B), the United States (\$1.54B), India (\$1.3B), Kuwait (\$1B) and Italy (\$700M). In 2016 Ethiopia exported \$3.13B, making it the 117th largest exporter in the world. During the last five years the exports of Ethiopia have increased at an annualized rate of 1.7%, from \$2.88B in 2011 to \$3.13B in 2016. The most recent exports are led by Coffee which represents 33% of the total exports of Ethiopia, followed by Other Oily Seeds, which account for 15%. Earning from export of coffee rose sharply by 59.3 percent in 2017/18 to USD 841.8 million on account of a 40 and 14 percent growth in world coffee price and volume of export, respectively. As a result, the share of coffee in total exports of goods increased to 30.6 percent from 26.4 percent in the previous year (Workman, 2018).

According to Daniel Workman (2018) Ethiopia's top 10 exports are highly concentrated, representing 91.9% of the overall value of Ethiopian global shipments. The coffee, tea

and spices category placed first via a 33.6% gain. Ethiopia's exported coffee generated the bulk of these international sales. Next to coffee Vegetables exported was the second income generating commodities for Ethiopia accounted for 18.8%. Shipments of oil seeds from Ethiopia posted the third-fastest gain via a 15.6% improvement. Electrical machinery and equipment was the fastest-growing among the top 10 export categories, up 175.1% from 2016 to 2017.

Two categories declined in value, namely Ethiopian exports of live animals (down - 31.8%) and oil seeds (down -13.7%).

1. Coffee, tea, spices: US\$963 million (33.6% of total exports)
2. Vegetables: \$538.4 million (18.8%)
3. Oil seeds: \$446.3 million (15.6%)
4. Live trees, plants, cut flowers: \$221.9 million (7.8%)
5. Gems, precious metals: \$125.7 million (4.4%)
6. Meat: \$97.1 million (3.4%)
7. Raw hides, skins not furskins, leather: \$74.8 million (2.6%)
8. Live animals: \$61.9 million (2.2%)
9. Electrical machinery, equipment: \$56.2 million (2%)
10. Footwear: \$45.5 million (1.6%)

2.2.2. Empirical Studies conducted on Export Determinant

Different studies have been conducted by different people to analyze the determinants of exports and to analyze their impact on export performance. Different studies used the imperfect substitution model proposed by (Goldstein, 1985) to analyze the determinants of countries export performance. For example (Munoz, 2006) analyze the impact of parallel market and governance factors on Zimbabwe's export performance using quarterly data and found positive and significant relationship between exchange rate and export. Similarly, On a study made on the factors affecting export performance in three different export categories; total merchandize exports, manufacturing exports and exports of machinery and equipment on nine East & South East Asian countries by (Jongwanich, 2007) using quarterly data and Imperfect Substitutions Model, results found from the long run equation reveal that real exchange rate to have different elasticity in the three

export categories, it was found to have highest elasticity for merchandise export while lowest elasticity for exports of machinery and transport equipment.

Recent studies on export have been focused on the role of trade facilitation reforms on export performance. A study made by Portuga-Perez, and S.Wilson (2012) tried to analyze the role of hard infrastructure (roads, ports, airports, rail infrastructure and information communications technology) and soft infrastructure (efficiency of customs and domestic transport and business regulatory measures and transparency) on export performance of 101 countries during 2004 -07. The results from their study revealed that an improvement in hard and soft infrastructure leads to more exports which ensure that investments on physical infrastructure have a positive impact on exports, but declining as per capita income increases, on the contrary investments in ICT and soft infrastructures were found to have more impact on richer countries.

2.2.2.1. Real exchange Rate

The major factor that affects export supply capacity is the real exchange rate. The real exchange rate can be an important element in determining export growth, diversification and international competitiveness of goods produced in a country (UNCTAD, 2008) (UNCTAD, 2005). It is a key variable that requires close government supervision in any programme to expand and diversify exports (Biggs, 2007) since its management can influence export performance over a large number of different product groups (Mouna and Reza, 2001).

The performance of a country's exports is highly dependent on its exchange rate regime and more specifically the real exchange rate. Various studies have shown that the demand for a country's exports increases when its export prices fall in relation to the world prices. The depreciation of its currency compared to other currencies particularly the dollar, makes its exports cheaper on the international market. However, Sivri and Usta (2001), while studying the determinants of export growth in Turkey found that real exchange rate does not appreciably account for changes in exports. On the same issue, Fang et al. (2006) analyzed the impact of exchange rate depreciation on exports for 8 Asian economies (Philippines, Malaysia, Indonesia, Japan, Singapore, Chinese Taipei, Republic

of Korea and Thailand) and they found that depreciation contributes exports for most countries, but its contribution to export growth is low and varies across countries.

Biggs (2007) explained the real exchange rate is often rendered uncompetitive in low income countries by poor economic management and turbulence in financial markets. Ensuring that the real exchange rate adjusts to more realistic levels is a means of enhancing the economy's incentives for exporting and can lead to an increase in the production of export products (Oyejide, 2007). While an overvalued currency can undermine export competitiveness through a direct loss of price competitiveness for exporting firms undervaluation of the currency can bolster export competitiveness (Biggs, 2007), enhance the incentives for export activities (Oyejide, 2007). Therefore, unexpected positive and statistically insignificant long- run relationship of real exchange rate exists. This finding is contrast to most economic literatures which confirmed the significant relationship between the real exchange rate and export. However, this result conforms to Rodrik (2008)'s study which indicated the insignificant effect of real exchange rate on exports. Also, other studies of Eichengreen and Gupta (2015), Haddad and Pancaro (2010), and Eichengreen (2008) confirmed that exchange rate depreciation causes export and economic growth only in the short term, not the long term.

Wondaferahuw (2013) concluded that trade openness, real effective exchange rate, real gross domestic product of home country and infrastructural development are positive determinants of Ethiopia's export in the long run.

2.2.2.2.Domestic transport infrastructure

Domestic transport infrastructure is one of the major factors affecting export supply capacity of a nation. It is expected to play an important role especially at the early stages of export sector development (UNCTAD, 2005). Most African countries are characterized by poor transport infrastructure, which is a major obstacle to trade, competitiveness and sustainable development (UNCTAD, 2005; Mbekeani, 2007; Bacchetta, 2007), and isolates countries, inhibiting their participation in global production networks (Limão and Venables, 2000).

Due to poor internal transport infrastructure African transport costs are high making their exports expensive and uncompetitive (Radelet and Sachs, 1998; Matthee, Grater and Krugell, 2007), and reducing foreign earnings from exports (UNCTAD, 2003; Matthee, Grater and Krugell, 2007).

The analysis of African trade flows shows that their relative volume is low due to poor infrastructure (Limão and Venables, 2001). Therefore, improvements in transportation services and infrastructure can lead to improvements in export performance (Fugazza, 2004; Clarke, 2005; Francois and Manchin, 2006; Edwards and Odendaal, 2008). They argue that infrastructure directly affects transport costs by determining the type of transport used (for example, the type and quality of roads determines the maximum size of trucks) and delivery time for the goods. Fugazza (2004) finds that the internal transport infrastructure has a significant and positive impact in raising exports that is expanding physical infrastructure (transportation, road construction, and communication) density of various types with an acceptable level of quality has significant positive impact on the volume of production and hence earnings from export.

2.2.2.3. Foreign Direct Investment and Export performance

Foreign Direct Investment (FDI) refers to international investment in which the investor obtains a lasting interest in an enterprise in another country. Most concretely, it may take the form of buying or constructing a factory in a foreign country or adding improvements to such a facility, in the form of property, plants, or equipment.

The benefits of Foreign Private investment include transfer of technology, higher productivity, higher incomes, more revenue for government through taxes, enhancement of balance of payments ability, employment generation, diversification of the industrial base and expansion, modernization and development of related industries. According to Feldstein (2000), first, international flows of capital reduce the risk faced by owners of capital by allowing them to diversify their lending and investment. Of course, the weights to be applied to each factor will differ from one potential host country to another and different weights will also be applied by different foreign firms (UNCTAD) in its World Investment Report (1998).

The experience from a number of countries suggests that FDI strongly contributes to the transformation of the composition of exports, thus affect export performance positively (UNCTAD, 2004).

The United Nations conference of Trade and Development (UNCTAD), in its World Investment Report (1998) categorized type of FDI and the general characteristics of host countries that are considered by investors when deciding whether to undertake a project in any given country. These factors have also been elaborated in the context of developing countries in an article Finance and Development by Mallampaly and Sauvart, (1999). The particular economic dominants of FDI, according to the UNCTAD staff, depend on whether the FDI project falls into one of three categories: (i) market-seeking FDI, that is, firms that are attempting to locate facilities near large markets for their goods and services; (ii) resource seeking and asset- seeking FDI, that is, firms that are in search of particular natural resource or particular human skills and (iii) efficiency seeking FDI, that is, firms that can sell their products worldwide and are in search of the location where production costs are the lowest.

Beyond economic factors, foreign firms considering investment in any given country will also be influenced by various policies and attitudes of the host country's government. Of course, the weights to be applied to each factor will differ from one potential host country to another and different weights will also be applied by different foreign firms (UNCTAD) in its World Investment Report (1998). There is consensus among development economists that FDI inflows are likely to play an important role in explaining growth of recipient countries (De Mello, 1997, 1999; Buckley et al., 2002; Akinlo, 2004; Seetanah and Khadaroo, 2007). By increasing capital stock, FDI can contribute to a more efficient use of existing resources and absorb unemployed resources and thus increase a country's output and productivity (De Gregorio, 1992; Seetanah and Khadaroo, 2007). However, the World Bank (1993) notes that the role of FDI in export promotion depends crucially on the motive for such investment: If the motive behind FDI is to capture the domestic market (tariff-jumping type of investment), it may not contribute to export growth. On the other hand, if the motive is to tap export markets by

taking advantage of a country's comparative advantage, then FDI may contribute to export growth. Thus, whether FDI contributes to export growth or not depends on the nature of the policy regime (Sharma, 2000).

The existing empirical studies of the role of FDI in export performance also report mixed findings. Some studies found a negative relationship between FDI and export (Horst, 1972; Jeon, 1992; Ancharaz, 2003; Gu.Awokuse and Yuan, 2008). In contrast, others indicate that FDI have a positive effect on the export performance of host countries (Fugazza, 2004; UNCTAD, 2005; Morrissey and Mold, 2007; GU, Awokuse and Yuan, 2008). Finally, Lall and Mohammad (1983) and Sharma (2000) do not see any statistically significant impact of FDI on exports.

2.2.2.4. Inflation and Export performance

Inflation is a condition, when cost of goods and services rise. High inflation results into economic instability as it erodes the purchasing power of households.

High inflation tended to be associated with low exports because it makes domestic goods more expensive to foreigners. Thorvaldur (1998) identified four linkages between inflation and exports.

- i. Inflation induce overvaluation of national currencies in real terms;
- ii. Inflation-induced production distortions driving a wedge between the returns to real and financial capital.
- iii. The potentially deleterious effects of inflation on saving and investment, and
- iv. Economic mismanagement and structural weaknesses, of which inflation is Symptomatic Based on the foregoing discussion it is reasonable to expect that high inflation would reduce export performance.

Rwenyagila (2013) indicated that inflation rate has also been observed to be statistically significant to export performance. His finding has found to be consistent with that of Gylfason (1998) studying the main determinants of exports and economic growth in cross-sectional data from the World Bank covering 160 countries in the period 1985-1994. He pointed out that excessive dependence on primary exports tends to be associated with low total exports and slow growth. The most likely explanation for this

link is that an abundance of natural resources leads to the Dutch disease, involving overvaluation of the national currency and wage distortions, in addition to rent seeking that is costly from a macroeconomic point of view. He concluded that high inflation and an abundance of natural resources tended to be associated with low exports and slow growth rate

According to Monineath EL (2018) Analysis of Factors Affecting the Export Performance in CAMBODIA using THE ARDL BOUNDS TESTING APPROACH in long analysis, in the long run inflation causes export to more expensive reduced the competitiveness of an exporting economy as foreign consumers would substitute in favor of alternative lower-price products (Epaphra, 2016). However, unexpected results of positive relationship between crises with export performance of Cambodia would be explained that insignificant impact of 1997 ASEAN financial crisis on Cambodia since the economic ties between Cambodia with Thailand, Malaysia and Indonesia was relatively small. Also, even the most country experience negative impact of 2008 world financial crisis, Cambodian economy and export growth still obtained the positive growth as government stimulated both fiscal and monetary policy to subsidy and maintain its economic stabilization (Jalilian, et al, G.,2009). In the short run the results of the short-run relationship estimated by ARDL model depicts that there are the significant negative relationship of Inflation and export performance with.

2.2.2.5. Terms of Trade

Terms of Trade are also one of the determinants of export performance in both developed and developing countries. Favorable terms of trade are associated with increased export growth rates and unfavorable terms with low export growth rate. Therefore when the value of a country's exports relative to that of its imports decreases, it means more money is used to buy imports than incoming one. In other word there is an unfavorable term of trade, and when the situation is opposite there is favor arable terms of trade. In this case terms of trade is expected to have a great influence on export performance. Terms of trade represent the ratio between a country's export prices and its import prices. The ratio is calculated by dividing the price of the exports by the price of the imports

and multiplying the result by 100. When a country's TOT is less than 100%, more capital is leaving the country than is entering the country. When the TOT is greater than 100%, the country is accumulating more capital from exports than it is spending on imports.

In line with the terms of trade different authors gives conclusion as one of the factors that affect the export performance in their studies. As cited in Nega Muhaba (2013) the study of Musinguzi, Obwane and Stryker (2000) found out that terms of trade has a significant positive relationship with export but though an increase in terms of trade marginally increase export.

2.2.2.6. Share of Trade (Openness)

Trade increases, amongst other things, competition (hence boosting productivity and innovation), enables firms to capitalize on economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation. Openness to trade (share of trade) is exports plus imports as a share of GDP is vital to any successful modern economy. The trade-to-GDP-ratio is the sum of exports and imports divided by GDP. A low ratio for a country does not necessarily imply high (tariff or non-tariff) obstacles to foreign trade.

The ratio of trade to GDP - an indicator of trade 'openness' - has increased for most trading nations, and is a result of globalization, and trade liberalization.

According to the UK's Department for Business, Innovation and Skills (BIS) the trade to GDP ratio increase from 51.6 to 61.6 between 2003 and 2013. However, according to the World Bank, UK trade openness fell to 59% in 2014.

Trade openness is calculated using the following equation:

$$\frac{\text{Exports} + \text{Imports of goods and services}}{\text{GDP}}$$

It is argued that trade openness brings many economic benefits, including increased technology transfer, transfer of skills, increased labor and total factor productivity and

economic growth and development.

According to Diana Beltekian and Max Roser, 2014 on their Trade and Globalization, the so-called trade openness index is an economic metric calculated as the ratio of country's total trade (the sum of exports plus imports) to the country's gross domestic product. This metric gives us an idea of integration, because it captures all incoming and outgoing transactions. The higher the index, imply the larger the influence of trade on domestic economic activities.

A number of studies point to positive growth effects of trade openness (e.g. Chang, Kaltani, and Loayza, 2009, Chang, R., Kaltani, L., & Loayza, N. V. (2009). Openness can be good for growth: Effect of trade openness on economic growth may depend on complementary reforms that help a country take advantage of international competitions. Other studies contradict the existence of a positive link between trade and economic growth (e.g. Musila & Yiheyis, 2015 Musila, J. W., & Yiheyis, Z. (2015). The impact of trade openness on growth: The mixed results from the empirical literature might be attributed to the econometric techniques, the sample of countries, and the indicator used as proxy for trade openness. Most of existing studies employ panel data regression approaches that impose cross-sectional homogeneity on coefficients, with the hope that the results could be applied to all countries. The cross-sectional homogeneity assumption is likely to be violated given the heterogeneity of economies with respect to trade policy, economic conditions and technological and institutional developments.

2.2.2.7. Real Gross Domestic Product

Gross Domestic Product (Real GDP) is assumed to have a positive impact on exports. Kumar (1998) conducted a study on the determinants of export growth in developing countries and confirmed that Real GDP has a significant positive impact on volume of exports. He further said that higher level production is the main cause of export expansion since surplus output can be exhausted in the international markets. Ngeno (1996) carried out a study on determinants of exports and one of his findings was that export growth is positively related to output level since higher production leads to increased export volumes.

GDP is the final value of the goods and services produced within the geographic boundaries of a country during a specified period of time, normally a year. Real GDP growth rate is an important indicator of the economic performance of a country.

GDP is a measure of economic output. It measures all of a nation's consumption, private investment and government spending plus exports, but minus imports. It is a market measure, which means that the value of the various dimensions mentioned above is calculated in terms of their market prices.

Study conducted by Yishak (2009) Within gravity model framework, Ethiopia's exports were assumed to depend on its GDP, importer's GDP, FDI, internal transport infrastructure, real exchange rate, foreign trade policy index, institutional quality index and the weighted distance between Ethiopia and her trading partners. The model was estimated by applying the Generalized Two Stages Least Squares technique on a panel data covering 30 Ethiopia's trading partners spanning for the period 1995–2007. Growth in domestic national income, good institutional quality and internal transport infrastructure were found to significantly determine Ethiopia's export performance. Real GDP is included in the model to capture the factors associated with the level of economic development (Frankel, 1997).

Economies with higher Real GDP are expected to trade more than those with lower GDP because the former tend to innovate more and have more advanced infrastructures that facilitate trade. It also captures the productive capacity of the exporting country and the purchasing power of the importing country. A higher GDP signifies greater potential supply from the exporting country and increased demand in the importing country. Therefore, the coefficients of the Real GDP variables were expected to be positive.

In his study of Tanzanian economy Rwenyagila, G. A. (2013) concluded that the Gross Domestic Product is not the determinant factors to all sectors; however, the Gross Domestic Product in developing countries is one of the determinants for export performance. Since GDP could be contributed by low capacity in production which leads to low output as a result few surpluses for exportation and finally low export earnings in terms of value and volume. In addition Wondaferahu, (2014), Ahmed and Majeed (2006)

on their study found that Real GDP of home country affects their export performance positively.

2.2.2.8. Conceptual Framework of the study

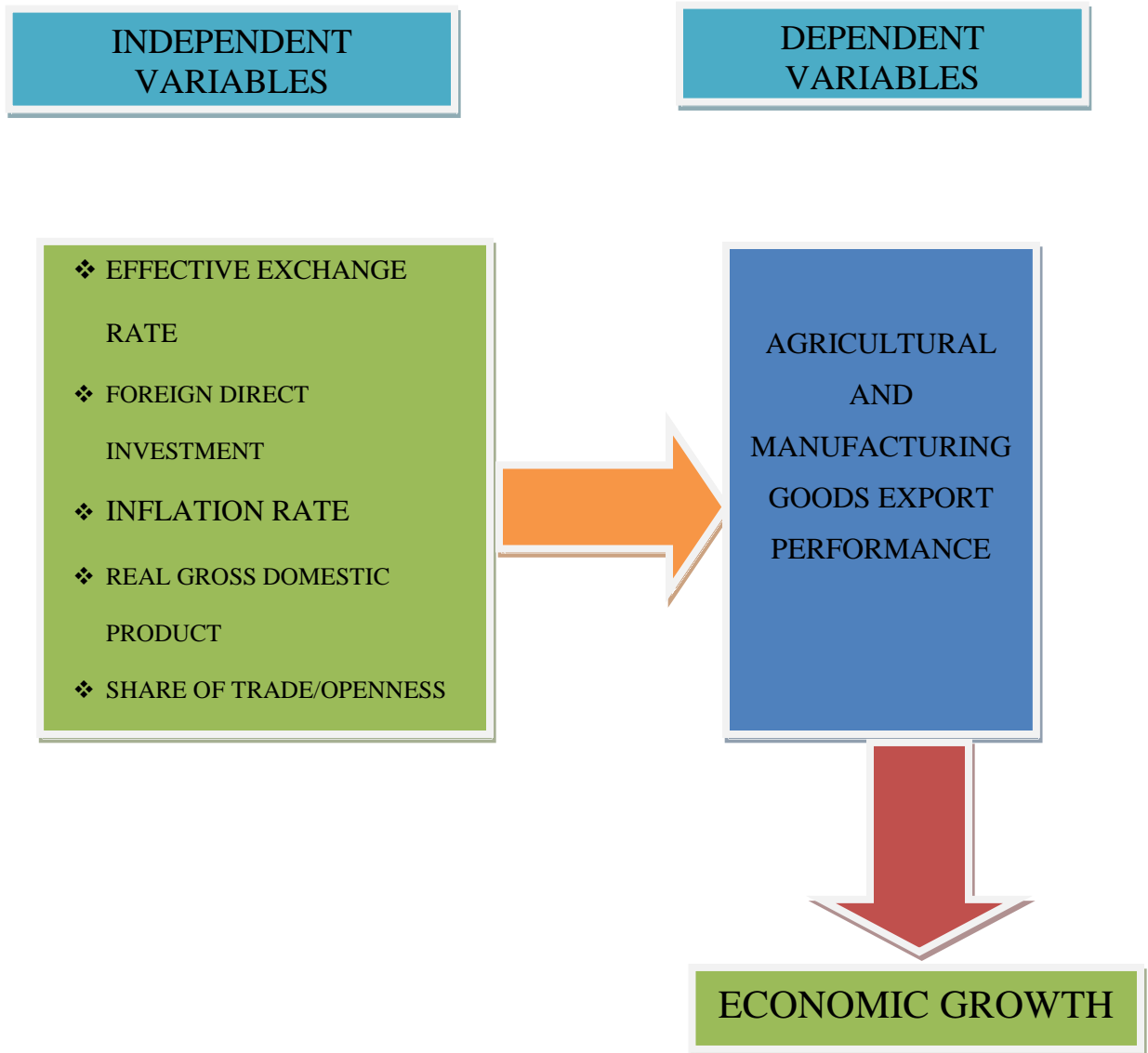


Fig.2.5. Conceptual Framework of the study

Source: - Own Sketch

CHAPTER THREE

3. RESEARCH METHODOLOGY

3.1. Research Design

A research design is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the research problem. The design of a study defines the study type (descriptive, correlation, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research problem, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan. A research design is a framework that has been created to find answers to research questions. Accordingly, longitudinal research designs has used for the research study. Because longitudinal research designs helps to describe patterns of change and help to establish the direction and magnitude of causal relationships. Measurements are taken on each variable over two or more distinct time periods. This allows the researcher to measure change in variables over time.

3.2. Data Source and Methods of Collection

Time series analysis is a statistical technique that deals with time series data, or trend analysis. Time series data means that data is in a series of particular time periods or intervals. So time series secondary data were used in this study. The data set were collected from National Bank of Ethiopia (from 1992-2017), Ministry of Finance and Economic development (currently National plan Commission) (1992-2017), and WB (1992-2017), International Monetary Fund (IMF), Central Statistical Agency (CSA), Ethiopian Investment Commission (EIC) and Federal Reserve. For the purpose of analyzing the country's factors that determine export performance, the export equation in this study was estimated using time series model for the period of 1992-2017/18. The time series data that were used in this study are export of goods and services valued in Birr, because the data collected from NBE, MOFED and investment commission are valued in Birr. But in some part of the analysis \$ has used.

3.3. Methods of Data Analysis

3.3.1. Descriptive Analyses

Descriptive statistics is the term given to the analysis of data that helps describe, show or summarize data in a meaningful way such that, for example, patterns might emerge from the data. Descriptive statistics are very important because if we simply presented our raw data it would be hard to visualize what the data was showing, especially if there was a lot of it. Descriptive statistics therefore enables us to present the data in a more meaningful way, which allows simpler interpretation of the data. All descriptive statistics are either measures of central tendency or measures of variability. These two measures will be help to use with graphs, tables, and general discussions to help people understand for the meaning of to be analyzed data. Accordingly, in this study descriptive analysis has used to determine the trend or pattern in a time series using graphs, tables and other tools. It was also used to identify cyclic pattern, overall trends, turning points and outliers.

3.4. Econometric Analyses

A. Econometric Model Specification

The general Estimation model used was time series model of VECM to identify the long and short run relation and estimation method was used Multiple Linear Models because of the research design of longitudinal research design. Time series processes are often described by multiple linear regression (MLR) models of the form:

$$y_t = X_t\beta + e_t,$$

Where, Y_t is an observed response and X_t includes columns for contemporaneous values of observable predictors. The partial regression coefficients in B represent the marginal contributions of individual predictors to the variation in Y_t when all of the other predictors are held fixed.

The term e_t is a catch-all for differences between predicted and observed values of Y_t . These differences are due to process fluctuations (changes in B), measurement errors (changes in X_t), and model misspecifications (for example, omitted predictors or nonlinear relationships between X_t and Y_t). They also arise from inherent stochasticity in

the underlying data-generating process (DGP), which the model attempts to represent. It is usually assumed that e_t is generated by an unobservable *innovations process* with stationary covariance

$$\Omega_T = Cov(\{e_1, \dots, e_T\}),$$

for any time interval of length T. Under some further basic assumptions about X_t , e_t , and their relationship, reliable estimates of β are obtained by ordinary least squares (OLS).

Accordingly the long-run equilibrium equation for determinants of export (OLS estimation model) of this study has used using first difference of the variables

$$EXPO_t = B_0 + B_1 EER_t + B_2 FDI_t + B_3 IFR_t + B_4 GDP_t + B_5 OPPE_t + B_6 TOT_t + B_7 IFRA_t + \xi_t$$

Where Expo is the total export volume in million dollars in trend of time, t

EER, is the effective exchange rate,

FDI, of Foreign Direct investment,

IFR represents the Inflation rate,

GDP represents the gross domestic product,

OPPE represents share on trade in GDP,

TOT represents terms of trade,

IFRA_t, implies of domestic infrastructure

For estimating the relationships among the variables in the long run multiple regression analysis and VECM has used to check relationship of the variables. The software planned to be used are STATA / E-views latest version.

B. Definition of Variables, Measurements and Estimation Technique

Export performance as a dependent variable was measured in terms of value. This type of measurement had been chosen because Country's total export consists of basket of goods and services therefore it was easily measured in terms of value rather than other measurements. The variables that are going to be test are Effective Exchange rate, Gross Capital Formulation, Foreign Direct investment, Inflation Rate, Gross Domestic Product, Share of Trade, Terms of Trade, and Domestic Infrastructure.

The variables to be selected for verifying the factors that affect the export performance and hence, in this paper the generic form of the export function is defined as follows:-

Expo=F (Real GDP, FDI, INFRA, EER, INFLA, OPPE, TOT,)

Studies performed in the developed countries mostly suggest that export can be a function of the price variables such as exchange rate, inflation, terms of trade and external income. These countries possess a well-established production structure and powerful economy that make the mentioned variables good descriptors of the export function. However, this is not the case in the developing countries whose production structures are not so powerful. Moreover, in macroeconomic and public sector analyses export is mostly considered as a function of exchange rate, internal prices and external income. But in developing countries non-price variables should be also included. In Ethiopia, the external incomes do not play an important role since goods competitiveness is not mainly considered as an important factor for export and the export volume (especially non-oil products) is not so high comparing to the world level. In addition, inflation looks to be a more important player for the examined country rather than the general price level. High inflation rates definitely harm the foreign direct investment decisions that might affect the export volume. As a representative for the internal shocks, a general GDP growth, domestic infrastructure, degree of openness and Effective Exchange rate have its own significant effect on export performance.

In order to deduce sound conclusions from the empirical study, it is important to choose an appropriate time period and to include as many countries as possible into the sample. The study covers the period from 1992 to 2018 of Ethiopia.

Dependent Variable

A. Export (X)

The annual values (in Birr Million or USD million) of Ethiopian exports are used in this study based on the data nature.

Independent Variable:

Effective Exchange rate: $RER = E \cdot P^* / P$ Where E is the bilateral nominal exchange rate, P^* is the consumer price index of the foreign country and P is the domestic consumer

price index (Ethiopia in this case). Depreciation of the real exchange rate enhances the competitiveness of the domestic goods vis-à-vis foreign goods. On the other hand, an appreciation in real exchange rate will decrease competitiveness of home goods in international markets. Sisay Minji (2010) investigated determinants of export trade and its performance in Ethiopia he found that relation between export performance and real exchange rate are insignificant using co-integration analysis in the period of 1981-2004 and also Yishak (2009) found insignificant result studied determinates of Ethiopia's export performance by employing a gravity model analysis. In opposite to this, Lemlem (2008) has found that negative relationship between export demanded and real effective exchange rate.

Biggs, (2007), Oyejide, (2007), Wondaferahuw, (2013) and UNCTAD, (2015) on their study as exchange rate is determinants of export performance indicated that there is a positive relationship between exchange rate and export. While overvaluation of currency can undermine export competitiveness through a direct loss of price competitiveness for exporting firms and undervaluation of the currency can bolster export competitiveness (Biggs, 2007).

In contrast (Roderick 2009, Eichengreen and Gupta, 2015, Haddad and Pancro 2010, Eichengreen 2008) in their study indicated that the insignificant effect of real exchange rate on exports and depreciation causes export and economic growth only in short run but not in the long run.

Foreign Direct investment: Data on FDI stock is taken from UNCTAD World Investment Report 2008; FDI could represent a measure of production development in the export sector. It can be expected to contribute to the enhancing of a country's competitiveness on international markets by increasing the technological content of exports. FDI stock measures its productive capacity. According to the report of UNCTAD 2004, FDI is needed because of three issues. These are market seeking, resource seeking and asset seeking and efficiency seeking, where location of production costs are lowest. The study of (Horst 1972, Jeon 1992, Ancharaz 2003, Awokuse and Yuan, 2008) concluded on their study that FDI has negative relationship with export

performance.

In contrast (Fugazza 2004, UNCTAD 2005, Morrissey and Mold 2007, Yishak 2009) on their study indicated that there is a positive relationship between FDI and export performance of host countries.

By opposite of the two empirical studies (Lall and Mohammed 1983, Sharma 2000) argued that foreign direct investment did not see any significant impact and relationship with Export As it is believed that transformation of the composition of exports increases with FDI and the sign of this variable is expected to be positive.

Inflation Rate: Inflation is a condition, when cost of goods and services rise. High inflation results into economic instability as it erodes the purchasing power of households. High inflation tended to be associated with low exports because it makes domestic goods more expensive to foreigners. (Gylfason 1998, Jalilian et al, G, Rwenyangila 2013, Monineath El 2018, Epaphra 2016) concluded that inflation affected negatively many countries leads financial crisis and there is negative relationship of inflation and export performance. Accordingly, the sign of this variable is expected to be negative.

Domestic and Foreign Income (Real GDP): This data was collected from both World Bank data base indicators and National Bank of Ethiopia. Since exports are the difference between domestic supply and domestic demand, they should be affected by the growth in domestic income. When the economy grows, both domestic demand and domestic supply are shifted, and therefore the expected overall effect of domestic income on exports is ambiguous. The import demand of the foreign countries is determined by their income. The higher the income of the importing country leads the greater the demand for imports and then for Ethiopia's exports. (Ahmed and Majeed 2006, Yishak 2009, Wondaferahuw, 2014) they found that real GDP of home country affects their export performance positively. This is due to the fact that output capacity of an economy has implication of supply potential by maintaining a country's competitiveness in the international market in the long run through the improvement of GDP.

Yishak (2009) examines the determinants of export performance of Ethiopia by employing gravity model for a panel of 30 Ethiopia's trading partners for the period 1995-2007. He indicated that the growth of domestic product (GDP) affects Ethiopian exports positively. Similarly, Kiros (2012) examines determinates export growth rate in Ethiopia using Co-integration and error correction model and found positive and significant effect between export and GDP. Hence, the more GDP of Ethiopia increase, the better export performance of Ethiopia and then both variables have positive signs.

Openness/Share of Trade: Openness to trade: exports plus imports as a share of GDP. Trade (both imports and exports) is vital to any successful modern economy. Trade is crucial for the competitiveness of the Ethiopian economy in the long run. Meaning the more trade internationally competitive the more the share of the economy registered in Real GDP increase from trade and vice versa. Trade increases, amongst other things, competition (hence boosting productivity and innovation), enables firms to capitalize on economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation. (Chang, R., Kaltani, L., and Loayza N.V, 2009, Wondaferahuw, 2013) indicated in their study as there are positive relationship among export growth and trade openness. On the other hand (Musila, J.W., and Yiheyis Z. 2015) concluded that there is negative relationship between trade share and export performance which will further affect economic growth. Accordingly, Ethiopian export commodity being competitive in international market more export is initiated local manufacturing industries for more production, hence, the better export performance of Ethiopia and then both variables have positive signs.

Terms of Trade: Terms of trade refer to the ratio index of export prices to import prices. In other words, it measures a country's export prices relative to its import prices. Put simply, it is the rate at which a country's exports are exchanged for imports. It may be expressed as: $\text{Index of export prices} \div \text{index of import prices} \times 100$. When the terms of trade rise above 100, it is said to be improving, and when they fall below 100, it is said to be worsening. If a country's terms of trade improve, it means that for each unit of exports sold, it can buy more units of imported goods. On the other hand, a

worsening terms of trade means that the country has to export more to purchase a given quantity of imports. However, it seems that there is a dominant view that deterioration in terms of trade lowers national income, because deterioration in terms of trade means a loss of real national income, as low units of exports have to be given to obtain low unit of import. (Musiinguzi, Obwane and Stryker, 2000, Nega 2013) in their stud indicated that terms of trade has positive and significant relationship with export by increasing favorable terms of trade marginally increase export and then export performance improved accordingly. Hence, the effect of the terms of trade on trade balance is expected to be negative

Domestic Infrastructure: Internal transport infrastructure is captured by the percentage of paved roads out of the total roads. Data on percentage of paved roads is taken from the World Development Indicators database. A higher rating indicates a better infrastructure. According to Samuel (2012) examined the determinants of Agricultural export in Ethiopia using Co-integration and error correction model in time series data from 1980-2010. He concluded that improved infrastructural condition positively and significantly determine the export performance of Ethiopia. Infrastructural facilities of a given country can be proxy by indexes such as percentage of paved roads out of the total road; number of fixed and mobile telephone subscribers (per 1000 people); number of internet subscribers (per 1000) and so on (Eyasu, 2011). Since the major export products are agricultural, the impact of infrastructure is proxies by kilometers of total paved roads considered. Better infrastructure should lead to higher trade and therefore more exports from Ethiopia. The study of (UNCTAD 2005, Mbekeani 2007, Baccetta 2007, Wondaferahu 2013, Limao and Venables, 200) confirmed that infrastructure has played an important role for their improvement of export growth (performance), otherwise it is an obstacle to trade competitiveness and sustainable development. By the same token (Fugazza 2004, Clarke 2005, Edwards and Odendaal 2008, Yishak 2009, Wondaferahu 2013) strongly support that infrastructure directly affect the export of good and service especially on delivery time, quality of the exported item and test and preference of the imported countries sustainably. They conclude that the development of infrastructures and export performance has positively and significant relation related. Thus, the

coefficient of internal infrastructure is expected to be positive in this study.

Table: 3. 1: Expected Sign of Variables

Dependent Variable	Independent Variable	Expected Sign	
(Agricultural and Manufacturing Goods)	Export performance	Effective Exchange rate	+ve
		Foreign Direct investment	+ve
		Inflation Rate	-ve
		Real Gross Domestic Product	+ve
		Share of Trade	+ve
		Terms of Trade	-ve
		Domestic Infrastructure	+ve

Source: Own Computation

C. Estimation Techniques

Ordinary Least Square (OLS) is planned to be used for the estimation technique. This technique was chosen because of the nature of the dependent variable. Since this study is a time series in nature it will be also examined the time series characteristics of the variables to be modeled, testing for stationary and co-integration of the variables and finally VECM has used to capture both the long run and short run relationship among variables.

3.5. Unit Root Test

3.5.1. Stationary test

The estimation starts by checking either the variables are stationery or not and Augmented Dickey-Fuller test was used for testing stationery of variables. Accordingly, to check the stantionarity at the beginning the data was transformed to first difference using STATA 15 version and the data is stationary at first difference.

3.5.2. The Unit Root Test Analysis

One of the major problems encountered in studying time series data the data is not stationary all the time. To overcome this problem it is critical to study the long run relationship of the variables behaviors. This is often done by checking if the variables are

co-integrated. The first step in co-integration analysis is studying the order of integration of the variables under consideration. The order of integration of the variables in this study is determined using unit root tests.

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, and Gujarati, 2004).

The well-known Augmented Dickey- Fuller (1981) and the Phillips Perron (1988) tests will be 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 ADF includes first-difference lags in such a way that the error term is distributed as a white noise. This is done so that the autocorrelation in the error term does not bias the test.

$$Y_t = \rho Y_{t-1} + u_t \quad -1 \leq \rho \leq 1$$

It is important to test the order of integration of each variable in a model, to establish whether it is non-stationary and how many times the variable needs to be differenced to derive stationary series. There are several ways of testing for a unit root. In this study, the researcher has applied the Augmented Dickey-Fuller (ADF). Philip and Perron (1988), propose a non-parametric method of controlling for higher order serial correlation in a series. Unlike ADF, Philip-Perron test makes a correction to the t-statistic of the dependent variables in the autoregressive process to account for the serial correlation in random term.

3.5.3. Co-integration analysis

In a regression involving non-stationary variables, spuriousness can only be avoided if a Stationary co-integrating relationship is established between the variables. Therefore, if two or more variables can be linked together to form an equilibrium relationship spanning the long run, then even though the variables themselves may contain stochastic trends, they will nevertheless move closer over time and the difference between them will be stable. Therefore a test for co-integration, need to be run and the ADF unit roots test to be used to test for the stationary of the residuals. If the residuals are stationary, then there is a proof for the presence of co-integration in the series used in the model (Adam, 1993; Perman, 1989).

$$\Delta \hat{u}_t = \alpha + \rho \hat{u}_{t-1} + \varepsilon_t$$

3.5.4. Vector Error Correction Model

The error correction model used to capture both the long run and short run model. Note: co integration test only indicates long run relationship but not short run. That is why error correction model required. To explain the short run relationship between independent and dependent variables that are co-integrated, ECM is used. According to (Gujarati, 2004), even if the variables of the model are co-integrated, there may be disequilibrium in the short run. ECM tells us how much time it takes to adjust this short run shocks. As a result, the residual of the long run model can be treated as the equilibrium residual and it can be used to connect the short run behavior the model's dependent variables to its long run value. The ECM is also important since it conveys information for the speed of adjustment from short run disturbance to long run equilibrium. If the variables are stationary, say at first difference, the short run model, ECM can be given a

$$\Delta Y = B \Delta X_t + U_{t-1} + E_t$$

Where, Δ =is the first difference

E_t = the disturbance (error) term

U_{t-1} = the one year lagged of the long run residual value, it called ECM

X_t = represent the short run disturbance in Y

U_{t-1} =represents the speed of adjustment towards the long equilibrium

According to Johansson (2010) since there is co-integration among dependent variables and its fundamentals, an error correction model has to be estimated by incorporating the lagged error correction term in the set of repressors. The error correction term is the residual from the static long run regression and it joins the set of differenced non-stationary variables to be estimated to capture both short run and long run dynamics.

CHAPTER FOUR

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics Results

4.1.1. Agricultural and Manufacturing Sector Export performance

4.1.1.1. Agricultural Export trend

The structure of the export sector of Ethiopia is dominated by a few primary products that account for a lion's share of the country's export earnings, while the share of non-agricultural products in total merchandise exports is almost insignificant. For the past three decades, primary agricultural products accounted to about 80-90% of the merchandise export earnings of Ethiopia. Among the major export products, as shown in fig. 4.1 below, coffee accounts the major share of primary exports. From 1984/85-2017/18, coffee is the most dominant export commodities accounted for 59% share among agricultural commodities exported and earned foreign currency. Next to coffee oilseeds accounted for 12% share from agricultural commodities. The third external income is earned from chat next to oil seeds accounted for 10% share. Next to chat pulses are the most dominated agricultural commodities exported to different countries and earn external income to Ethiopia accounted for 6%. Of the total export, which, is very recent but has 3% share to Ethiopian export agricultural commodity is flower. Export flower started recently but has good share compared to Ethiopian potential export for agricultural commodities.

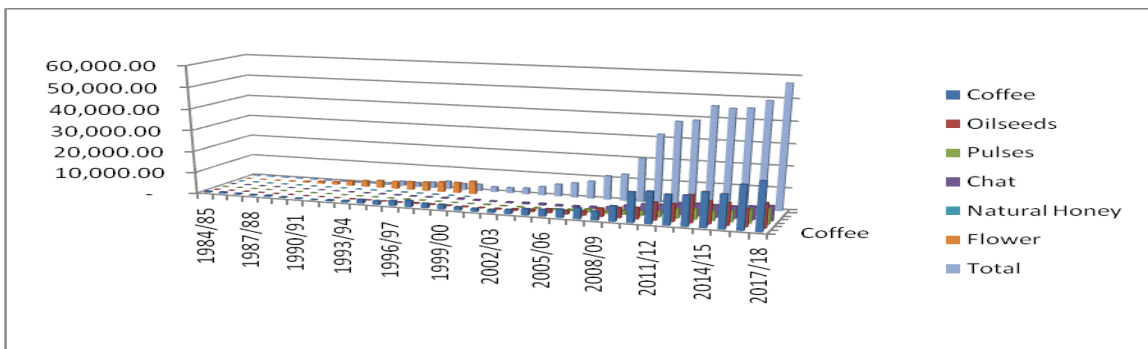


Figure: 4. 1: Agricultural Export Structure of Ethiopia

Source: MOFED and NBE and Own Computation

For the past ten years primary agricultural products accounted to about 69-81% was exported and earned foreign currency even if it has insignificant impact on economic growth of Ethiopia. As depicted to the graph 4.2 below the overall average export growth rate of agricultural commodities for the last 34 years was 15 % (NBE, 2018). The growth rate of agricultural export in the period under study is 28%.

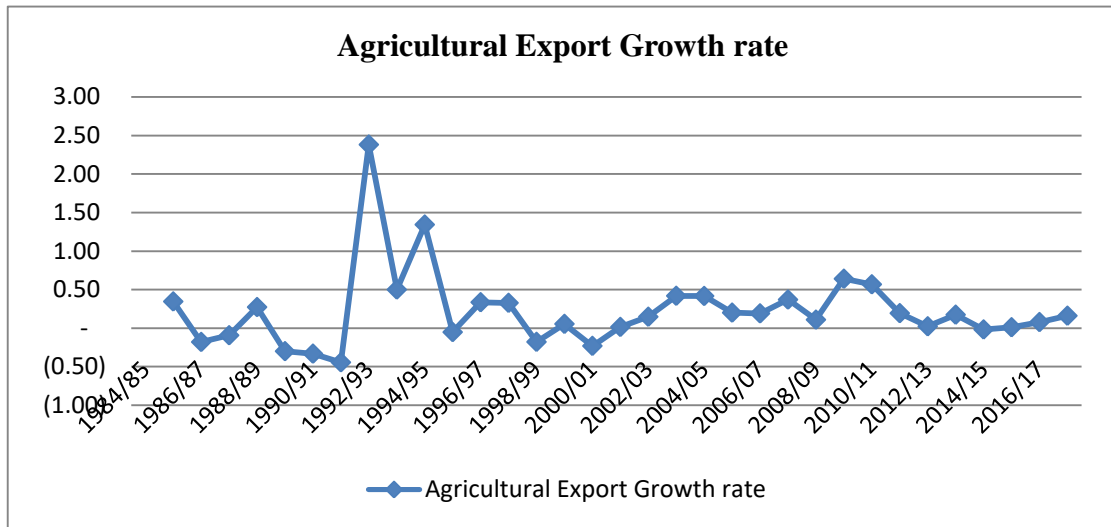


Figure: 4. 2: Agricultural Export Growth Rate

Source: MOFED and NBE and Own Computation

According to the table 4.1 below export of coffee, oilseeds, chat, pulse, live animals, fruits and vegetables, and Bees Wax were the progressive and incremental from time to time. However, the export growth is not competitive and generating to the level of expected income to the country because of the low index of terms of trade. The most recent agricultural commodities started from 2002/03 were Flower, Spices, Cotton, Cereals and Flour, Animal Fodder and Natural Honey, of which flower export is the most progressive.

(In millions of Birr)														
Year	Coffee	Oilseeds	Pulses	Fruits & Vegetables	Live Animals	Chat	Bee's Wax	Cotton	Cereals and Flour	Animal Fodder	Natural Honey	Flower	Spices	Total
1984/85	466.27	15.64	16.88	6.02	19.17	15.90	3.37	-	-	-	-	-	-	543.25
1985/86	664.79	7.69	12.64	6.03	18.91	8.48	12.72	-	-	-	-	-	-	731.24
1986/87	524.35	9.79	8.48	12.85	15.65	28.68	0.76	-	-	-	-	-	-	600.56
1987/88	439.18	22.02	16.09	11.79	32.36	21.32	2.47	-	-	-	-	-	-	545.23
1988/89	626.45	11.03	16.32	9.00	23.54	7.91	-	-	-	-	-	-	-	694.24
1989/90	405.10	8.39	35.96	4.07	10.82	21.02	1.70	-	-	-	-	-	-	487.06
1990/91	268.45	3.63	15.72	12.00	5.17	20.42	0.69	-	-	-	-	-	-	326.08
1991/92	168.32	0.38	0.39	6.40	0.47	5.07	0.66	-	-	-	-	-	-	181.69
1992/93	536.98	1.19	4.05	2.73	1.32	65.73	1.92	-	-	-	-	-	-	613.91
1993/94	718.02	44.19	27.70	6.86	10.76	107.93	5.51	-	-	-	-	-	-	920.98
1994/95	1,799.03	50.13	103.29	18.19	7.66	172.34	6.52	-	-	-	-	-	-	2,157.16
1995/96	1,724.01	41.94	77.22	21.03	0.77	174.44	7.99	-	-	-	-	-	-	2,047.40
1996/97	2,307.39	74.24	87.85	45.79	11.20	199.53	9.18	-	-	-	-	-	-	2,735.19
1997/98	2,889.53	314.66	102.95	31.48	10.56	272.35	10.51	-	-	-	-	-	-	3,632.05
1998/99	2,112.71	271.46	101.66	40.56	5.72	444.99	9.91	-	-	-	-	-	-	2,987.02
1999/00	2,133.65	255.33	80.02	44.25	14.14	618.77	5.55	-	-	-	-	-	-	3,151.70
2000/01	1,520.10	269.60	72.80	45.69	1.51	510.51	7.25	-	-	-	-	-	-	2,427.45
2001/02	1,393.81	278.74	281.41	80.11	7.13	418.67	6.01	-	-	-	-	-	-	2,465.88
2002/03	1,418.32	395.57	171.24	82.12	4.13	497.87	4.03	96.11	120.99	2.57	0.01	0.07	37.76	2,830.78
2003/04	1,926.68	712.74	194.68	109.66	16.45	758.88	8.28	105.14	102.55	2.59	0.26	19.82	59.98	4,017.71
2004/05	2,901.33	1,082.22	306.61	139.05	110.87	866.80	9.59	15.70	75.31	24.09	0.46	67.81	92.98	5,692.82
2005/06	3,076.49	1,835.27	320.97	114.54	239.24	773.24	12.55	59.47	123.84	3.90	0.69	189.01	89.25	6,838.44
2006/07	3,741.74	1,654.71	619.56	142.21	323.07	816.80	16.09	126.81	15.91	20.43	10.41	561.31	97.46	8,146.50
2007/08	4,897.34	2,037.09	1,333.63	118.40	376.47	1,000.78	17.09	178.42	18.99	26.13	5.96	1,037.92	114.72	11,162.95
2008/09	3,932.23	3,819.43	946.83	124.03	539.99	1,448.07	16.44	63.09	3.27	0.25	5.56	1,374.36	117.03	12,390.57
2009/10	6,913.38	4,670.85	1,677.73	412.60	1,177.29	2,710.33	20.61	137.76	74.76	61.65	24.66	2,204.20	242.48	20,328.30
2010/11	13,617.88	5,282.98	2,232.69	512.63	2,387.25	3,836.25	29.13	8.65	528.44	0.43	26.79	2,845.76	567.24	31,876.12
2011/12	14,424.85	8,174.11	2,762.65	775.37	3,565.93	4,144.33	37.33	3.26	106.56	0.07	56.00	3,402.18	620.12	38,072.76
2012/13	13,597.85	8,096.55	4,251.50	798.84	3,022.72	4,936.46	47.78	157.79	70.23	0.22	52.87	3,401.60	546.64	38,981.04
2013/14	13,708.11	12,477.21	4,790.44	877.21	3,553.28	5,670.69	52.05	20.06	213.11	-	47.23	3,817.38	561.15	45,787.92
2014/15	15,734.93	10,269.30	4,409.21	956.61	2,976.56	5,468.03	95.73	0.24	319.56	0.25	46.14	4,086.87	647.85	45,011.27
2015/16	15,267.17	10,076.70	4,886.96	1,128.06	3,090.57	5,511.99	51.33	0.01	185.21	-	41.93	4,737.81	566.21	45,543.95
2016/17	19,897.56	7,891.36	6,276.56	1,257.75	1,506.51	6,113.69	60.57	-	645.10	-	31.34	4,905.51	554.73	49,140.68
2017/18	21,893.48	11,188.85	7,124.26	1,603.50	1,539.07	6,882.24	81.31	140.35	156.78	-	23.69	5,982.07	441.28	57,056.90

Table: 4. 2: Agricultural Export Commodities of Ethiopia

Source: - NBE and MOFED and own computation

4.1.1.2. Manufacturing Export Trend

Manufacturing exports are showing a persistent growth in Ethiopia where their share in total exports declines from in 40% 1991 to 10% in 1998 (NBE, 2018). This implies that growth in manufacturing exports is weak while in non-manufacturing exports, primary products, is high. The graph 4.3 below shows the trend of manufacturing export share in merchandise exports. Second it implies that Ethiopia’s exports are not much value adding & linkage creating in the domestic economy, because primary exports are mostly raw exports or exports with minor processing value.

Lower share of manufacturing exports also implies that Ethiopia’s export sector doesn’t play a huge role in creating employment and linkage effects in the economy since primary product exports are with less linkages and lower employment generating capacity. In addition, concentrating on non-manufacturing exports has made the country not to get the benefits of manufacturing exports; transfer of technology & capital, development of industries related with export industries.

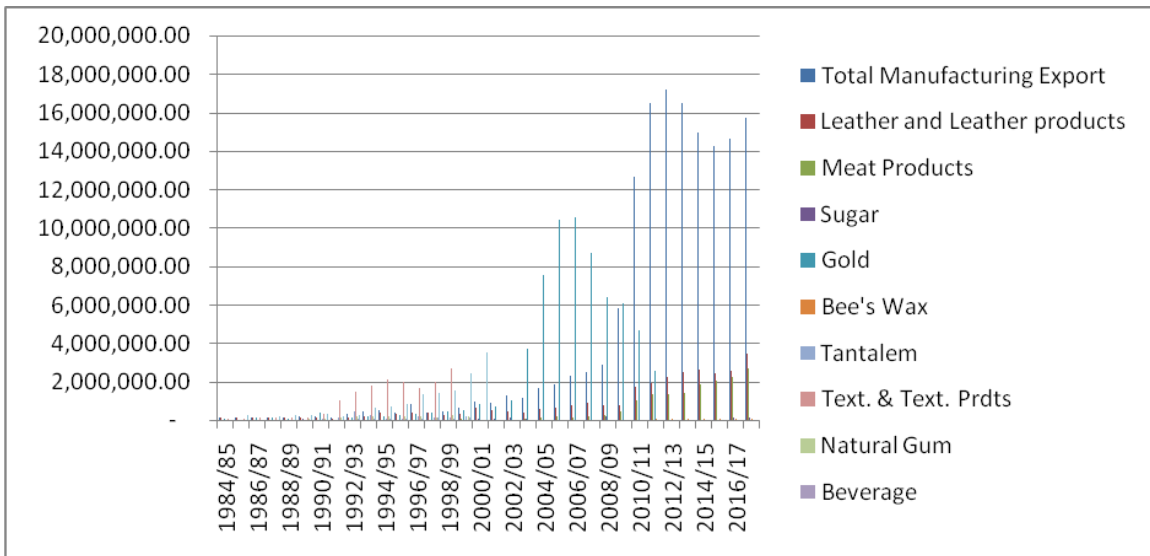


Figure: 4. 3: Manufacturing Export Structure of Ethiopia

Source: - MOFED and NBE and Own Computation

Ethiopian main manufacturing products are semi-final (intermediate) goods exported to foreign market. As per the data of (NBE, 2018), the major semi-final products are leather

and leather products, meat products, Sugar, Gold and most recently started exporting are Textile and textile products, Natural Gum, Marble and Beverage are the major one.

As indicated in the graph 4.4 below manufacturing growth rate of Ethiopia in 1984/85 was 10% compared to the previous year and then decreased to -20%. The maximum was in the year 2008/09-2009/10 comparable to the previous years after the fall of Derg. It was not so long years stayed and then fall to -10% growth rates in 2015. Then after it was not as such attractive growth rate for export of manufacturing products. The overall annual growth rate is 22%, which is far below the expected planned by GTP-I and II of Ethiopian government wish to boom industry and is not significant effect for economic growth of the country. The low growth rate is not the only case but also manufacturing products exported are not competitive in international market because exported without value adding.

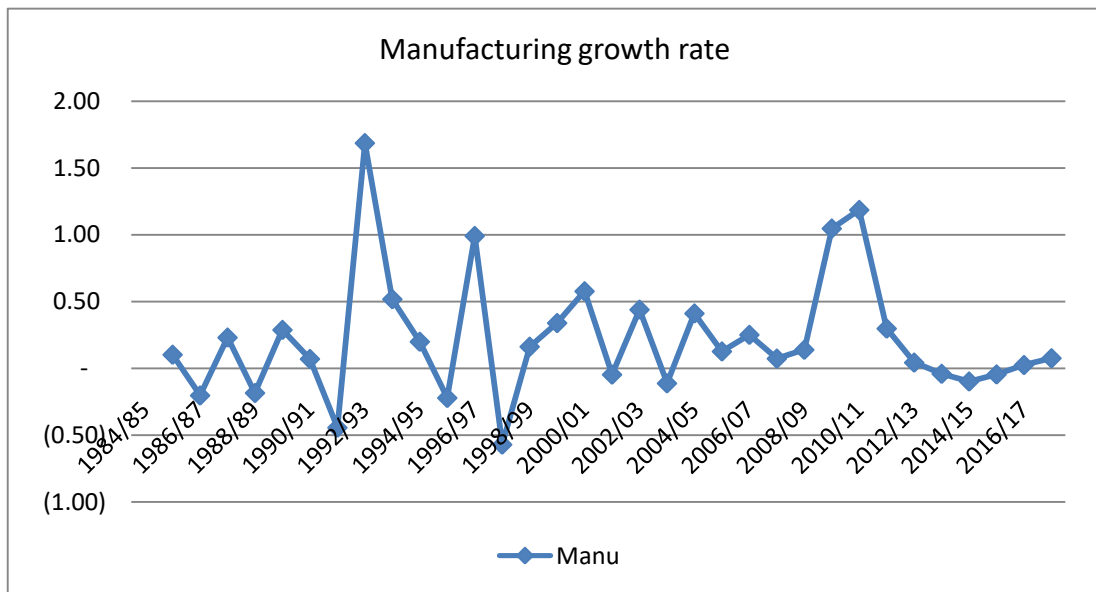


Figure: 4. 4: Manufacturing Growth Rate

Source: Own sketch from NBE data

In the table 4.3 below shows the manufacturing export trend is low compared to the potential of the country expected to export and generate foreign income.

Table: 4. 3: Manufacturing Export Commodities of Ethiopia in Millions of Birr

Year	Leather and L.pro	Meat Products	Sugar	Gold	Tantalum	Text. & Text. Prdts	Natural Gum	Beverage	Others	Total
1984/85	95.41	3.92	9.34	-	-	-	-	-	-	174.64
1985/86	119.46	3.87	10.40	-	-	-	-	-	14.10	192.57
1986/87	108.29	5.37	12.63	-	-	-	-	-	-	153.59
1987/88	133.00	5.14	14.85	-	-	-	-	-	-	189.10
1988/89	123.53	2.09	10.00	-	-	-	-	-	-	154.38
1989/90	134.05	1.15	37.41	-	-	-	-	-	-	198.88
1990/91	92.21	1.02	16.36	73.90	-	-	-	-	-	212.97
1991/92	58.65	0.02	1.76	39.33	-	-	-	-	-	118.58
1992/93	134.52	0.42	5.09	148.17	-	-	-	-	-	318.50
1993/94	203.61	0.67	25.72	180.74	-	-	-	-	-	483.49
1994/95	373.55	6.07	2.23	103.13	-	-	-	-	-	580.07
1995/96	309.70	12.17	-	68.23	-	-	-	-	-	452.11
1996/97	372.25	24.18	4.73	416.04	-	-	-	-	-	900.21
1997/98	347.70	29.34	-	-	-	-	-	-	-	387.23
1998/99	243.05	31.64	1.24	174.30	-	-	-	-	-	450.24
1999/00	286.46	32.71	23.96	260.04	-	-	-	-	-	603.17
2000/01	633.75	14.37	68.47	234.89	-	-	-	-	-	951.48
2001/02	474.43	9.42	85.11	300.71	-	-	-	-	37.76	907.43
2002/03	448.00	20.78	153.71	361.03	34.32	-	18.88	1.72	263.69	1,306.43
2003/04	375.84	66.68	88.63	419.86	34.47	75.84	37.06	3.45	54.62	1,160.76
2004/05	585.18	126.15	5.28	513.36	43.43	62.14	42.60	3.72	256.27	1,638.44
2005/06	651.33	160.84	-	562.14	37.72	95.01	45.04	2.69	292.16	1,846.93
2006/07	789.16	135.52	-	863.86	54.49	109.42	49.69	5.39	303.59	2,311.11
2007/08	917.53	193.94	17.88	735.12	56.56	141.14	63.93	-	354.91	2,481.02
2008/09	763.69	273.52	178.59	1,034.50	72.11	143.43	100.04	12.64	248.66	2,827.18
2009/10	732.60	440.95	0.12	3,709.81	153.61	297.31	163.96	22.10	266.54	5,787.01
2010/11	1,690.16	1,024.71	-	7,540.51	462.48	1,000.17	206.79	33.88	690.75	12,649.45
2011/12	1,894.38	1,358.08	-	10,417.36	288.21	1,460.99	202.78	76.52	723.70	16,422.01
2012/13	2,205.36	1,350.63	0.00	10,536.98	92.24	1,773.24	204.69	92.16	887.24	17,142.55
2013/14	2,474.65	1,424.01	-	8,722.19	86.42	2,100.92	231.46	59.89	1,355.53	16,455.08
2014/15	2,644.75	1,865.87	-	6,399.03	202.65	1,969.32	230.95	79.90	1,456.65	14,849.11
2015/16	2,424.09	2,026.53	-	6,113.14	151.56	1,633.98	176.00	109.78	1,546.72	14,181.80
2016/17	2,559.00	2,214.72	115.43	4,683.99	137.86	2,004.29	266.18	90.51	2,473.08	14,545.06
2017/18	3,455.81	2,661.97	133.58	2,605.76	246.01	2,695.23	233.80	108.80	3,515.15	15,656.10

4.1.1.3. Share of Export Sectors

Of the major sectors that support economy of Ethiopia are Agriculture which is the major leading sector for external trade and manufacturing is next to Agriculture. The annual average growth of export share to Ethiopia is 75% for agriculture and 25% for manufacturing commodities. Of the Agricultural commodities majorly exported are Coffee, Oilseeds, chat, pulses and flower and from manufacturing commodities leather and leather products, meat products, Gold are the major one.

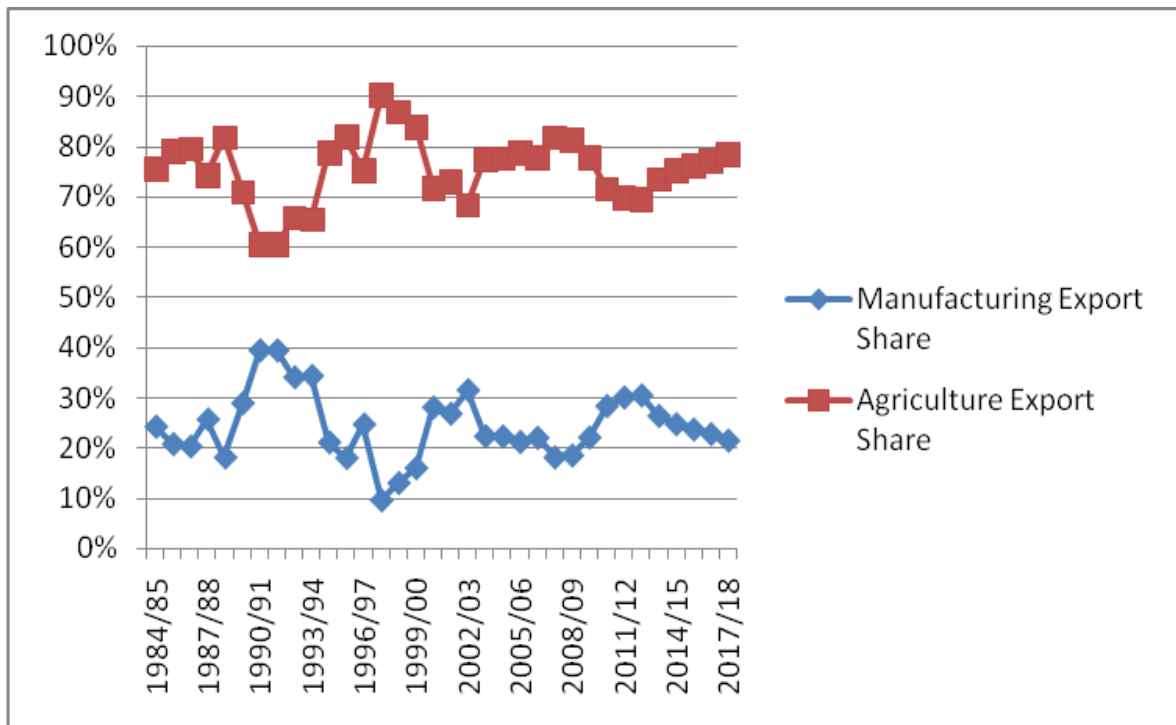


Figure: 4. 5: Share of Export Sector of Ethiopia

Source: MOFED and NBE and Own Computation

In conclusion, the trend analysis results (see graph 4.5 above) show that growth rates of exports in Ethiopia had been very volatile. This is basically qualified to factors related to demand side (a low income elasticity of commodities that Ethiopia exports, declining prices for its exports, and limited destinations for Ethiopian exports with lack of competitiveness) and supply side (its high dependency on few primary products and a very high degree of concentration of exports on few commodities).

4.1.2. Summary Statistics of Explanatory Variables

The study has eight variables to be described and analyzed based on the data nature of the time series model. These are two dependent variables i.e. Agricultural and Manufacturing export performance and seven independent variables. The total observations of the study are 27 years.

In table 4.4 below showed that the data of export performance is explained with a mean value of 21985.6 and standard deviation of 25491.94. The minimum export amount of Ethiopia was 300million Birr in 1992 during the fall of Derg and EPRDF comes to power. It was mainly generated from coffee, leather and leather products followed by Gold. The maximum export amount of Ethiopia is 72.7Billion Birr in 2017/18.

The first independent variable is gross domestic product with mean value of 429212.8 as showed in table 4.4. The standard deviation of GDP is 445217. The minimum value of GDP was registered for 12.5Billion of Birr in 1992. The maximum GDP of Ethiopia was registered in 2017/18 with 1.7trillion Birr which shows progressive through time.

The mean of FDI in this study is 16114.43 with standard deviation of 299950.78. The minimum FDI registered was during the period of 1992 with 0.4029million Birr and currently reach to maximum of 111.64Billion Birr (Investment Commission, 2018) and same is depicted in table 4.4 below.

The third independent variable used in this study is infrastructure. The quality of domestic infrastructure is the main factor for the improvement of export performance. As showed in table 4.4 below the mean of infrastructure is 36719.82 with standard deviation of 45237.88. The minimum cost invested for the improvement of infrastructure of Ethiopia is 951million of Birr in 1992(MOFED, 2018). The maximum infrastructure cost of the improvement was registered in 2017/18 which is accounted for 134.63Billion Birr (MOFED, 2018).

Exchange rate is the major independent variable analyzed in this study. In table 4.4 below showed that the mean of exchange rate is 11.31 and with 6.345 standard deviation.

Before 1992 exchange rate of Ethiopia was followed fixed policy. But after 1992 the minimum exchange rate of Ethiopia was 2.07 birr equivalent with 1USD. The maximum exchange rate of Ethiopia in average was registered in 2018 with 26.11 Birr equivalent with 1USD (NBE, 2018)

Inflation rate data used in this study is the general inflation rate. The mean of inflation rate during the period covered of the study is 11.25% as showed in table 4.4 below with standard deviation of 11.77. In Ethiopia the minimum inflation rate was 0.1044% in 1998 and was maximum in 2008 with 55.24 %

As depicted in table 4.4 below Ethiopian TOT is with mean of 68.39% and standard deviation of 19.96. The minimum TOT of Ethiopia was registered in 2001 which was accounted for 48.2 and the maximum of 112.96in 2016/17.

The last but not least independent variable used in this study is share of trade/ openness. The share of trade/openness is the ratio of export plus import to GDP of Ethiopia is registered with mean value of 32.17 and standard deviation of 6.092 according to the table 4.4 below. Ethiopia's minimum share of trade was 23.43% registered in 1996 and the maximum was 41.47%. This is because of export performance is low and import is shooting than export. Meaning the contribution of export to GDP share is very low. According to (NBE, 2018) export were accounted for 72.7Billion Birr and import accounted for 397Billion Birr. There is a deficit balance of payment that the country has registered throughout the study under covered.

Table: 4. 4: Summary of Descriptive Statistics in million Birr for Min and Max

Variable	Mean	Std. Dev.	Min	Max
Export Performance	21985.61	25491.94	300.267	72712.99
Gross Domestic Product (GDP)	439212.8	445217	125406.3	1719491
Foreign Direct Investment (FDI)	16114.43	29950.78	0.4029	111643
Infrastructure (IFRA)	36719.82	45237.88	951.8	134725
Exchange Rate (Exch)	11.31006	6.345027	2.07	26.1082
Inflation Rate(Infla)	11.25288	11.7713	0.104496	55.24131
Terms of Trade(TOT)	68.39344	19.96074	48.21057	112.9684
Openness (Oppe)	32.17193	6.091686	23.427	41.47

Source: MOFED, NBE, INVESTMENT COMMISSION and OWN COMPUTATION

4.1.2.1.Export Import Structure of Ethiopia

Export is the major factors that affect economic growth of every country by generating external income for further economic development that helps for importing capital goods especially for LDC's for sustainable growth. However most LDC's export performance is at low/poor stage and almost all of the balance of payment are extreme negative/deficit and depends on high external debt to cover the deficit, which was expected to cover by export. Ethiopia is one of those LDC's which is, its export performance/contribution to the balance of payment is deficit.

In fact the export of Ethiopia is highly dependent on agricultural export commodities/traditional export which is characterized with very low TOT and couldn't competitive of international trade.

Both MOFED and NBE data during under the period of 1992-2018 as per the Fig.4.7 below showed that the overall export growth rate is 26%. However, the contribution to economy is very low since external income generating is insignificant. In the reverse the expense of import for capital goods and other commodities are growing by 23%. The import growth rate is less than export growth rate but the import amount is very significant and showed the capital is depleting from the country.

In fact the growth rate of export outshine the import growth rate, according to data listed under the period covered. But the balance of payment in deficit annual growth rate is by 24%. In 2018 Ethiopian balance of payment is about 324billion Birr in deficit. Meaning 72.7billion Birr export and 397.1billion Birr import, which is high deficit. In all period under study the export import difference is negative because the trend of import is greater than export market. Meaning the export gain is low compared to payment for importing capital.

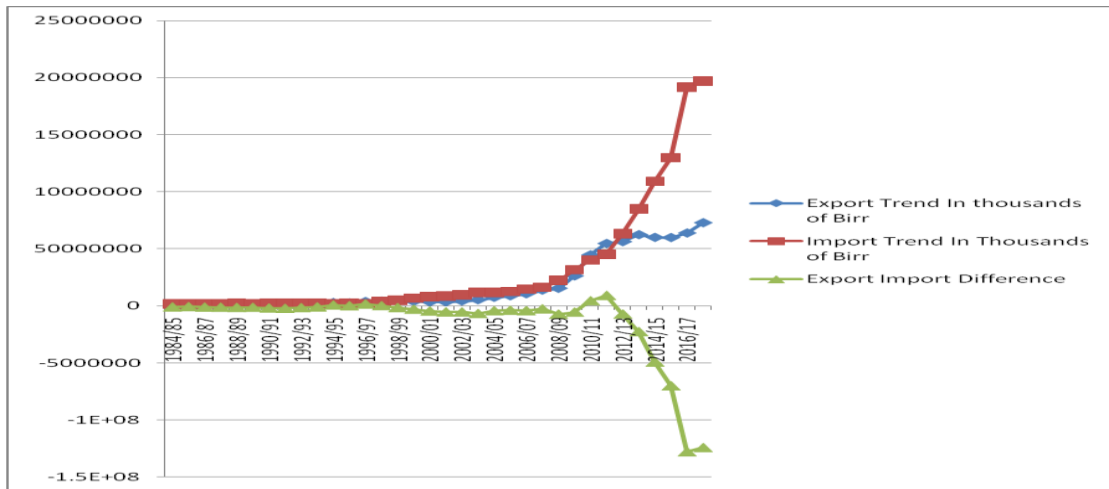


Figure: 4. 6: Export Import Structure of Ethiopia

Source: -Own Computation from NBE and MOFED Data

4.1.2.2.Trend of Real GDP

Gross domestic product is the final value of goods and service produce within the geographic boundaries of a country during a specified period of time, normally at fiscal year. It is assumed to have a positive impact on export. It measures all of a nation's consumption, private investment and government spending plus exports but minus import. It is a market measure, which means that the value of the various dimensions mentioned above is calculated in terms of their market price. Economies with higher GDP are expected to trade more than those with lower GDP because the former tend to innovate more and have more advanced economic growth. Ethiopian GDP trend is increasing by annual growth rate of 11%. Post Derg, start of the EPRDF has made significant change on the Real GDP of Ethiopia. It was because of the open economy

Ethiopia started and disclose open an Opportunity for the paradigm shift of GDP. According to NBE data, in 1992, Ethiopia’s GDP was 125.4 Billion Birr in the Year after the reform. The reason for the increase of GDP was because of FDI was invited and some of the foreign investors were started producing different commodities in the country. The FPRDF launched open market economy, most of state owned farms and industries were privatized and transferred to local investors and started producing efficiently than before and exchange rate policy changes to floating which was fixed during Derg regime. In 2018 Ethiopian Real GDP increased to 1.72 Trillion Birr with growth rate of 11% (NBE 1992-2018). Export has low significant effect on real gross domestic product of Ethiopia. Even though the composition of export sector of the country is dominated by agricultural products, it still plays a significant role in the growth performance of the Ethiopian economy. The import of goods and services value outweighs the Ethiopia export value and hence, the balance of payment is highly in debt (deficit).

In general the real GDP of Ethiopian is increasing, however, the per capital income of the peoples are small compared to the similar countries of Africa. As per the graph 4.8 below the trend of real GDP of Ethiopian was low in 2003 with -2% and fluctuating to up to 2015. It was again increased and reached maximum in 2016 and continuously decreases to 10% and 8% in 2017 and 2018 respectively. This was because of political unrest of the country leads inefficient production of both agricultural and industrial commodities were the major reason for the down turn of real GDP of Ethiopia. The overall real GDP average growth rate of Ethiopia under the period covered is 11%.

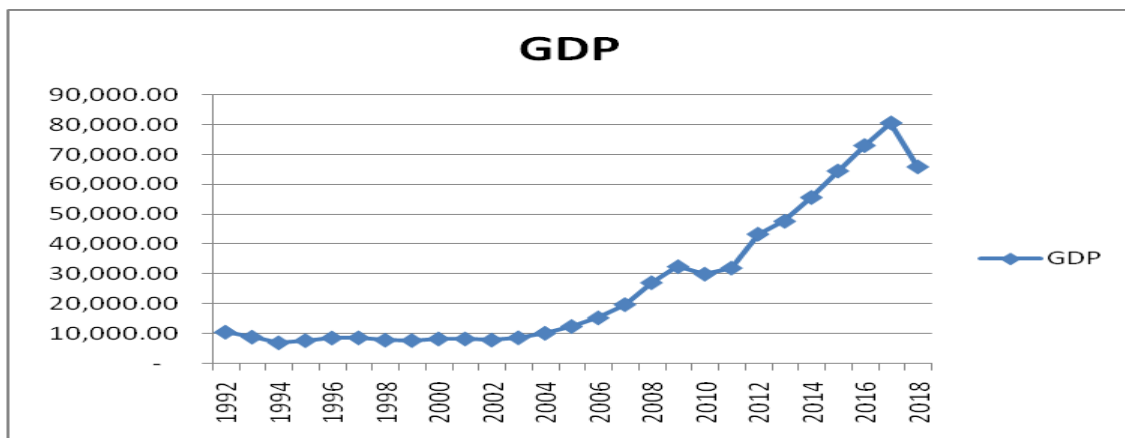


Figure: 4. 7: Real GDP trend of Ethiopia

The real GDP growth rate of Ethiopia is fluctuating in the period under study.

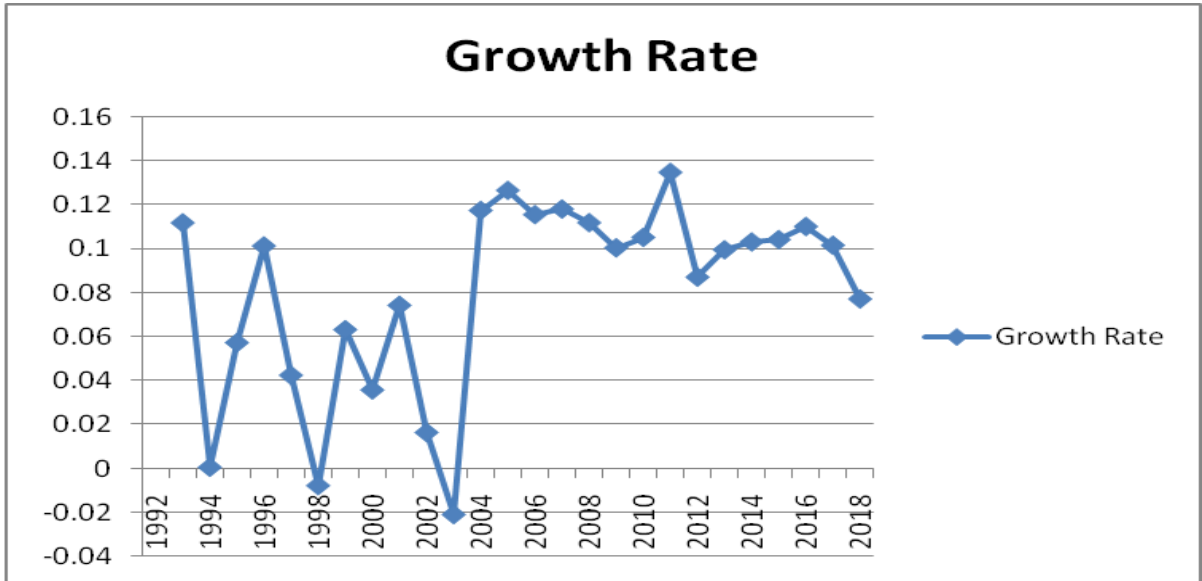


Figure.4. 8: GDP Growth Rate

Source: - NBE and MOFED and own sketch

In summary, assessed available literature indicates that the contribution of export sector to the development of different sectors of the economy is progressive by designing different policies and strategies even if far below the expected level.

4.1.2.3.Share of Trade/Openness

Openness to trade (share of trade) is a ratio of exports plus imports as a share of GDP. Trade openness gives an idea of interpretation because it captures all incoming and outgoing transaction. Meaning the higher the index (ratio) imply, the larger the influence of trade on domestic economic activities. The higher the export over import and the more and the more trade over GDP leads the higher share of trade further impact on economic growth and vice versa. According to data of MOFED and NBE, Ethiopian share of trade in 1992 was 27.87% through the period under study and the share of trade was fluctuating with the annual average growth rate of 32.17%. The maximum share of trade of Ethiopian was in 2013, accounted for 41.47%. As indicated in graph 4.10 below the share of trade of Ethiopia is very low because the index showed below 50%, meaning that

export has very low significant effect on Economic growth. The share of export to Real GDP is only 4%.

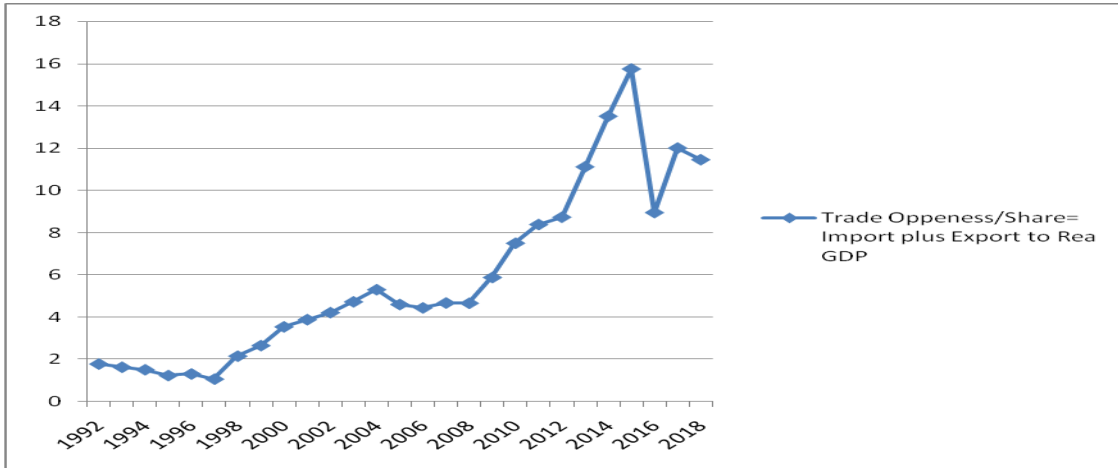


Figure: 4. 9: Import plus Export to GDP (Trade Openness)

Source: - NBE and MOFED

4.1.2.4. Trend of Foreign Direct Investment

During Derg regimens, it was used closed economy and was not allowed for foreign investors invest in Ethiopia. But after the political change in 1991/92 in the country the open market economy policy pave the way for foreign investors in Ethiopia. The first investment capital registered in 1992 by FDI was 170,000 USD /or 402,900.00, then increased to 9.5 million Birr after a year with growth rate of 225% which was high compared to the previous Year. An increase of FDI to Ethiopia fluctuating to some extent year to year and registered maximum in year 2016 for 83.8 Billion Birr and decrease to 77.8 Billion Birr in next year because of different factors related to the fear of the instability.

The FDI mostly registered was involved in to manufacturing sectors because of the policy of the country's Agricultural Development lead Industry strategy and import substitution and export promotion .The growth rate of FDI to Ethiopia was reach maximum in 1996, 2003 and 2016 with growth rate 84%, 83%, and 60% respectively.

The overall FDI growth rate to Ethiopia is 202.98% under the period of the research has conducted, in spite of the fact that there are situation of extreme up and down fluctuation

under the period covered. Fast economic growth, favorable investment climate, large market size and high-level of government commitment towards FDI attraction have contributed to the growth of FDI inflow into Ethiopia-making the country the second largest recipient of FDI in Africa and same is shown in fig 4. 11 below especially from 2012 to 2016 then down turn because of social unrest of the country since half of 2016 to 2018.

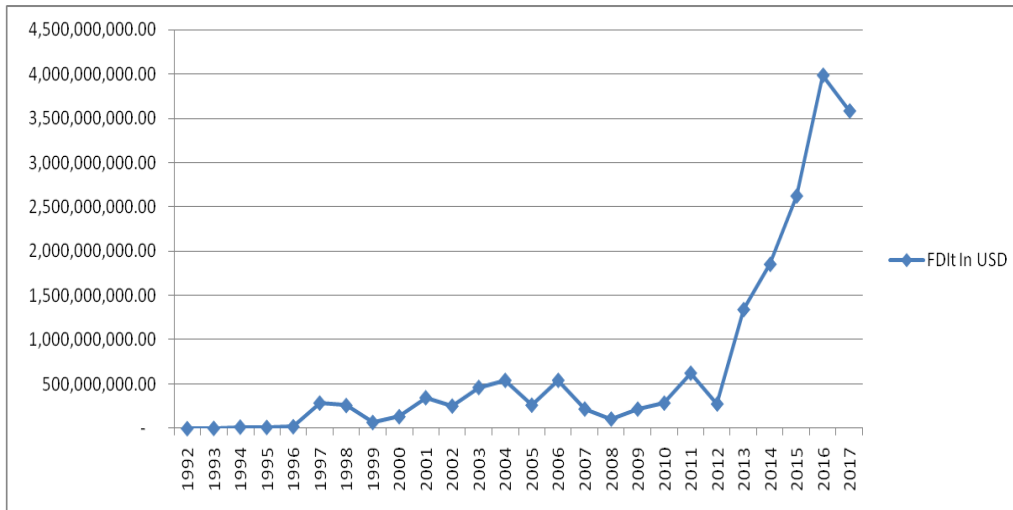


Figure: 4. 10: Foreign Direct Investment

Source: - NBE and MOFED and own computation

4.1.2.5. Trend of Infrastructure Cost

Infrastructure is the basic facilitator of growth of the commodity to reach at end user in particular and international market in general. For the fast growth of economy infrastructure in the main line that link countries at regional and at global level. The same is true for Ethiopia that plays great role locally, domestic infrastructure i.e. road, railways, Airlines, Telecommunications and other and internationally, Airlines; Ethiopian Shipping lines Telecommunications and internet market.

To facilitate the export of goods and service Ethiopia invested more on infrastructure, since the more and at best quality on infrastructure leads reliable and time delivery for export commodity. Accordingly in 1992 with 27% growth rate Ethiopia invested 951

million Birr to expand infrastructure increasing at increasing rate up to 1999 but decreasing in 2000 with -7%, then increase up to 2015 with growth rate of 29% and then continues decrease in 2016 and 2017 with growth rate -2%.

The overall growth rate of infrastructure of Ethiopia for the facilitation of export performance in particular and economic growth in general is 23%. The improvement of infrastructure leads the improvement of export performance accordingly there is strong relationship with economic growth by facilitating export of goods and services timely and with best quality to the expected and competitive level. According to Fig 4.12 below the infrastructure of Ethiopia is increasing at increasing rate but falls in 2016 and 2017 because, rather than invested on the indicated infrastructure it was highly diverted to other government expenditure like defense and others. The overall infrastructure of Ethiopia is increasing because of public expenditure increased through time.

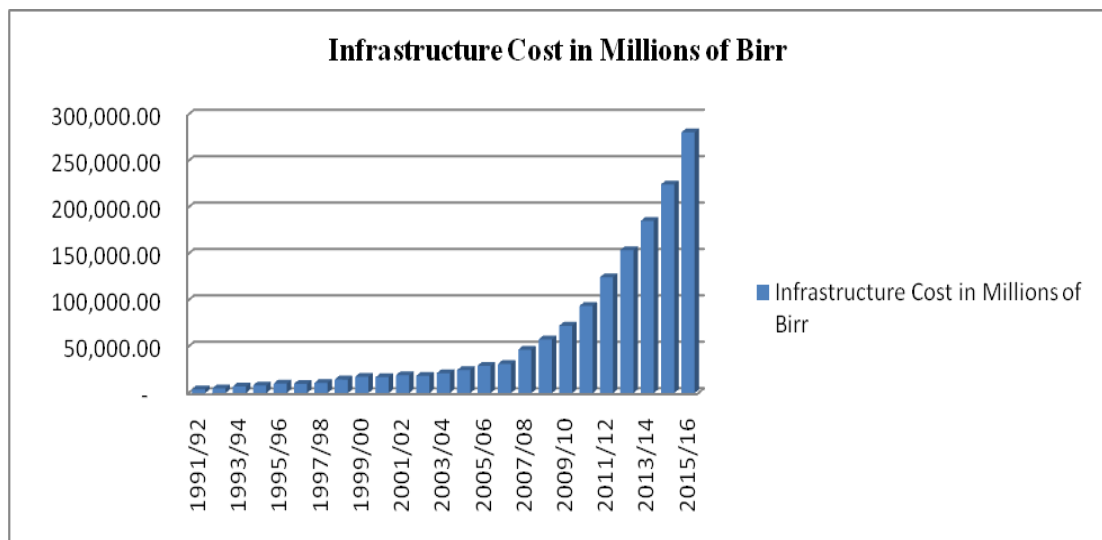


Figure: 4. 11: Trend of Infrastructure cost

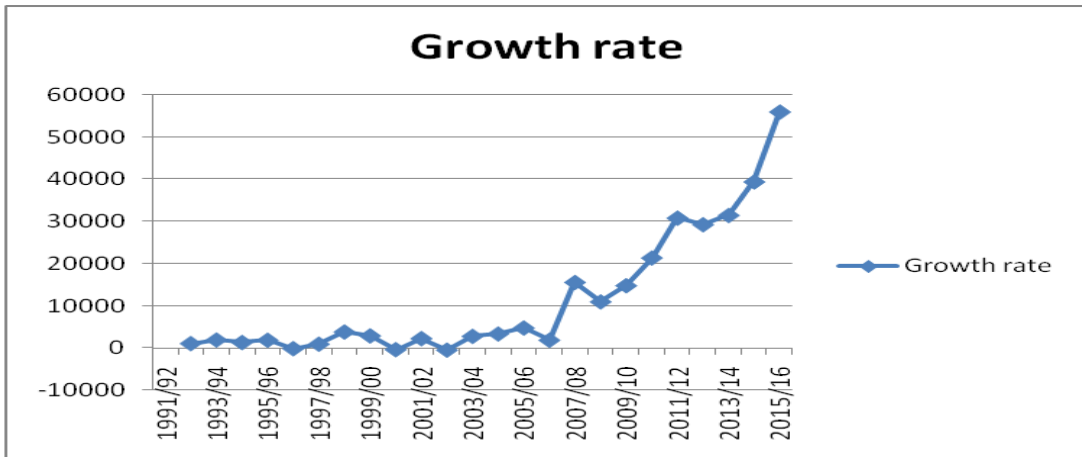


Figure: 4. 12: Infrastructure cost growth rate

Source: - NBE and MOFED and own computation

4.1.2.6. Trend of Inflation Rate

In 1992 inflation rate was 2.05 and gradually increasing up to 1995 with growth rate of doubling compared to the previous Years. In spite of the fact that, there was not significant effect on the economy, because, the economy was growing than inflation rate. In the Year 1996 and 1997 the inflation rate was -9 and -2.65 respectively with growing rate of -1.16; almost the general price increase was negative and abnormal: meaning that almost the economy was stagnant.

The same result was observed in 2001 and 2002 with -10.77 and -1.22 inflation rates with average growth rate of -6%, which is still abnormal on the economy. After a Year 2003, in 2004 it was the maximum of 17.77% rate. In 2008 Ethiopian maximum inflation rate was 55.24% and general inflation rate reach at maximum, then in the Years 2009 and 2010 back to normality up to 2011 reach 38.04%.

In the Year 2008 and 2011 Ethiopian economy was highly affected because of the affordability of the people to purchase goods and service. In the same token export performance is affected by this variable because the local price is very high compared to export price, after exchange has made with Birr to local price of goods and services exported. In 2018 Ethiopian inflation rate was 16.77% .which was double compared to the year in 2017 was 8.36%.

The general inflation Rate of Ethiopia in average is 9.5% for the period from 1992 to 2018.

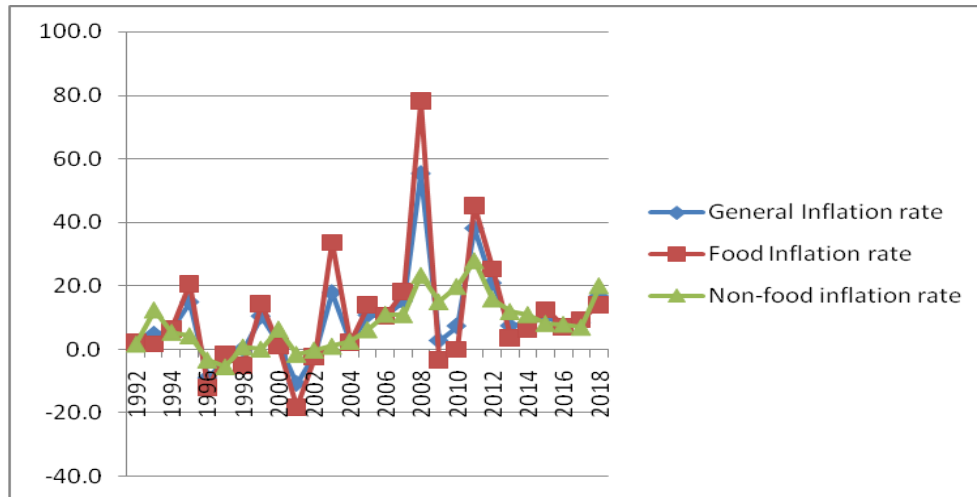


Figure: 4. 13: Inflation Rate Trend

Source: - NBE and MOFED and own computation

4.1.2.7.Trend of Terms of Trade/TOT

Terms of trade represents the ratio between a countries export price and import price. Favorable terms of trade are associated with increased export growth rates and unfavorable terms with low export growth rate. Meaning when the terms trade rise above 100, it said to be improving and when they fall below 100, it is said to be worsening. If a country's terms of trade improve, it means that for each unit of export sold, it can buy more units of imported goods and vice versa.

The deterioration in terms of trade lowers national income, because deterioration in terms of trade means a loss of real national income as low units of export have to be given to obtain low units of exports ,which affects the balance of payment becomes deficit because low export. Accordingly ,Ethiopian terms of trade is below 100,meaning each units of export sold, it cannot buy more units imported goods and deterioration in terms of trade and loss real national income. This result is aligned with the export, import structure of Ethiopian with deficit balance of payment.

According to NBE, the maximum term of trade of Ethiopian was 120% in 2017/18. And the average growth rate of terms of trade of Ethiopia is 68.57%. This means Ethiopian TOT is less than 100 and more capital is leaving the country than entering the country, meaning export performance of Ethiopian does not contribute and insignificant effect on Ethiopian Economy.

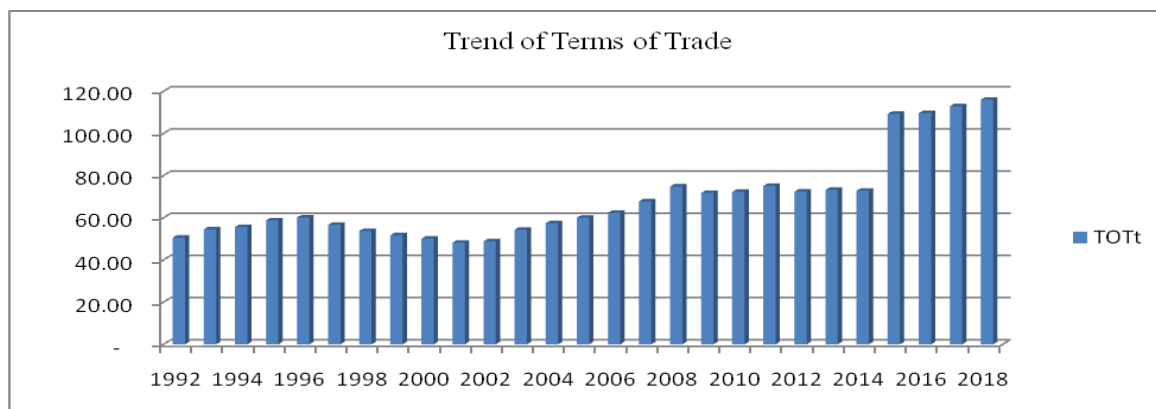


Figure: 4. 14: Trend of Terms of Trade

Source: - NBE and MOFED and own computation

4.1.2.8. Trend of Exchange rate

Among the factors that make international trade a distinct subject is the existence of different national monetary units of account. A typical international transaction requires two distinct purchases: First, the foreign currency is bought; second, the foreign currency is used to facilitate the international transaction (Page, 357-Robert J.Carbaugh, 2004). Accordingly the real exchange rate can be an important variable in determining export growth, diversification and international competitiveness of goods produced in a country (UNCTAD, 2005).

In Ethiopia exchange rate is among the major factors that affect export of goods since international relation started for exchange of goods and services internationally. During the Derg regimes Ethiopian exchange rate policy was fixed, based on the economic policy of the government. In 1991/92 the average exchange rate of Ethiopian was Birr 2.07, since, then the exchange rate increase with average growth rate of from 1991 to 2009 11.92% and increase at alarming rate in year 2010 which was 13% increased to 25% growth rate in 2011 after a Year. Based on the data from 2012 to 2017 the average

annual growth rate of exchange rate was 6%, which was less than previous Years, but in 2018 there was snapshot with average growth rate of 16% almost triple growth rate. The foreign exchange rate is managed by national Bank of Ethiopia to control the monetary impact on the overall economy of the country. As per the data of NBE the overall exchange rate annual average growth rate is 11%.

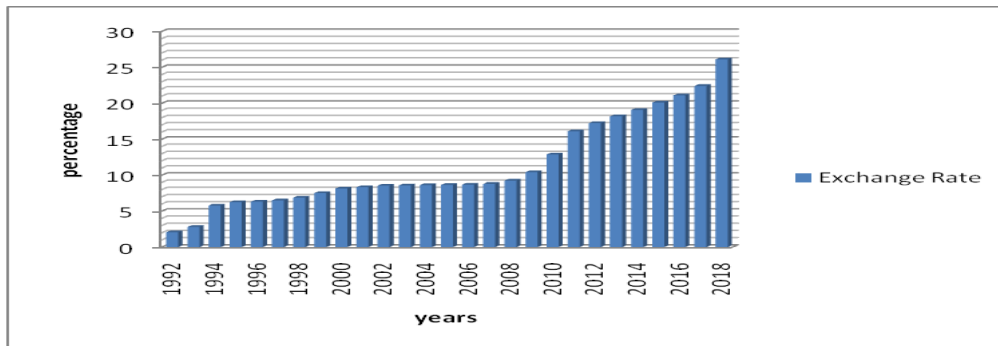


Figure: 4. 15: trends of Exchange Rate

Source: - NBE and MOFED and own computation

4.2. Econometric Model Results

4.2.1. Unit Root Test

As per depicted in the table.4.5 below unit root test using ADF unit root test for stationary on the variables at level without difference except inflation rate all are non-stationary or unit root, meaning that accepting the null hypothesis set except for the variable of inflation rate and rejection of null hypothesis however with weak stationary. Therefore there is a need of first differencing the data for testing unit root or to check stationary at first difference. Accordingly, the following results are listed by ADF.

Table: 4. 5: Augmented Dickey fuller unit test at the first Difference of the Variables

Variables	ADF			Lags	Remark	Decision
	Constant	Trend and constant	Drift and constant			
MANUEXPORT	-3.501*	-3.593	-3.501*	1	Reject Null	Stationary
Critical t 5%	3.000	3.600	1.721	1	Reject Null	Stationary
P-value for z(t)				0.0011		
AGREXPO	5.7753*	-5.666*	-5.852*	2	Reject Null	Stationary
Critical t 5%	-2.9919	-3.612	-1.955	2		
P-value for z(t)				0.0000		
DGDP	-3.914*	-4.831**	-3.914**	1	Reject Null	Stationary
Critical t 5%	-3.00	-3.60	-1.714	1		
P-value for z(t)				0.0003		
DFDI	-3.747**	-5.805**	-3.747**	3	Reject Null	Stationary

Critical t 5%	-3.000	-3.600	-1.714	3		
P-value for z(t)				0.0005		
DIFRA	-3.825**	-3.825**	-2.030**	2	Reject Null	Stationary
Critical t 5%	-3.600	-3.600	-1.721	2		
P-value for z(t)				0.0153		
DIFLAR	-7.210**	-7.048**	-7.210**	0	Reject Null	Stationary
Critical t 5%	-3.000	-3.600	-1.714	0		
P-value for z(t)				0.0000		
DOPPE	-3.644**	-3.742**	-3.644**	2	Reject Null	Stationary
Critical t 5%	-3.000	-3.60	-1.714	2		
P-value for z(t)						
DTOT	-4.998**	-5.295**	-4.988**	1	Reject Null	Stationary
Critical t 5%	-3.000	-3.600	-1.714	1		
P-value for z(t)				0.0007		
DExch	-1.991*	-3.268*	-2.023*	1	Reject Null	Stationary
Critical t 5%	-1.711	-3.240	-1.712	1		
P-value for z(t)				0.0280		

Note: **Rejection of the null hypothesis and stationary in the first difference of variable at 5% significant level. * 10% significance level

The Augmented Dickey-Fuller (ADF) test is employed to test the stationary of the variables in the model. As summarized in the Table Above all the variables export , Gross Domestic product, Foreign direct investment, Exchange rate, Openness/share of trade, terms of trade and infrastructure are non-stationary at levels however stationary at first difference since at 5% confidence interval the critical value is greater than the computed values for the variables. Rather all variables are characterized by I (1) process, implying they are stationary at their first difference except Inflation rate which is already stationary at first difference.

Table: 4. 6: Lag length Selection for agricultural Export

Lag	LL	LR	p	FPE	AIC	HQIC	SBIC
0	-1290.91			1.6e+39	112.949	113.048	113.344
1	-1092.13	397.56*	0.000	1.8e+34	101.229	102.123	104.783
2	.	.	.	-1.95514*	.	.	.
3	4192.95	.	.	.	-348.604*	-346.32*	-339.521*
4	4143.4	-99.093	.	.	-344.296	-342.011	--335.212

Note: * Indicates lag order selected by the criterion calculated using STATA. 15

Table: 4. 7: Lag length selection for Manufacturing Export

Lag	LL	LR	p	FPE	AIC	HQIC	SBIC
0	-1171.07			4.9e+36	107.188	107.282	107.585
1	-1049.7	242.74*	0.000	4.0e+34	101.973	102.814	105.543
2	.	.	.	-3.9e-13*	.	.	.
3	4691.48	.	.	.	-410.999*	-408.442*	-401.77*
4	4457.34	-468.28	.	.	-389.213	-387.157	-380.485

Note: * Indicates lag order selected by the criterion calculated using STATA. 15

P: Probability Value

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

4.2.2. Con-integration Test Result

In Table 4.8 below the trace test indicates the existence of two co-integrating equations at 5 percent significance. And the maximum Eigen value test makes the confirmation of this result. Thus, all variables of the study (i.e., Expo, GDP, FDI, IFRA, Oppe, Infla, TOT, and Exch) have long run equilibrium relation between them. But in the short run there may be deviations from the equilibrium.

Table: 4. 8: Johansen Co-integration test for agricultural Exports

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value
0	.	.	51.42
1	1.00000	80.9823	45.28
2	0.96576	58.6379	39.37
3	0.91312	57.7333	33.46
4	0.90978	26.5016**	27.07
5	0.66854	11.7319	20.97
6	0.38666	6.0021	14.07
7	0.22127	2.8996	3.76
8	0.70179	10.7684	20.97

Source: own calculation using STATA 15.00

Note: - ** Maximum rank at which co-integrations confirmed

Table: 4. 9: Johansen Co-integration test for Manufacturing Export

Hypothesized No. of CE(s)	Eigen value	Trace statistic	0.05 Critical Value	Eigen value	Max-Eigen Statistic	0.05 Critical Value
0	.	673.9609	156.00	.	409.3040	51.42
1	1.0000	264.6569	124.24	1.0000	99.7420	45.28
2	0.98433	164.9149	94.15	0.98433	67.2453	39.37
3	0.93930	97.6696	68.52	0.93930	48.5234	33.46
4	0.86758	49.1463	47.21	0.86758	32.0994	27.07
5	0.73749	17.0469*	29.68	0.73749	11.4572**	20.97
6	0.37960	5.5897	15.41	0.37960	4.6897	14.07
7	0.17750	0.9000	3.76	0.17750	0.9000	3.76
8	0.03680			0.03680		

Source: own calculation using STATA 15.00

Note: - * Maximum rank at which co-integrations confirmed

4.2.3. Long Run Model Result

4.2.3.1. Estimation of Long Run Relation of Agricultural Export and Factors Affecting

Gross domestic product has statistically significant effect on agricultural export performance at 5% significant level. The positive effect is due to the fact that output capacity of an economy has implication of supply potential by maintaining a country's competitiveness in the international market in the long run through the improvement of

GDP. This is consisted with (Ahmed and Majeed 2006, Yishak 2009, Wondaferahuw, 2014) they found that real GDP of home country affects their export performance positively.

Foreign direct investment has statistically significant effect on agricultural export performance at 1% significant level but negatively affect and against the expected sign. The negative effect is due to small commercial size registered as FDI in Ethiopia and most of FDI registered in Ethiopia are more of manufacturing investment. The result of the study is consistent with (Horst 1972, Jeon 1992, Ancharaz 2003, Awokuse and Yuan, 2008) concluded on their study that FDI has negative relationship with export performance of home country

Infrastructures have statistically significant effect on agricultural export performance at 1% significant level. The positive effect is due to that infrastructure has played an important role for the improvement of export growth (performance) locally smooth and quality transport leads agricultural products easily accessible for export and internationally facilitate for competitiveness and sustainable supply, otherwise it is an obstacle to trade for international market. This is consisted with the study of (Limao and Venables, 2000, Fugazza 2004, UNCTAD 2005, Clarke 2005, Mbekeani 2007, Baccetta 2007, Edwards and Odendaal 2008, Yishak 2009, Wondaferahuw 2013,).

Real exchange rate has statistically significant effect on agricultural export performance at 1% significant level. The positive effect is due to the agricultural export of Ethiopia have incentive of exempting tariff to generate more foreign currency and export promotion to appreciate/provoke the exporters/firms. Accordingly in this study exchange rate has significant and positive effect on export performance of Ethiopia. This is consisted with empirical study of UNCTAD, (2015) as exchange rate is determinants of export performance indicated that there is a positive relationship between exchange rate and export.

Inflation rate has statistically significant negative effect on agricultural export performance at 5% significant level. The negative effect is due to that high inflation rate

leads economic instability and deteriorates the purchasing power of the consumer. Local high price affect export of goods because rather than exporting the local price offer is attractive. This result is consisted with the empirical studies of (Gylfason 1998, Jalilian et al, G, Rwenyangila 2013, Monineath El 2018, Epaphra 2016).

Table: 4. 10: Estimated long run model

Variables	Coefficient	Std error	t-value	P-value
C	558.4033	537.4255	-1.04	0.313
GDP	.0095443	.0047884	2.64	0.017**
FDI	-.1663338	.0558377	-2.98	0.008***
IFRA	.2907051	.0626068	4.64	0.000***
Exch	1630.609	440.1303	3.70	0.002***
Infla	-52.73512	19.6567	-2.68	0.015**
TOT	-61.95529	46.92739	-1.32	0.203
Oppe	198.0278	125.3676	1.58	0.132

Number of observation= 26

R-squared= 0.8101

F-statistic = 10.97

Adj R-squared = 0.7362

Prob (F-Statistic) = 0.0000

Source: - Own computation and STATA version 15 result

The result of R^2 is also 0.8101 (81%) and the adjusted R^2 is 0.7362 (73.62%) is explained by the variables indicated in the study. Which reveals that of Ethiopian agricultural export performance is caused by the explanatory variables included in the model, while 19% is by other variables which were not included in the model. Furthermore, F-statistic is significant with a probability of 0.0000 which implies that the model fit/goodness of fit. The coefficient of correlation R^2 among dependent and independent variables are explained by the variables included in the model.

4.2.3.2. Estimation of Long Run Relation of Manufacturing Export and Factors Affecting

Gross domestic product has statistically significant positive effect on manufacturing export performance at 5% significant level. The positive effect is due to more manufacturing

export value addition with technology improved, then more capital accumulation and output capacity of an economy has implication of supply potential by maintaining a country's competitiveness in the international market in the long run through the improvement of GDP. This result is consistent with (Ahmed and Majeed 2006, Yishak 2009, Wondaferahuw, 2014) they found that real GDP of home country affects their export performance positively.

Foreign direct investment has statistically significant negative effect on manufacturing export performance at 1% significant level and against the expected sign. The negative effect is due to the motive behind FDI is to capture the domestic market (tariff-jumping type of investment) and this may not contribute to export growth rather help for GDP growth. On the other hand, if the motive is to tap export markets by taking advantage of a country's comparative advantage, then FDI may contribute to export growth. But in Ethiopian case most of investors motive behind FDI is to capture the domestic market (tariff-jumping type of investment), it may not contribute to export growth since their product is sold in local market rather than exporting. The other issue is the numbers of FDI in Ethiopia are much but the significance less on the ground. The result of the study is consistent with (Horst 1972, Jeon 1992, Ancharaz 2003, Awokuse and Yuan, 2008) concluded on their study that FDI has negative relationship with export performance of home country.

Infrastructures have statistically significant positive effect on manufacturing export performance at 1% significant level. The positive effect is due to the fact that the improvement of infrastructures in roads, railway, shipping lines, telecommunication, online internet market and related technology helps easily accessible to exported goods. This is consistent with the study of (Limao and Venables, 2000, Fugazza 2004, UNCTAD 2005, Clarke 2005, Mbekeani 2007, Baccetta 2007, Edwards and Odendaal 2008, Yishak 2009, Wondaferahuw 2013,) confirmed that infrastructure has played an important role for their improvement of export growth (performance), otherwise it is an obstacle to trade competitiveness and sustainable development.

The fact that real exchange rate has statistically significant positive effect on manufacturing

export performance at 1% significant level. The positive effect is due the fact that country's export imply that enhanced competitiveness through strict quality control as well as through a shift in the structure of both production and trade towards products with higher income elasticity of demand (manufactures) is a valid option in the long-run. The positive and significant coefficient also shows that manufacturing export may be influenced by exchange rate policy. This is consisted with empirical study of Biggs, (2007), Oyejide, (2007), Wondaferahuw, (2013) and UNCTAD, (2015) on their study as exchange rate is determinants of export performance indicated that there is a positive relationship between exchange rate and export. While overvaluation of currency can undermine export competitiveness through a direct loss of price competitiveness for exporting firms and undervaluation of the currency can bolster export competitiveness (Biggs, 2007). It follows that devaluation of birr in terms of foreign currency improves price competitiveness of export and hence leads to an increased export performance of Ethiopia.

Table: 4. 11: Estimated Long run model

Variables	Coefficient	Std error	t-value	P-value
C	686.9428	327.7955	2.10	0.051
GDP	.0056182	.0022024	2.55	0.020**
FDI	-.1282301	.0340575	-3.77	0.001***
IFRA	.1053608	.0381862	2.76	0.013**
Exch	1103.273	268.4516	4.11	0.001***
Infla	-21.60738	11.98934	-1.80	0.088
TOT	-29.07157	28.62273	-1.02	0.323
Oppe	223.8518	76.46627	2.93	0.009***

Number of observation=26

R-squared=0.7328

F-statistic = 7.05

Adj R-squared = 0.6289

Prob (F-Statistic) = 0.0004

Source: - Own computation and STATA version 15 result

As per the result of table 4.11 above shares of trade /openness has statistically significant positive effect on manufacturing export performance at 1% significant level. The positive effect is due the fact that more trade internationally competitive the more the share of the economy registered in Real GDP increase from trade and vice versa, significance and

positively affecting Ethiopian export performance. This is consistent with the empirical studies of (Chang, R., Kaltani, L., and Loayza N.V, 2009, Wondaferahu, 2013) as there are positive relationship among export growth and trade openness because, trade increases, amongst other things, competition (hence boosting productivity and innovation), enables firms to capitalize on economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation.

The result of R^2 is also 0.7328 (73.3%) and the adjusted R^2 is 0.6289 (63%) is explained by the variables indicated in the study. Which reveals that of Ethiopian export performance is caused by the explanatory variables included in the model, while 26% is by other variables which were not included in the model. Furthermore, F-statistic is significant with a probability of 0.0004 which implies that the model fit/goodness of fit. The coefficient of correlation R^2 among dependent and independent variables are explained by the variables included in the model.

4.2.4.Short Run Model Result

4.2.4.1.Estimation of Short Run Relation of Agricultural Export and Factors Affecting

Having already obtained the long-run model and estimated the coefficients, then the coefficients of the short-run dynamics that have important for policy implications was estimated. Hence, a Vector error correction model was estimated that incorporates the short term interactions and the speed of adjustment towards the long run equilibrium. So, the error correction model has been estimated using vector error correction model (VECM) and the results are summarized in table 12 below.

Table: 4. 12: VECM estimate for Agricultural Export

Variables	Coefficient	Std.error	t-value	Prob.
_Cons	0.005205	572.2901	0.00	1.000
AGRExpo_1	0.592934	0.3906991	1.52	0.129
GDP_1	-0.255077	0.0056918	-4.46	0.000***
FDI_1	0.5617438	0.134232	4.18	0.000***
IFRA_1	-0.1595559	0.1414497	-1.13	0.259
Exch_1	83.4602	702.9551	0.12	0.905
Infla_1	20.81367	31.6585	0.66	0.905
TOT_1	180.9555	125.7324	1.44	0.150
Oppe	-208.76	144.8724	-1.44	0.150
ECT_1	-.697596	.2038107	-3.42	0.001***

Source: own calculation using STATA 15.00,

Note: (ECT-1) is the lagged residual saved from the estimated long run equation

The estimation results of the short run error correction model in table 4.12 above, the coefficient of the error correction term is significant with expected negative sign which implies that there is a feedback mechanism in the short run. The negative sign and the significance showed that there is long run relationship and the model is good. There is a co-integration among variables and they have long run association or relationship. Meaning there is a long run causality running from the independent and dependent variables or moving together in the long run. The error correction model helps to correct for disequilibrium in the short run and therefore the negative coefficient in the results above in confirmation that there is no disequilibrium of the variables in the short run and relatively large magnitude or its speed of adjustment is (-.697596). Its magnitude indicates that deviation from the long run equilibrium is adjusted fairly quickly where in 0.697596 years of the disequilibrium is removed each period.

Furthermore foreign direct investment has significant and positive determinants of the Ethiopia's agricultural exports in the short-run. However, real GDP has negative relationship but affects agricultural exports in the long run. The variables of infrastructure

and openness have negative relationship but have no significance effect on export performance in the short run. Inflation rate exchange rate and terms of trade has no significance effect but positive relation in the short run.

4.2.4.2. Estimation of Short Run Relation of Manufacturing Export and Factors Affecting

Having already obtained the long-run model and estimated the coefficients, then the coefficients of the short-run dynamics that have important for policy implications was estimated. Hence, an error correction model was estimated that incorporates the short term interactions and the speed of adjustment towards long run equilibrium. So, the error correction model has been estimated using vector error correction model (VECM) and the results are summarized in table 4.4 below.

Table: 4. 13; VECM estimate for Manufacturing Export

Variables	Coefficient	Std.error	t-value	Prob.
_Cons	0.0043645	613.6448	0.00	1.00
MANUExport_1	0.9874505	0.2877717	3.43	0.001***
GDP_1	-0.0000566	0.0024898	-0.02	0.982
FDI_1	0.1026685	0.0482184	2.13	0.033**
IFRA_1	0.0536172	0.536172	0.99	0.320
Exch_1	52.02948	317.1313	0.16	0.870
Ifla_1	10.7983	12.76559	0.85	0.398
TOT_1	137.8424	44.47455	3.10	0.002***
Oppe	-41.18037	61.51283	-0.67	0.503
ECT_1	-1.307598	0.2733791	-4.78	0.000***

Source: own calculation using STATA 15.00

Note: (ECT-1) is the lagged residual saved from the estimated long run equation and D shows first difference

The estimation results of the short run error correction model in table 4.13 above, the coefficient of the error correction term is significant with expected negative sign which implies that there is a feedback mechanism in the short run. The negative sign and the significance showed that there is long run relationship and the model is good. There is a co-integration among variables and they have long run association or relationship. Meaning there is a long run causality running from the independent and dependent

variables or moving together in the long run. The error correction model helps to correct for disequilibrium in the short run and therefore the negative coefficient in the results above in confirmation that there is no disequilibrium of the variables in the short run and relatively large magnitude or its speed of adjustment is (-1.307598). Its magnitude indicates that deviation from the long run equilibrium is adjusted fairly quickly where in 1.307598 years of the disequilibrium is removed each period.

Furthermore foreign direct investment and terms of trade have significant and positive determinants of the Ethiopia's manufacturing exports in the long-run based on the causality test. The variables of real GDP, infrastructure, exchange rate and openness have negative relationship but have no significance effect on export performance in the short run how ever has significant effect in the long run. Inflation rate has no significance but positive relation in the short run.

4.2.5. Model diagnostic and Stability Test Result

In this study there is different model stability and diagnostic test has made using VEC diagnostics and test for LM test for residual autocorrelation, test for normally distributed disturbances and check stability condition of VEC estimate and all are confirmed. Accordingly, Autocorrelations was tested using Breusch-Godfrey LM test for autocorrelation and verified as no autocorrelation. Another disease that change the pattern and magnitude of any study's result is Multicollinearity. Multicollinearity is a state of very high intercorrelations or inter-associations among the independent variables. It is therefore a type of disturbance in the data, and if present in the data the statistical inferences made about the data may not be reliable. The very simple test to assess multicollinearity in the regression model variance inflation factor (VIF) identifies correlation between independent variables and the strength of that correlation. According to rule of thumb Statistical software calculates a VIF for each independent variable and VIFs start at 1 and have no upper limit. A value of 1 indicates that there is no correlation between this independent variable and any others. VIFs between 1 and 5 suggest that there is a moderate correlation, but it is not severe enough to warrant corrective measures. VIFs greater than 5 represent critical levels of multicollinearity where the coefficients are

poorly estimated, and the p-values are questionable. The values of VIF of all variables are less than 3 which almost indicate there is no correlation between independent Variables. The mean of VIF of this study is only 1.89 which indicates not multicollinearity among independent variables. The third disease that affects the study is the presence of Heteroscedasticity. One of the assumptions made about residuals/errors in OLS regression is that the errors have the same but unknown variance. This is known as constant variance or homoscedasticity. When this assumption is violated, the problem is known as heteroscedasticity. Heteroskedasticity means that the variance of the errors is not constant across observations. So, using Breusch-Pagan / Cook-Weisberg test for heteroskedasticity and the result shows constant variance and no heteroskedasticity detected in the study. In addition to the three data disease it was check for normality of the data using Jarque-Bera statics and is above 10% meaning the residuals are normal. It was also checked by graphs to check the normality.

CHAPTER FIVE

5.CONCLUSION AND RECOMMENDATION

5.1. Summary and Conclusion of the study

This paper has analyzed the assessments of Agricultural and Manufacturing export performance and its effect on economic growth in Ethiopia for the period of 1991/92-2017/18. Time series econometrics method has employed to identify the trend of agricultural and manufacturing export commodities on economic growth of the country. In order to identify the long run and short run determinants of agricultural and manufacturing export Johansson co-integration methodology is employed and then vector error correction model has conducted. The general export performance of Ethiopia is insignificant or at low level of contribution to the Ethiopian economy and hence, the import outshine export then the Ethiopian balance of payment is deficit in all the period under study. Agricultural exports are the major source of external income of Ethiopia whereas; manufacturing export income is at very low level because there are greater supply side challenges in the sector than in any other sector. This in turn slows down economic growth through affecting the country's international reserves or competitiveness.

The empirical findings on agricultural export determination model confirms that in the long run Gross domestic product , Infrastructures and Real exchange rate have significant and positive effect on agricultural export commodities and Foreign direct investment has statistically significant effect on agricultural export performance at 5% significant level but negatively affect and against the expected sign. By the same token inflation rate has statistically significant negative effect on agricultural export performance at 5% significant level. The negative effect is due to that high inflation rate leads economic instability and deteriorates the purchasing power of the consumer. Using the vector error correction term the foreign direct investment has significant and positive determinants of the Ethiopia's agricultural exports in the short-run. For manufacturing export determination model confirms that in the long run gross domestic product, Infrastructures, real exchange rate and Share of trade /openness has significant effect on

manufacturing export commodities.

In all the cases Ethiopian export performance has affected with the variables of gross domestic product, exchange rate, infrastructure and share of trade have significant positive effect on the improvement of export performance on both agricultural and manufacturing export performance of and have long run relationship. Whereas, foreign direct investment, inflation rate and terms of trade has negative effect on Ethiopian export performance. Of all the variables terms of trade, and share of trade has no significant effect on agricultural export and inflation and terms of trade has no significant effect on manufacturing export in the long run and share of trade/openness have no significant effect in the short run.

In general the variables included in the study have almost significant effect on Ethiopian export performance further which leads the improvement of export performance, realizing the growth of Ethiopian economy and vice versa. Because Trade increases, amongst other things, competition (hence boosting productivity and innovation), and enables firms to capitalize on economies of scale from having access to larger markets and encourages the spread of skills, knowledge and innovation which currently Ethiopia lacks. Accordingly, Ethiopian export commodity being competitive in international market more export is initiated and enhancing local manufacturing industries for more production, hence, the better export performance of Ethiopia and then proactively initiate Ethiopian economy but Ethiopia fails to do so.

5.2. Recommendation of the Study

Based on the findings of the study the following policy recommendations are made.

1. The government should promote Ethiopian export in general and improving the status of the two main sectors i.e. agricultural and manufacturing export commodities in particular is crucial to have a high and sustainable economic growth.
2. In the entire cases real Gross domestic product, infrastructures, real exchange rate and share of trade /openness has statistically significant and positive effect on the

improvement of export performance of Ethiopia. In case of real GDP, the government should strictly identify the potential areas of sectors which efficiently increase output capacity of an economy, which further has an implication of supply potential by maintaining a country's competitiveness in the international market in the long run through the improvement of GDP.

3. Infrastructure strongly supports export of good and service especially on delivery time, quality of the exported item and sustainable supply. The development of telecommunication and transportation facilities is crucial not only in promoting countries economic growth; it is also to sustained export performance. Thus, it needs investment in infrastructural development. This pertains in particular improvements of the main roads that connect the production areas and central markets. The role of communication service should also give due attention.
4. Online internet market should accessible with the support of high tech, that may help to display the local firm products internationally and thus it needs more investment to improve the role of the sector for export growth, which further is the base for economic growth. In case of Exchange rate, the government should control and monitor exchange rate policy properly and transparently, especially exporters should be supported by the government since foreign currency improves price competitiveness of export and hence leads to an increase of export performance of Ethiopia. In addition black market for exchange rate should have legal framework for accountability, since the capital has depleted illegally.
5. Foreign direct investment has negative significant effect on both agricultural and manufacturing export in the long run and has positive significant effect on both agricultural and manufacturing export in the short run. This indicates in the long run FDI has a motive to capture the domestic market potential because of the local price is greater than the export market, which attract to sell in local market rather than exporting for the produced goods. Accordingly, in the long run FDI affect export performance of Ethiopia negatively. So, the government should lay strong legal framework which control and force for the evaluation of their annual production and

- export sales of FDI, investors and make them sign disclaimer agreement to be accountable and free from illegal activity (e.g. corruption)
6. Inflation has long run relation and affects negatively export performance of Ethiopia. This is because it leads economic instability and deteriorates the purchasing power of the consumer. Local high price affect export of goods because rather than exporting the local price offer is attractive to the exporter. So, the government should control the inflation rate in the long run to have sustainable export growth, which further affects economic growth in good phase.
 7. Finally the country needs to strengthen the promotion and expansion of domestic industries, and at the same time, strengthen export capacity to promote diversification both in the export and domestic industrialization sector to fully exploit the benefits of those sectors and achieve a sustainable economic growth which will be miracle to the country.
 8. Lastly any researcher based on the export performance of Ethiopia for agricultural and manufacturing goods can update, assess and give any modified information further research studies.

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- IMF, International Monetary Fund

ANNEX-I

Long Run Regression Model

Regression result for Agricultural products

Source	SS	df	MS	No of obs = 26		
				F(7, 18) = 10.97		
Model Residual	207404814	7	29629259.1	Prob > F = 0.0000		
	48632073.4	18	2701781.86	R-squared = 0.8101		
Total	256036887	25	10241475.5	Adj R-squared = 0.7362		
				Root MSE= 1643.7		
DAGRExport	Coef.	Std. Err.	t	P>t	[95% Conf.Interval]	
GDP	.0095443	.0036109	2.64	0.017	.0019582	0.0171305
FDI	-	.0558377	-	0.008	-	-0.0490231
	.1663338		2.98		.2836445	
IFRA	.2907051	.0626068	4.64	0.000	.159173	0.4222372
Exch	1630.609	440.1303	3.70	0.002	705.9296	2555.289
Infla	-	19.6567	-	0.015	11.43792	94.03233
	52.73512		2.68			
TOT	-	46.92739	-	0.203	-	36.6355
	61.95529		1.32		160.5461	
Oppe	198.0278	125.3676	1.58	0.132	-65.3597	461.4153
_cons	558.4033	537.4255	-	0.313	-1687.49	570.6858
			1.04			

1.1. Test for heteroskedasticity for the model

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values of DAGRExport	
chi2(1)	= 3.19
Prob > chi2	= 0.0739

The result shows the constant variance because the Prob > chi² = 0.0739 (7%) is greater than 5% significant level.

Test for heteroskedasticity for the variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1498140.	6686938.	0.224040	0.8251
GDP	1.429643	6.904939	0.207046	0.8382
FDI	-67.13657	94.95400	-0.707043	0.4881
IFRA	-13.10565	68.03967	-0.192618	0.8493
EXCH	236621.0	447561.4	0.528690	0.6031
INFLA	156917.8	55327.00	2.836189	0.0106
OPPE	-79638.18	137989.6	-0.577132	0.5706
TOT	-2575.351	100412.2	-0.025648	0.9798

1.2. Test for Multicollinearity for the model

Variable	VIF	1/VIF
DFDI	2.99	0.334680
DGDP	2.59	0.386845
DIFRA	1.98	0.504351
DExch	1.93	0.518259
DOppe	1.47	0.680483
DTOT	1.16	0.863099
DInfla	1.10	0.907587
Mean VIF	1.89	

1.3. Test of autocorrelation for the model

Durbin's alternative test for autocorrelation			
lags(p)	chi2	df	Prob > chi2
1	0.097	1	0.7558
H0: no serial correlation			

There is no serial correlation in the model and the null hypothesis is accepted. The result of Prob > chi2 = 0.7558 is greater than 5% significant value.

Test of autocorrelation for the variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1839.104	3608.532	0.509654	0.6168
GDP	0.000793	0.003306	0.239784	0.8134
FDI	-0.003377	0.045505	-0.074219	0.9417
IFRA	0.019298	0.036945	0.522338	0.6082
EXCH	-93.07237	225.6161	-0.412525	0.6851
INFLA	-8.945828	27.43377	-0.326088	0.7483
OPPE	7.530029	66.75301	0.112804	0.9115
TOT	-28.50611	51.00717	-0.558865	0.5835

2. Regression of long run

2.1. Regression result for Manufacturing for the model

Source	SS	df	MS	Number of obs =	26	
				F(7, 18) =	7.05	
Model	49614697.2	7		Prob > F =	0.0004	
	7087813.89					
Residual	18092234	18	1005124.11	R-squared =	0.7328	
Total	67706931.2	25		Adj R-squared =	0.6289	
	2708277.25			Root MSE =	1002.6	
MANU Export	Coef.	Std. Err.	t -val	P>t	95% Conf Interval]	
GDP	.0056182	.0022024	2.55	0.020	.0009912	0.0102453
FDI	-.1282301	.0340575	-	0.001	-.1997822	-0.056678
			3.77			
IFRA	.1053608	.0381862	2.76	0.013	.0251345	0.185587
Exch	1103.273	268.4516	4.11	0.001	539.2771	1667.269
Infla	-21.60738	11.98934	-1.80	0.088	-3.581292	46.79606
TOT	-29.07157	28.62273	-1.02	0.323	-89.2057	31.06256
Oppe	223.8518	76.46627	2.93	0.009	63.20218	384.5015
_cons	686.9428	327.7955	2.10	0.051	-1375.616	1.729974

2.2. Test of heteroskedasticity for the model

Breusch-Pagan / Cook-Weisberg test for heteroskedasticity	
Ho: Constant variance	
Variables: fitted values of MNExport	
chi2(1)	= 2.69
Prob > chi2	= 0.1013

The result shows the constant variance because the $\text{Prob} > \chi^2 = 0.1013$ (10.13%) is greater than 5% significant level

Test of heteroskedasticity for the variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	1320356.	2745754.	0.480872	0.6361
GDP	3.279841	2.835269	1.156801	0.2617
FDI	-100.4160	38.98950	-2.575462	0.0185
IFRA	36.02865	27.93808	1.289589	0.2127
INFLA	46224.74	22718.07	2.034712	0.0561
OPPE	-45530.01	56660.55	-0.803557	0.4316
TOT	-7889.759	41230.72	-0.191356	0.8503
EXCH	17830.59	183775.2	0.097024	0.9237

2.3. Test of autocorrelation for the model

Durbin's alternative test for autocorrelation			
lags(p)	chi2	df	Prob > chi2
1	2.730	1	0.0985
H0: no serial correlation			

There is no serial correlation and the null hypothesis is accepted. The result of $\text{Prob} > \chi^2 = 0.0985$ is greater than 5% significant value.

Test of autocorrelation for the variables

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1988.732	2719.305	-0.731338	0.4745
GDP	-0.004432	0.002935	-1.510056	0.1494
FDI	0.042539	0.037329	1.139567	0.2703
IFRA	-0.014208	0.027225	-0.521883	0.6085
INFLA	-8.367630	19.87647	-0.420982	0.6790
OPPE	-0.607846	48.70077	-0.012481	0.9902
TOT	42.42763	40.86045	1.038354	0.3136
EXCH	85.22811	171.1192	0.498063	0.6248
RESID(-1)	0.624074	0.260988	2.391199	0.0286
RESID(-2)	-0.534559	0.262033	-2.040045	0.0572

3. Result of VECM

3.1 Manufacturing Export

. varsoc MANUEXport DGGDP DFDI DIFRA DEXch DInfla DTOT DOppe

Selection-order criteria

Sample: 1997 - 2018 Number of obs = 22

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1171.07				4.9e+36	107.188	107.282	107.585
1	-1049.7	242.74*	64	0.000	4.0e+34	101.973	102.814	105.543
2	.	.	64	.	-3.9e-13*	.	.	.
3	4691.48	.	64	.	.	-410.499*	-408.442*	-401.77*
4	4457.34	-468.28	64	.	.	-389.213	-387.157	-380.485

Endogenous: MANUEXport DGGDP DFDI DIFRA DEXch DInfla DTOT DOppe

Exogenous: _cons

. vecrank MANUEXport DGGDP DFDI DIFRA DEXch DInfla DTOT DOppe, trend(constant) max

Johansen tests for cointegration

Trend: constant Number of obs = 24

Sample: 1995 - 2018 Lags = 2

					5%	
rank	parms	LL	eigenvalue	trace statistic	critical value	
0	72	-1193.3359	.	673.9609	156.00	
1	87	-988.68393	1.00000	264.6569	124.24	
2	100	-938.81293	0.98433	164.9149	94.15	
3	111	-905.19028	0.93930	97.6696	68.52	
4	120	-880.92861	0.86758	49.1463	47.21	
5	127	-864.87891	0.73749	17.0469*	29.68	
6	132	-859.15031	0.37960	5.5897	15.41	
7	135	-856.80546	0.17750	0.9000	3.76	
8	136	-856.35547	0.03680			

					5%	
rank	parms	LL	eigenvalue	max statistic	critical value	
0	72	-1193.3359	.	409.3040	51.42	
1	87	-988.68393	1.00000	99.7420	45.28	
2	100	-938.81293	0.98433	67.2453	39.37	
3	111	-905.19028	0.93930	48.5234	33.46	
4	120	-880.92861	0.86758	32.0994	27.07	
5	127	-864.87891	0.73749	11.4572	20.97	
6	132	-859.15031	0.37960	4.6897	14.07	
7	135	-856.80546	0.17750	0.9000	3.76	
8	136	-856.35547	0.03680			

. vec MANUExport DGDP DFDI DIFRA DExch DInfla DTOT DOppe, trend(constant) rank(4)

Vector error-correction model

Sample: 1995 - 2018	Number of obs	=	24
	AIC	=	69.58442
Log likelihood = -715.0131	HQIC	=	71.14711
Det(Sigma_ml) = 1.04e+16	SBIC	=	75.47469

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_MANUExport	13	780.695	0.8638	57.08956	0.0000
D_DGDP	13	48493.4	0.9697	288.0235	0.0000
D_DFDI	13	4042.41	0.9570	200.3683	0.0000
D_DIFRA	13	3613.97	0.8663	58.29666	0.0000
D_DExch	13	.51639	0.8522	51.88742	0.0000
D_DInfla	13	16.5752	0.8582	54.45042	0.0000
D_DTOT	13	5.31069	0.8947	76.49383	0.0000
D_DOppe	13	3.42453	0.6281	15.20033	0.2950

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
D_MANUExport						
_ce1						
L1.	-1.307598	.2733791	-4.78	0.000	-1.843411	-.7717849
_ce2						
L1.	.0179729	.0047771	3.76	0.000	.00861	.0273359
_ce3						
L1.	-.2954397	.0568382	-5.20	0.000	-.4068405	-.1840389
_ce4						
L1.	.1474936	.0538049	2.74	0.006	.042038	.2529492
MANUExport						
LD.	.9874505	.2877717	3.43	0.001	.4234282	1.551473
DGDP						
LD.	-.0000566	.0024898	-0.02	0.982	-.0049364	.0048233
DFDI						
LD.	.1026685	.0482184	2.13	0.033	.0081622	.1971748
DIFRA						
LD.	.0536172	.0539548	0.99	0.320	-.0521324	.1593667
DExch						
LD.	52.02948	317.1313	0.16	0.870	-569.5365	673.5954
DInfla						
LD.	10.7983	12.76559	0.85	0.398	-14.22181	35.81841
DTOT						
LD.	137.8424	44.47455	3.10	0.002	50.67389	225.0109
DOppe						
LD.	-41.18037	61.51283	-0.67	0.503	-161.7433	79.38257
_cons						
LD.	.1043528	442.7229	0.00	1.000	-867.6167	867.8254

3.2. Agricultural Export

```
. varsoc AGExport GDP FDI IFRA Exch Infla TOT Oppe
```

Selection-order criteria

Sample: 1996 - 2018 Number of obs = 23

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-1290.91				1.6e+39	112.949	113.048	113.344
1	-1092.13	397.56*	64	0.000	1.8e+34	101.229	102.123	104.783
2	.	.	64	.	-1.95514*	.	.	.
3	4192.95	.	64	.	.	-348.604*	-346.32*	-339.521*
4	4143.4	-99.093	64	.	.	-344.296	-342.011	-335.212

```
. vecrank DAGRExport DGDP DFDI DIFRA DExch DInfla, trend(constant) max
```

Johansen tests for cointegration

Trend: constant Number of obs = 24

Sample: 1995 - 2018 Lags = 2

					5%	
maximum				trace	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	42	-1119.7319	.	205.9162	94.15	
1	53	-1086.1701	0.93900	138.7925	68.52	
2	62	-1055.0373	0.92531	76.5271	47.21	
3	69	-1038.5056	0.74783	43.4635	29.68	
4	74	-1027.4402	0.60232	21.3328	15.41	
5	77	-1016.7801	0.58866	0.0126*	3.76	
6	78	-1016.7738	0.00053			

					5%	
maximum				max	critical	
rank	parms	LL	eigenvalue	statistic	value	
0	42	-1119.7319	.	67.1237	39.37	
1	53	-1086.1701	0.93900	62.2655	33.46	
2	62	-1055.0373	0.92531	33.0635	27.07	
3	69	-1038.5056	0.74783	22.1307	20.97	
4	74	-1027.4402	0.60232	21.3202	14.07	
5	77	-1016.7801	0.58866	0.0126	3.76	
6	78	-1016.7738	0.00053			

```
. vec DAGRExport DGDP DFDI DIFRA DExch DInfla DTOT DOppe, trend(constant) rank(5)
```

Vector error-correction model

```
Sample: 1995 - 2018          Number of obs   =       24
                          AIC                 =    70.39625
Log likelihood = -717.7551   HQIC            =    72.0501
Det(Sigma_ml) = 1.31e+16   SBIC            =    76.63012
```

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_DAGRExport	14	1585.18	0.9003	81.23303	0.0000
D_DGDP	14	43742	0.9776	392.5621	0.0000
D_DFDI	14	3332.48	0.9734	329.8841	0.0000
D_DIFRA	14	3627.96	0.8775	64.45649	0.0000
D_DExch	14	.640439	0.7933	34.5432	0.0017
D_DInfla	14	16.0779	0.8787	65.1795	0.0000
D_DTOT	14	4.14878	0.9416	145.0951	0.0000
D_DOppe	14	3.56445	0.6337	15.57148	0.3402

	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
D_DAGRExport						
_ce1						
L1.	-.8576863	.4708202	-1.82	0.069	-1.780477	.0651043
_ce2						
L1.	.0519793	.0139154	3.74	0.000	.0247057	.0792529
_ce3						
L1.	-.697596	.2038107	-3.42	0.001	-1.097058	-.2981343
_ce4						
L1.	.2032473	.1863871	1.09	0.276	-.1620647	.5685592
_ce5						
L1.	1009.439	857.7096	1.18	0.239	-671.6413	2690.519
DAGRExport						
LD.	.592934	.3906991	1.52	0.129	-.1728222	1.35869
DGDP						
LD.	-.0255077	.0056918	-4.48	0.000	-.0366635	-.014352
DFDI						
LD.	.5617438	.134232	4.18	0.000	.2986538	.8248338
DIFRA						
LD.	-.1595559	.1414497	-1.13	0.259	-.4367923	.1176805
DExch						
LD.	83.4602	702.9551	0.12	0.905	-1294.307	1461.227
DInfla						
LD.	20.81367	31.6585	0.66	0.511	-41.23586	82.8632
DTOT						
LD.	180.9555	125.7324	1.44	0.150	-65.47552	427.3865
DOppe						
LD.	-208.76	144.8724	-1.44	0.150	-492.7046	75.18473
_cons	.005205	572.2901	0.00	1.000	-1121.663	1121.673