
**ADDIS ABABA UNVIRESTY**

**COLLEGE OF BUSINESS AND ECONOMICS**

**MBA PROGRAM**

# THE CONTRIBUTION OF AGRCULTURAL EXPORT TO ECONOMIC GROWTH IN ETHIOPIA: A CASE OF SESAME PRODUCT

**A PROJECT PAPER SUBMITTED AS A PARTIAL FULFILLMENT FOR THE REQUIREMENTS OF THE DEGREE OF MASTER OF BUSINESS ADMINSTRETION (MBA)**

**BY**

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**MAY 2019**

**ADDIS ABABA, ETHIOPIA**

# Declaration Statement

I declare that this thesis is my original work and has not been presented for any degree and that all sources of materials used for the study has been duly acknowledge.

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This is to certify that the thesis entitled: The Contribution of Agricultural Export to Economic Growth in Ethiopia: A case of sesame product is prepared by Tekeste Abrham. The thesis is submitted in partial fulfillment of the requirements for the degree of Master of Business Administration complies with the regulations of the university and meets the accepted standards with respects to originality and quality.

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# Acknowledgement

I would first like to thank my advisor Dr Habtamu Berhanu for his guidance and constrictive comments from the beginning of the research proposal to the completion of the thesis work.; and I would also like to thank the regional and federal agricultural bureau experts and senior officials who were involved in validating data, coordinating workshops and providing technical input for this research project: Dr Taye Tadese Ethiopian Agricultural Transformation Agency Director, Dr Yibeltal Asefa ,Trade Information Management Center Ministry of Trade Director; Ato Fiseha Baraki, Ethiopian Agricultural Transformation Agency, Senior Data Expert in Tigray region; Ato Netsanet Tesfaye, Cooperate Manager Ethiopia Commodity Exchange ; Ato Husen Amen, National Bank of Ethiopia, Senior Data Expert; Ato Samuel Meberatu, Ethiopia Revenue custom Authority, Senior Data officer; Ato Anbesaw Mulu, Directorate, Central Statistical Agency Agriculture Natural Resource and Environment Statistics; Who without their passionate participation and input .

Many thanks and appreciation to my friends Yared Solomn(MA) and Belay Getachew (MA) provided me with appropriate materials as well as software applications that enabled me to finalize my work. Finally many thanks for any kind comments and suggestions from the beginning up to final goes to my best friend Fasil Tefera and also other comments from Mr. Alemayehu Tessema; the study could not have been successfully conducted. And lastly, without the need to be exclusive, I am very thankful to God and St. Mary's; finally, I give thanks to my sweet family and friends.

# Abstract

*The study made use of time series annual data covering the period between 1988 and 2018. The main objective of this study is to investigate the relationship between agricultural export and economic growth in Ethiopia. The reviewed studies focused on the standard theoretical neoclassical growth model using based on a generalized Cobb Douglas production framework with some extensions. The stationarity, long run, and short dynamics between economic growth and agricultural exports sub-sector sesame export in Ethiopia were estimated through the employment of econometrics methodology proved and tests such as Unit root test (i.e. the data is stationery at first level both ; Augmented Dickey fuller test and Phillips-Peron tests ), Model Stability test(i.e. the study model was performed stability of the model) , Heterodosicity test (the study there is no heteroscedasticity problem ), Autocorrelation test(i.e. the study there is no problem of multicollinearity ) and Normality test(i.e. the study data were consistent with a normal distribution).The investigations on the relationship between agricultural export and growth in Ethiopia has provided a good understanding of the impact that agricultural export has on the growth of Ethiopia's economy with particular reference to agricultural exports stimulates economic development. Also Sesame seeds, are the second largest source of foreign currency for Ethiopia's next to coffee, contributing significantly for the achievement of the country's high economic growth. the result of the study has found a positive relationship between sesame export and economic growth with strong statistical significance, showing that an increase in sesame export result in increased economic growth; also this study also approved the purpose of this thesis is to identify key bottlenecks in sesame value-chain and assess the magnitude and effects of key determinants of sesame exports. Moreover it recommends the Ethiopia government to establish effective agricultural export promotion policy to overcome all challenges accordingly and fuel the economic growth of the country. Finally, the study ends with some policy recommendations aiming at guiding effective strategy to improve the performance of the sesame export.*

***Key words**: Agricultural export, Sesame, value-chain, foreign currency, economic growth.*

# Acronyms and Abbreviations

| | |
|---|---|
| ADB | Africa Development Bank |
| ADF | Augmented Dickey-Fuller |
| AFREXIMBANK | Africa Export & Import Bank |
| AR | Auto Regression |
| ATA | Agriculture Transformation Agency |
| BLUE | Best Liner Unbiased Error |
| BPG | Bruserch –Pagan-Godfrey |
| CBI | Central Bureau Investigation |
| CSA | Central Statistics Authority |
| DID | Department For International Development |
| DW | Durbin-Watson |
| ECX | Ethiopian Commodity Exchange |
| ELG | Export Led Growth |
| EIA | Ethiopia Investment Agency |
| EPOSPEA | Ethiopian, Pulses, Oilseeds & Spices Processors Export Association |
| FAO | Food and Agriculture Organization |
| FDI | Foreign Direct Investment |
| GAIN | Global Agricultural Information Network |
| GCF | Gross Capital Formation |
| GLF | Gross Labor Force |
| GDP | Gross Domestic Product |
| GLS | Generalized Least Squares |
| GEMRP | Global Engagement Manager Recruitment Program |
| HP | Hypothesis |
| IIT | Intra-Industry Trade |
| IMF | International Monterey Fund |
| JB | Jarque–Bera |
| LDC | Less Developed Country |
| LMS | Logistic Management Service |

| | |
|---|---|
| LOG | Logarithm |
| MOT | Ministry of Trade |
| NBE | National Bank of Ethiopia |
| NPAD | New Partnership for Africa's Development |
| NES | National Export Strategies |
| OLS | Ordinary Least Square |
| ONES | Oilseeds National Export Strategies |
| PP | Phillips-Peron |
| RD | Research and Development |
| RESET | Regression Equation Specification Error Test |
| RET | Real Exchange Rate |
| RGDP | Real Gross Domestic Product |
| RIR | Real Interest Rate |
| RQ | Research Questions |
| SBN | Sesame Business Network |
| SE | Sesame Export |
| SSA | Sub-Saharan Africa |
| TFP | Total Factor of Productivity |
| UNDP | United Nation Development Program |
| UAE | United Arab Emirate |
| VACM | Vector Auto Correction Mechanism |
| WB | World Bank |
| WTO | World Trade Organization |

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# CHAPTER ONE
# INTRODUCTION

## 1.1 Background of the study

The agricultural export sector is very important for Ethiopia as it is a source of economic growth which can be attributed to the foreign exchange earned 2.5 billion US dollars is reached in 2018. One of the major agricultural exports in Ethiopia is Oilseeds export sector, which has been significant over the last decade in the generation of the foreign exchange and also in employment creation. Ethiopia's oilseed sector plays an important role in generating foreign exchange earnings for the country. In the recent year 2018 exports of major oilseeds such as Sesame, Niger seed, and Soybeans; more than 400 million US dollars generated in export earnings; according to the National Bank of Ethiopia data. In addition, the oilseed sector provides income to millions of growers and other market actors along the value chain.

Sesame export in Ethiopia, it is the second most important agricultural commodity after coffee in foreign exchange earnings more than 390 million US dollars in 2018. Importance of Sesame crop is one of the oldest foods that are extremely beneficial for health but are often overlooked. They have the ability to prevent diabetes, lower blood pressure, prevent a wide variety of cancers, build strong bones, protect against radiation, and improve heart health. They also help cure sleep disorders, improve digestion, reduce inflammation, boost respiratory health, and aid in dental care. These powerful seeds improve blood circulation, detoxify the body, and eliminate depression and chronic stress. (NBE 2018)

### 1.1.1 The Origin and Cultivation of Sesame

Origin of sesame seed, written by many researchers and different intuitions, were published and all focus on the same origin. The recent study in the year 2016 India Academic press is an imprint of Elsevier by Surndier Kumar Gupta is the combination research by University of Chain & University of Australia. The study conclude that Sesame seeds (Selete) a member of the Pedaliaceae family and originate from flowering plant family classified in the order of flowering part in sub class Asteridae distinguished by usually superior ovary. In the Cronquist system of plant classification is a taxonomic classification system of flowering plants into two broad classes, Magnoliopsida (dicotyledons) and Liliopsida (monocotyledons). Sesame seed is one of the oldest and most of the world has traditional oilseed crops, valued for its high-quality seed oil.

According to recent archeological findings, sesame cultivation was derived from wild populations native to South Asia (Indiana), and its cultivation was established in South Asia from the time of the Harappa civilization and spread west to Mesopotamia before 2000 B.C. (Surndier Kumar Gupta) and then it was transferred to tropical and is cultivated sesame growing countries such as Africa, Asia, Latin America, and some parts of the southern United States. The ancient Mesopotamian kingdom used its sesame oil for food, medicine and cosmetics.

Sesame is ancient time is known as the "queen of oilseeds" and was used by the ruling family in its natural form. Nowadays, more attractive developed sesame growing countries; such as India, Chain, USA, Australia, & Some parts of Africa (including Ethiopian) who have been working based on Research & Development. Currently, there are four types of sesame seeds for international oilseeds markets; these are Brown sesame seed, Black sesame seed, White sesame seed, and Red sesame seed. (Central Bureau Investigation CBI Ministry of foreign affairs 2016)

### 1.1.2 The Biology of Sesame Crop

Sesame is a flowering plant grouped in annual plant classification which means the life cycle from a seedling stage to the harvested stage of seeds completed within one year. Sesame seeds self-pollinating plant with an erect, pubescent, and branching stem. The length of sesame seeds from 0.60 mater to 1.20 mater tell and the seeds length is from 1.9 to 2.5 cm long. The flowers are bell shaped and two lipped and the fruit color during harvest time are five types based on the origin of seeds ; yellow, white, red, brown, or black ; Flower are produced at each leaf, the lower flower bloom is two to three months to the upper flowers which are open, This crop grows in dry conditions and deserts. It is an annuals plant tolerant to drought like conditions where other crops fail. Therefore this plant is mostly growing sub share Africa and South Asia countries.

One of a big study in 2016 (Surndier Kumar Gupta) research book is Sesame seeds have one of the highest oil contents of any seed. It is a common ingredient across the world and has high mineral content. The seed is rich in carbohydrate, ash, calcium, phosphorus, iron, copper, magnesium, zinc, and potassium in addition to high degree of resistance against oxidative rancidity and the linoleic acid. Finally biological of sesame crop is one of the world's important oil crops and natural gift for human beings obtained from tropical and desert regions that grow in medium rain condition to be produced.

**Table 1.1: The Chemical Composition of Sesame Crop**

| Composition | Value |
|---|---|
| Oil Content | 44% -57% |
| Protein Content | 18% - 25% |
| Fatty Acids Content | 79% |
| Carbohydrate | 13-14% |
| Vitamins Content | E,A, and B Complex |

*Source: Surndier Kumar Gupta 2016*

### 1.1.3 Global Market for Sesame Sector

The major producing and exporting regions in the world are Asia & Africa producing 95% of the total global production. Asian countries produce 64% of the global production of which 17% is for export, and Africa produces 31% of which 40 percent is for export and the rest for local consumption. The remaining 5% of the global production is covered by Central America (Guatemala). The major importing country according to FAO current statistical data is China. China is both the leading Export & Import country in the world. The Global sesame annual production in 2018 is estimated to be more than 5 million MT annually according to Global Agricultural Information Network Report on 2018 Ethiopia production of sesame seed is estimated to increase to 340,000 MT that would have a trading value of US $1 Billion.

**Table 1.2: Major Ethiopia Sesame Seed Destination Countries**

| Rank | Destination Countries | Total Market Share |
|---|---|---|
| 1 | China | 45% |
| 2 | Israel | 20% |
| 3 | Turkey | 8% |
| 4 | Vietnam | 5% |
| 5 | UAE | 5% |
| 6 | Saudi Arabia | 4% |
| 7 | Singapore | 3% |
| 8 | Japan | 3% |
| 9 | Greece | 2% |
| 10 | Jordan | 1% |

*Source: GAIN, 2018*

### 1.1.4 Profile of Ethiopian Sesame and Oilseeds

For Ethiopia, Sesame seeds are the second most important agricultural export commodity after coffee and are important in foreign exchange earnings However; sesame production in most areas is carried out under traditional production systems associated with low production and productivity of the crop levels. Ethiopia is one of the main sesames growing and exporting countries in Africa. It has high quality sesame seed varieties suitable for a wide range of applications. Sesame is produced in different areas in Ethiopia. It grows as a major crop in Oromia, Tigray, Amhara and in some areas in the Beni-shangul, Afar and Southern Nations Nationalities and Peoples region. Types of Ethiopian sesame are the Whitish Humera type which enjoys strong demand in world markets, and the darker brown Wellega type for which foreign demand remains high but is lower than Humera type sesame seeds (ECX 2010)

Sesame is an important crop produced in Ethiopia for oilseed production and it was ranked first in total production from oil crops during 2016 (GAIN Report 2016). Ethiopia exports the raw seed to mainly to China and Japan. The demand for export is mainly determined by the color, taste, purity and dryness of the seeds, while the opportunity to export refined sesame oil to Europe, USA and other countries are not well established. On the other hand, Ethiopia is the net importer of refined oil for soybean and palm. The quality of sesame seed oil is determined by the compositions of fatty acids. Sesame oil has a high content of favored linoleic and oleic acids which contain antioxidant which prolongs the shelf-life of both the oil and other food fried in the oil. In addition, after extraction of oil the mill contains high protein for human food and animal feed. The few refineries like Addis Modjo and crushing or refinery unit of the good prospects to export refined oil to developed countries; however, the quality standard of the industries should meet the international standard to be competent in the market. In the future, organic seeds and refined oil are good prospects for Ethiopian industries for export, sesame crop production status and oilseed production, marketing and its future prospects.

## 1.2 Statement of the Problem

The Ethiopian agricultural export has a history of less satisfactory performance. But this poor performance trend did not continue. During the period of 2003 to 2014 the sector increased from half a billion to 2.8 billion US dollars in export earnings. The main reason for the enhancements of agricultural export in Ethiopia for the last decades was the government has been introduced a free market economy whereby the private sector played a positive driving force in economic growth. However, this growth did not last long and showed a declining trend during the last five years of 2014-2018. Similarly sesame the

second export commodity next to coffee recorded an increase from half a million to a half billion US dollars on the export earnings during 2003 to 2014. But this growth did show the increasing trend rather the reverse particularly in the recent five years during 2014-2018, at the consequences; the nation's economic growth got declined. For the reason, Ethiopia's source of foreign currency mainly depends on agricultural exports. (NBE 2018, IMF 2018)

According to the previous studies related to this study in the context of Ethiopia; for instance, a study conducted by Chemeda (2001) and Gemechu,(2002) says that the contribution of real exports to economic growth in the context of the Ethiopian economy. But focus only on the short run and as well as the long run economic growth. However, both ignored specific economic growth, whereas the recent studies conducted by UNCTAD (2018) and Noah (2018), deals with the determination of agricultural export in general and that of sesame seeds. Assuring a particular concern on the performance of sesame export, again both studies did not observe on the relation between economic growth and agricultural export.

However, all the above empirical studies had no comprehensive empirical study which determines the factors affecting the Ethiopian economic growth which includes agricultural export, public domestic investment, labor force, inflation, interest, and exchange rate. Hence this study is identifying the macroeconomic and specific factors to determinants of economic growth, and these will fill the knowledge gap by showing a relationship between economic growth and agricultural export in the case of sesame exports. Also, the study attempts to fulfill the gaps on the existing export culture, matters on qualities, volumes, management of production, to observe the existing problems on sesame and to conduct successive, coherent researches on the production and availability of conducive infrastructure. All these specific and other related macroeconomics variables need to be synchronized to help the economy of the agricultural sector which supports the industry and the service sector to keep the economy of the nation in its proper track. These can be considered the main purpose of the study.

Meanwhile this study makes a very focuses on the sesame seeds sector and its contributions to foreign income generation for the national economy. However, this study is mainly concentrating on the chain of management of sesame from production to exporting systems. This important export commodity of the country has helped to derive foreign currency. This is currently needed badly by the nation; Ethiopia's foreign currency crises hinder the national economy for a private company and as well as for the public megaprojects.

Therefore, the government of Ethiopia should focus on agricultural export products and development of investments in agricultural research and extension services in order to improve the quality and production capacity of sesame seeds as well as using the opportunity of growth-related global agricultural crops standards and improve volume including the focus in values of the export. So the country's keeping & sustaining its place in the world's sesame export market is a challenge as the country follows the traditional agricultural system, so more has to be done in this sector to take advantage of the potential in this sector. Otherwise, with the upcoming world trade center membership and free competition the nation may lose its present status with competitors globally.

## 1.3 Research Questions

1. What are the problems of the Ethiopian Sesame seed production inconsistency for the last ten years?
2. How can to the government support for the Ethiopia Sesame exporter companies' challenges in the international market?
3. What is the trend in agricultural exports in Ethiopia?

## 1.4 Object of the Study

### 1.4.1 General Objectives

The general objective of this study is to investigate the relationship between agricultural export and economic growth in Ethiopia during 1988-2018

### 1.4.2 Specific Objectives of the Study

- To assess the trend of sesame exports in Ethiopia during 1988-2018
- To review the value chain analysis of sesame exports
- To assess the potential challenges that affects the performance of sesame export trading
- Investigating the effect of traditional system (farmer base) of sesame seeds production and its impact on sesame production volume and value problems.
- Why there are inconsistencies in the sesame export sector's contribution to economic growth in Ethiopia
- The effect of sesame exports sector's on economic growth
- The effect of sesame exports on economic growth in Ethiopia and to put in place export strategy policy it recommendations depending on the results of our findings

## 1.5 Significance of the Study

This study mentions the current global market for Ethiopian agricultural export and the challenge in the traditional exports. It has been dominated by the declining terms of agribusiness, which made the export earnings not to grow in its normal condition; As a result of this the recent period of Ethiopian agricultural export commodities decline in international market in its volume and as well as the value. This study will be more needed on how much of the outcome is the result of productivity gains, and will be provide attention to the role of sesame which is the sub sector of one of the major foreign exchange element the exports commodities. Which is subsequently important for sustainable growth of the national economy, and it also helps the government in establishing the agricultural export strategy, which gives a regular policy directions to improve the agricultural export performance of the country.

## 1.6 Scope and Limitations of the Study

This study is limited to the period between 1988 and 2018 which covered thirty years of time-series data on macroeconomic variables that can affect agricultural export to contribution economic growth. The limitation of this study was the one associated with data availability. There are shortages of data, particular sub-sectors variables affecting agricultural export; the country did not have will organized data both control variables as well as macroeconomic variables, especially, for the early. Because of this problem, most of the data collected from international organizations; such as, the International Money Fund (IMF), Food & Agricultural Organization (FAO) and World Bank (WB).

The most challenge while doing this study came from the inconsistency of data from different organizations. So as to avoid such inconsistency attempt is made to stick to the same source of data. The aim of this study is to analyze the agricultural export sub-sector sesame product conurbation to economic growth. However, for the sesame product factors on the specific explanatory variables; could not analysis and determine into the model, because there is no available qualitative and quantitative data in Ethiopia; for the specific Sesame production development costs, such as; skilled human resource data, research and development data, modern agricultural technology data, weather condition data, political stability data and others unobserved quantitative data's impact on sesame production. And other cases might be considering the limitations of this study.

## 1.7 Organization of the Study

The research paper contains five chapters. The First chapter presents the introduction part, which consists of background of the study, Profile of Ethiopian sesame and oilseeds, Detail Ethiopian sesame seeds characteristics, statement of the problem, objective of the study, significance of the study, and definition of terms, The Second chapter presents literature review of the study which consist both theoretical and conceptual frame works. The Third chapter contains methodology of the study. The Fourth chapter encloses the data presentation, tests, analysis and interpretation. This chapter also including four section; the first section agricultural export trend and the sesame export trend in Ethiopia; The second section is the statically analysis at the given statically data; The third section is to test the second econometrics part based on chapter three model; The fourth section is correlation analysis among the variables; The fifth section is the hypothesis result and; The last section this chapter is deals with the variable analysis and the impact on economic growth. And finally The Fifth chapter presents the summary of finding, conclusion and recommendations. Finally list of reference, appendix and other related sample are attached at the end.

# CHAPTER TWO

# LITERATURE REVIEW

This chapter reviews the related literature written by different authors, relevant articles, journal and research works. the study areas covers: The overview agricultural export and national economic growth, The theoretical discussions are reviewed from literatures and reading materials relevant to the topic on agricultural export product contribution on national economic growth varies between agricultural export counties, The Empirical part that focuses on to analytical parts will see the variables between the agricultural sectors and the economic growth, And last but not the least. I discussed the Conceptual part on the performance of agricultural export countries in general and the practice in Ethiopia about sesame seeds business and in his study I will also show the conceptual framework to determine on agribusiness.

## 2.1 Theories and Basic Concepts

### 2.1.1 Overview of Agricultural Export and Economic Growth

For a nation to have a sustainable economic growth and development export is the main determinant factor to work on in order for to acquire a foreign currencies. Export plays the main role for countries of the world to participate or react in the face of global market and to interact with one another. These encourage the countries to stimulate the host company to produce a certain product of service continually in the process of supporting the economy and also serves as an instrument how a given countries' economy is booming or declining. On the other hand export is the main entry point to investments. Provided that good export techniques are implemented with currencies earned there will be a reasonable numbers of companies to involve in the economy in return it demand a number of trained employees to the field related to the job provided.

These chains continue to involve citizens to participate in the economy generation not only these the people gradually get employment and become self-helping society in eradicating poverty and advancing but also in science and technology. As the patterns indicate as the spectrium of export is diversified country will have a chance to be developed economically and transformed from agriculture led economy to the service and technology guided economy. One of the indication for these the more the developing the nation is becoming the less involvement is exhibited towards to the weight of agricultural sector in the economy accordingly low income nations agriculture contributes about 23% as compared to 10% and 2% of GDP for countries of intermediate and high income countries respectively. In the process of

economic growth countries, agriculture and agricultural trade took the lead and consequently, it provides people the chance to access excess food with higher quality contents in relatively cheaper price. Millions of people are likely establish their livelihood on this sector and nations use the currencies from the export for the purchase of different materials and services they consider important. First this may include different food items and other developmental issues. (Sayef and Mohamed, 2017)

As finance is the key for the issue of food security and import for food. The nature of finance and food import is interrelated it involves conflict on agricultural trade due to national and international policies and interest of nations towards to who or for whom to sale and buy and vice versa. Export is the common phenomena in the economy of the world. Nations and individuals have a common interest to increase export as larger as possible. In these process conducting research and development plays an important role in increasing the world economy in general and the export excellence in particular according to Liargovas & Skandalis (2008). The degree of attention given to the research and development makes a difference between the level of the economy between and among nations. (Brzezinski, Dzielinski 2009)

Agriculture –led economy is the basic characteristics of developing nations on the other hand well advanced and developing nations provide more attention to export. The three components; Exports, Domestic demand have a good and Economic growth have an interrelated relationship, while export and domestic demands has a deal of importance for the growth of the economy on the other hand economic growth has a direct impact on exports and domestic demand, meaning that successful and sustained economic growth requires growth in exports and growth in domestic demand. (Tsen 2010)

### 2.1.2 The Role of Agribusiness on Economic Growth

When the sun of Industrial revolution starts to rise there was no formal and a well-structured theory which guide agriculture in the economic development because the society is largely agrarian and has no further ideas how the agriculture benefit the economy and to manipulate the economy at the beginning of the 19$^{th}$ century it is estimated that about 75-90% of the population were engaged in agriculture strengthening the belief by French physiocrates which states that agriculture was the only productive activity while according to Timmer in 2002 It was also during this period that one of the foundations of the role of the agricultural sector in development was laid down by Adam Smith. (Timmer 2002)

The other theoretician Johnson in 1997 stated that an improved cultivation of land and labor half of a given family can produce the consumption to the family while the rest of the family can be engaged on different activities that are essential for life. This was exactly what happened in the United Kingdom best

growing practices were implemented to increase productivity by using the system of crop rotation. It is just a simple innovation of increasing soil fertility and land productivity in another angel by doing so the farmer can sustain his family food security and even more for the society when such practices are developed more people are released to work in the industrial sector. On the other hand the industrial sector provides machineries to the agriculture sector to release even more labor from the agriculture to the industries and other service sector and finally to the industrial revolution according to Boserap (1965) on the contrary the more the industries are booming in number and diversified there will be a labor shortage as it is shown by Great Britain ,United states of America and Japan .

According to classical theory during the 20$^{th}$ century economists there were concerned about ideas on how to share these experience to the nations where less or no economic development existed; Agriculture is considered to be the home of traditional people contributing to the economy by providing food , labor and capital .As a traditional sector contributes less productivity ( Hazell and thurlow ,2007) these theorists regarded economic development as a systematic process that reallocated the factors of modern sector the latter enjoying higher productivity and returns (Adelman, 2001) these theorists consider investment as not one of the factor for agricultural development since agriculture decline as an economy is modernized (Timmer 2002) the share of agriculture declines as development is increasing due to Engels's law, which states that in a closed economy with constant prices, the income elasticity of demand for food is less than one. Therefore, if an individual's income increases, the percentage share of that person's expenditure on food will decrease. If this effect is aggregated, it can be deduced that the total value of sales by farmers will grow at a slower rate than the rate of growth of GDP (Timmer 1988)

### 2.1.3 Agribusiness Theories

Agribusiness is the business of agricultural production; According to Goldberg and Davis in 1957 includes agrichemicals, breeding, crop production, distribution, farm machinery, processing, and seed supply, as well as marketing and retail sales. All agents of the food and fiber value chain and those institutions that influence it are part of the agribusiness system. Within the agriculture industry, "agribusiness" is used simply as a portmanteau of agriculture and business, referring to the range of activities and disciplines encompassed by modern food production. (Decio 2016)

Agribusiness is the sum of all operations involved in manufacture and distribution of farm supplies, production operations on the farm, and the storage, processing, and distribution of farm commodities. Agribusiness theories is a concept evolved giving origin to "Agribusiness Systems Analysis" rooted in

two elements: Agriculture treated as an isolated sector, became part of specialized inter dependent system of agents that operate in interconnected industries. And the relevant aspect proposed by Goldberg is that the value added at the farm level tends to decline through time as a share of the total value of production, with serious strategic consequences.

The concept considers only that agriculture is part of the business sphere of phenomena A small farmer's part of the agribusiness system as well as a large corporate farm. The domain of agriculture economists in most of the research centers prevailed and did not place efforts to study real world business practices, focusing public policies instead. Mean while real world problems faced by agriculture-based production were waiting for answers. In the 80s and 90s to the convergence of interests between economics and management has intensified. As the theory of economics of organizations evolved, the issue of governance and coordination of agribusiness systems became a vigorous applied field of empirical research. Questions of mechanisms of governance based in vertical integration, complex contracts and the role of institutions added to Goldberg's approach. Studies of agribusiness economics and management based in the property rights perspective, transaction costs analysis, knowledge, resources based views and new institutional economics gained strength.

### 2.1.4 Business Cycle Theory

A business cycle involves periods of economic expansion, recession, trough and recovery. The duration of such stages may vary from case to case. The real business cycle theory makes the fundamental assumption that an economy witnesses all these phases of business cycle due to technology shocks. The former adaptive expectation is replaced by the concept of rational expectation according to the Lucas which is an important step in the new classical macroeconomic analysis. Based on such rational expectations, and on the classical conception regarding the equilibration of markets, despite the abandon of the dichotomy between the real and the nominal factors sustained by the latter, Lucas initiates, in 1973, the theory of the real business cycle (RBC) including both the idea of compromise between the inflation and the real GDP level, while maintaining the short-run non-neutrality of money (Snowdon and Vane 2005), and the one relating to the surprise element of the monetary policies, which influence the supply of goods and services if their effect on prices is incorrectly surprised, given the incomplete information held. Considering the vision of Lucas, a new class of models emerged, which, by accepting the classical dichotomy, have abandoned the conception of Keynesians and of the early new classical economists (Mankiw 1989).

Based on the microeconomic fundamentals of the neoclassical models, the RBC model captured the impact of technological changes on the economic activity evolution and on the unemployment rate; therefore minimizing the influence exercised by the modifications occurred on the goods and services or money market. According to this theory's partisans, productivity is pro-cyclical, being indissolubly related to technological fluctuations. Labor supply is stimulated only in productive times, in economic critical conditions, generating drops in the real wage, it being lowered (Mankiw, 1990). In case of unsatisfactory technological level, we assist to the drop down of production, consumption and investments and, therefore, to the capital diminish, the re-establishment of the technological level not having the power to restore the level of GDP to its equilibrium value, the capital accumulation becoming a propagation mechanism transforming apparently non-persistent shocks on the supply of goods and services into persistent ones.

The dynamics of the employment, production and real interest rate equilibrium is independent of the monetary policy, the real variables varying only in response to technological changes. By synthesizing, three essential elements are at the basis of the new classical model: the negligible importance of money in influencing the business cycles, the rationality of the economic agents who respond in an optimum way to the real shocks, mainly related to the fluctuations occurred at the level of productivity, governmental acquisitions or preferences, and the orientation towards the dynamic analysis of the economy, based on rational an expectation, starting from the Walrasian general equilibrium theory which implies that economy has a unique equilibrium at full employment, as result of price, wage and interest rate adjustment. (Oana 2015)

### 2.1.5 National Competitive Advantage Theory

The first attempt to explain why countries engage freely in international trade has its origin in 1876 with Adam Smith's theory of absolute advantage. According to this theory, a country can enhance its prosperity if it specializes in producing goods and services in which it has an absolute cost advantage over other countries and imports those goods and services in which it has an absolute cost disadvantage. This theory explains why countries, through imports, can increase their welfare by simultaneously selling goods and services in international markets. Adam Smith thus viewed trade as a positive sum game. This was in direct contrast to the viewpoint of the mercantilists of the 16th century that trade is a zero sum game. They believed that if countries wanted to become rich and powerful, they must export more and restrict imports to the minimum. Such a policy would result in an inflow of gold and silver that would make the country wealthy.

The competitive advantages of nations appeared in 1990, in a very dynamic historical context. We are only one year after the launch of the initiative known as "Washington Consensus", document issued by international financial institutions based in Washington, considered as reference material of neoliberalism based on market fundamentalism. There is a significant positive correlation between the recommendations from the "Washington Consensus", and recommendations expressed or implied in Porter's suggestions for governments (privatization, deregulation, financial liberalization, reorientation of public spending, trade liberalization). The insufficient academic rigor of "Competitive Advantage of Nations", its disproportionate promotion and subsequent efforts of the author in the World Economic Forum (WEB, the headquarter for promoting neoliberal competitiveness (for business exclusively) lead us to say that the theory of competitive advantage is less an intellectual product that tries to shed light on the causes of economic performance, but rather a tool to promote neoliberal ideology. Trade patterns are determined by the level of businesses and economic situations in countries that traded within competitive advantage his important factor on economic development. According to Porter in 1990 pointed out that, 'the only meaningful definition of competitiveness at the national level is national productivity'. Porter postulated four keys to a state's competitive advantage in comparison to the other nations:

- Factor Conditions: the basic factor conditions are; natural resources, location, vegetation and climatic condition, and fertile land for agricultural production these factors they have most developing Africa & Latin America countries fulfill and The advanced determinants available in developed country USA, EU and some Asia countries (i.e. China, Japan, and India) a given economy are; communication, skilled workers, and deregulation of markets, research and development.
- Demand Conditions: the level of customers' demand for goods and services produced in a particular economy.
- Related and Supporting Industries: are determined by the level of investments in advanced factors of production and the spillover from the similar industries that lead to both the domestic and global competitiveness of industries.
- Firm Strategy, Structure and Rivalry: are the conditions in a country that explain how companies are established, managed, organized, controlled, and that determines the features of domestic competitions.

Porter maintained that local rivals and the search for competitive advantage within a country could stimulate organizations or companies with bases for attaining such competitive advantage on a more international stage. Porter further maintained that nations should export products from those companies

in where all the four pillars of the diamond are conducive, whereas, in that area that are not favorable, countries should import and the Government has a vital role to play in ensuring that businesses maintain a high quality of production, service delivery and healthy competition among firms, Nations are likely to benefit from trade even if they do not vary in factor endowments. (Grant, 1991)

## 2.2 Agricultural Exports in Ethiopia

The Ethiopian economy and the export market is dominated by agricultural commodities, with coffee playing a critical role amongst the exported commodities from the country total share export earning greater than 15% Of the ten key export commodities, as determined by the National Bank of Ethiopia, six are agricultural average value per years 30%,16%,10%,6%,5% and 2% respectively coffee, oilseeds (sesame), chat, pulses ,fruits and vegetables, , flowers, and these six commodities account all per year's average greater than 70% from the total export value . Less well known is the important role that livestock and livestock-related commodities(i.e. leather, meat, and live animals) play in Ethiopia's export market account all per year's average greater than 10 % these including accounting for an additional three of the ten key commodities such as leather, meat, and live animals. The livestock and livestock-related commodities account for approximately a tenth of the exports total foreign earning by value greater than 3.4billion USD for the last fifteen years. These two commodity types such as agriculture and livestock, together, accounted for greater than 80% of all export value, in every year between 2003 and 2017. (NBE 2002-2017)

Ethiopia's export sector grew more than fivefold in the past decade from 483 million USD in 2003 to 2.7 billion by 2011, while the last recent five years was slowly growing this equivalent to a 2% growth per annum during in 2017 to 2.9 billion USD and relatively the last five decades significantly small amount growing that was recorded 2 million USD only. This is equivalent to a 25% growth rate per annum which is more than double that of the average growth rate of the past four decades (i.e. 1961-2001). Primary agricultural commodities are the major sources of growth in the export sector during this period. In fact, earnings from export of primary agricultural commodities grew rapidly and consistently from a little higher than 300 million USD in 2003 to a little lower than 2 billion USD in 2011, and during in 2017 to 2.9 billion USD Moreover, the share of agriculture to total export proceeds increased consistently from about 63% in 2003 to 82% in 2009, though it slightly declined to 71% in2011and then in 2018 to 23%. In contrast to this, the share of non-agricultural goods (merchandise goods and gold) was, by and large, constant during the same period with a slight increase since 2008/9 (IMF 2014). The major export commodities in Ethiopia are, namely coffee, oilseeds, and pulses, dominate the agricultural export.

Between 1971- 2001 these commodities accounted for about 68% of the total export proceeds out of which about 80% was attributed to coffee. The contribution of these commodities in Ethiopia's export sector has even increased (though slightly) in the recent decade. In fact, the average contribution of these commodities was about 73% in the period 2003 -2011. A close look at the disaggregated the bellow table show that the share of coffee declined by 10 percentage points during this period (as compared to the1971-2001 period) while that of oilseeds and pulses increased by about 15 percentage points. Export of coffee, oil seeds and pulses grew on average by6.6%, 22% and 23%, respectively, over the period 2003-2011. However these commodities total share of the export 34%, 10% and 14% respectively in 2003 total share 58% similarly in recent period 2017 the total share of the country almost the same percentage that is 52% . While their contribution is quite small, new products are generating export earnings for the country. Meat and meat products, fruits and vegetables, and flowers are the new entrants into Ethiopia's export sector which generated about USD79 million in recent period 2017.

Generally accordingly to the National Bank of Ethiopia (2018) report, the share of industry in GDP rose sharply to 25.6 percent in 2017 from 16.7 percent while that of agriculture largely remained at around 36 percent. In contrast, the share of service sector dropped to 39.3 percent from 47.3 percent a year ago. This gradual but steady shift in the structure of the economy reflects the government's policy of developing manufacturing sector and promoting export-led growth while continuing to give due attention to modernizing the agriculture sector which has dominated for long the country's economic base; Ethiopia agricultural export performance from half millions USD to three billion USD foreign export earning respectively from 2003 to 2017, while the percentage of the previous ten years (2003-2012) change by 8% however the last five years (2013-2017) only 2% change from the previous decades so to conclude that the Ethiopia agricultural performance will be decline according to National Bank of Ethiopia Report. (EIC 2013 and NBE 2017)

### 2.2.1 The Structure of Ethiopia Sesame Sub-Sector

#### 2.2.1.1 Agricultural Resources

Ethiopia has a total area of 112 million hectares out which about 45% is arable. The country has a potential irrigable land of about 3.7 million ha. Overall, Ethiopia's natural resource base, the soil, the climate, the relative humidity the vegetation types are the foundations of agriculture. The different agro ecological zones, extensive arable land and high population in rural areas make Ethiopia an agrarian country. Agriculture is the mainstay of the national economy contributing about 46% of GDP, over 90%

export and 83% of employment. Ethiopia is one of the centers of biodiversity for several oilseeds which can be considered as specialty high value seeds on the international market oil seeds are Sesame, Niger, Mustard, Pumpkin Sunflower Rape & Castor The crops grown in Ethiopia are diverse following the mosaic agro-ecologies derived from the soil types ranging from fertile soils to send and cropping altitude from more than 3000mt to less than 600mt.

### 2.2.1.2 Geographical Location

The major sesame growing areas are located in the Northwest; in Humera area in Tigray near the border with Sudan and Eritrea; in Metema in North Gondar and in Wollo area of Amhara region, Chanka area in Wellega of Oromiya, and in Pawi area in Benshangul Gumuz region.

**Figure 2.1: Main Sesame Growing Regions in Ethiopia**


*Source: Alemu and Meijerink, 2010*

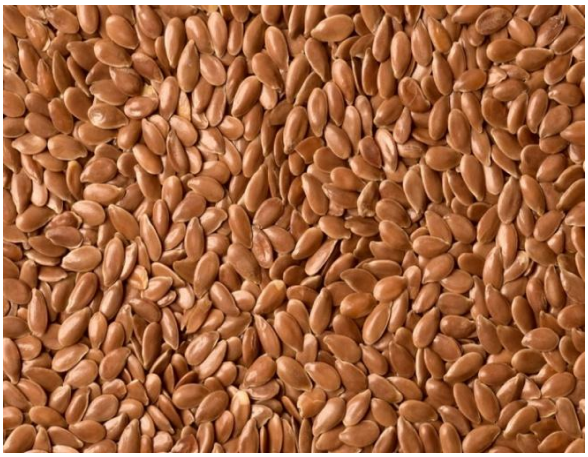
### 2.2.1.3 Types and Quality

A. Whitish Humera type: Sesame type is a good demand in the world market & known for its top quality. Also used as a reference for grading in the international market and high quality sesame seed varieties suitable for wide range applications and also appreciated worldwide for its aroma and taste.
B. Darker brown Wellega Type: Sesame type in color is the darker brown and high oil content

**Figure 2.2: Major Sesame Type in Ethiopia:**

**A: Whitish: Humera Type**

**B: Darker brown: Wellega Type**



*Source: ANADAS Trading Plc*

### 2.2.1.4 Sowing and Harvesting

The best time for sowing period is found to be from

- Beginning of June to Mid July when cultivated as rain fed crop.
- Maturity depends on the weather condition and it usually varies from 90 - 105 days.
- Mid October to November is the usual harvesting time
- Harvesting begins when two third of the plant and seed pods turn yellow

### 2.2.1.5 Ecology

Ethiopia has altitudes from below sea level up to4500meter above sea generic Viagra 100mg level with different climate zones which enables to grow a wide variety of oilseeds crops. Sesame is grown from sea level to altitudes of 1500mt with uniformly distributed rainfall of about 500-8-00 mm and temperature of 25- 30 Celsius. All the sesame growing areas fulfill the above condition In particular the north and north western parts of the country

### 2.2.1.6 Institutional Environment and Opportunities

- The Ethiopia government is investing on Roads, Telephone and the energy sector
- Ethiopia is in the process of WTO Membership
- The Government has developed a package of incentives for domestic and foreign investors engaged in new enterprises and expansions
- Hence there is good potential to increase the cultivation Viagra online sales area
- New areas are fertile, virgin and offer good opportunities for expansion
- The Exporters association is working hard to build the capacity of its members

### 2.2.1.7 Market Structure

Based on FAO report of 2015 Ethiopia sesame prices are calculated from the international price of the product at the country's border, where the product enters the country (if imported) or exits the country (if exported). This price is considered the benchmark price free of influence from domestic policies and markets. The prices of domestic are compared to reference prices at two specific locations along commodity value chains– the farm gate (usually the main production area for the product) and the point of competition (usually the main wholesale market where the domestic product competes with the internationally traded product). The approach for comparing prices at each location is summarized below, using an imported commodity as an example. In this situation, the country is importing a commodity that arrives in the port at the benchmark price (usually the unit value CIF price at the port of entry).

In the domestic market, we observe the price of the same commodity at the point of competition, which is in this case the wholesale market, and at the farm gate. We also have information on observed access costs, which are all the costs associated with bringing the commodity to market, such as costs for processing, storage, handling, transport and the different margins applied by marketing agents in the value chain. These include access costs between the border and wholesale, as well as between the farm gate and wholesale. The benchmark price is made comparable to the domestic price at wholesale by adding the access costs between the border and wholesale, resulting in the observed reference price at wholesale. This takes into account all the costs incurred by importers and other agents to bring the commodity to market, which in effect, raises the price of the commodity. The reference price at wholesale is further made comparable to the domestic price at the farm gate by deducting the access costs between the farm gate and wholesale, resulting in the observed reference price at farm gate. This takes into account all the costs incurred by farmers and other agents to bring the commodity from the farm to the wholes

## 2.3 Conceptual Framework

### 2.3.1 Conceptual Frameworks of the Study Model

The Conceptual framework of the study is an analytical tool with several variations. It can be applied in different categories of work where an overall picture is needed. It is used to make conceptual distinctions and organize ideas. Strong conceptual frameworks capture something real and do this in a way that is easy to remember and apply. The study concepts that relate to one another were used to explain the research problem; since the relation between agricultural export and economic growth in case of sesame export. The first economist who developed the theory of economic growth is Adam Smith. He thought that economic growth is not only conditioned by the capital accumulation, human capital, technology, land, labor, export, but from the total of all these factors in immediate manner

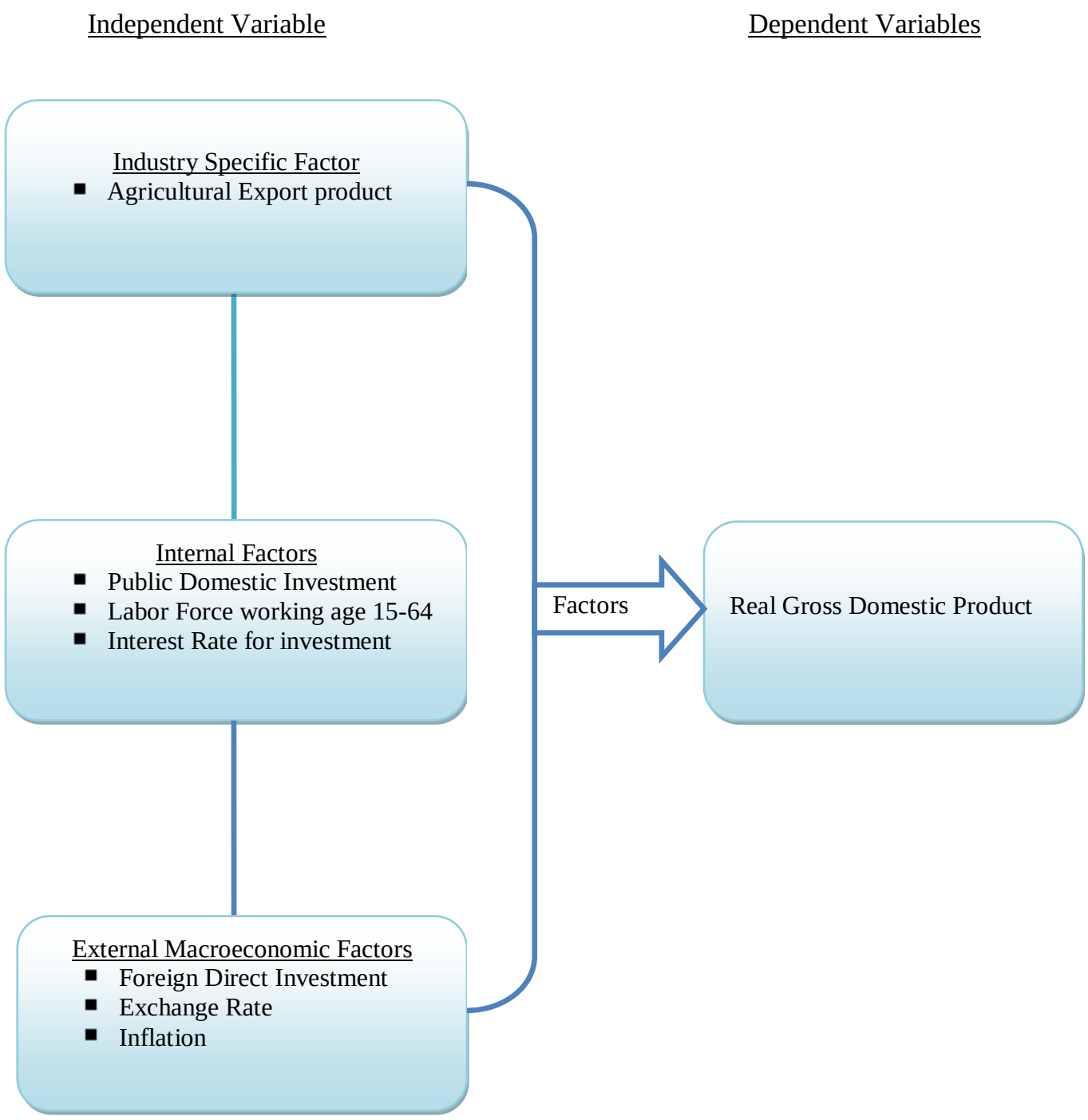
The agricultural export performance is influenced by various factors this study; Industry specific factors, Internal general factors and macroeconomics factors; all the variables need to understand what influences agricultural export to conurbation the national economy. The conceptual framework of the study is three sub sections:

A. **Industry specific factors**: The specific factor of this study is about sesame export and with the objective of studying the correlation between the explanatory and the dependent variables.

B. **Internal factors**: The internal factors of this study includes three explanatory variables such as Public domestic investment, labor force, and interest rate; all these variables are non agricultural export variables but have an impact on agricultural export to the contribution of the nation's economy and also having both a direct and indirect impact on economic growth.

C. **External Macroeconomics factors:** The external macroeconomics factors of the study three independent variables of this study including three explanatory variables such as foreign direct investment, exchange rate, and inflation; these all variables are non agricultural export variables but impact on agricultural export to contribution of the country economy also direct and indirect impact on economic growth.

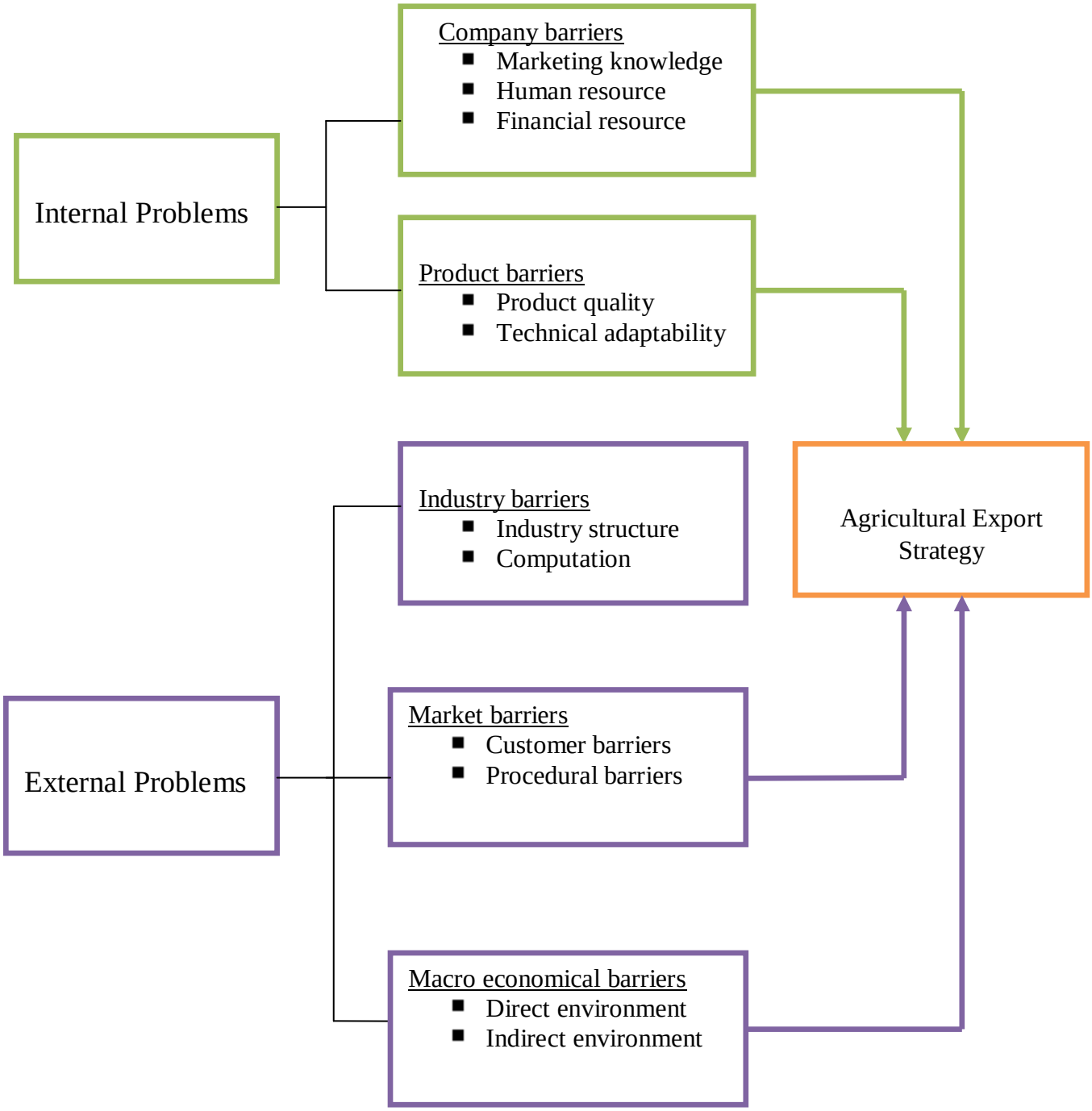
**Figure 2.3: Conceptual Frameworks the Study**




*Source :Own the Model*

### 2.3.2 Conceptual Frameworks of Agricultural Export Strategy

**Figure 2.4: Agricultural Export Strategy**




*Source: Tesfom and Lutz 2006*

## 2.4 Empirical Studies

### 2.4.1 Empirical Studies on Agribusiness Sectors

Agribusiness is considered as something that many in agriculture already knew: the farmer is a businessperson and his product is part of a much larger value-added chain. To explain this larger framework, they introduced the term Agribusiness. Using the Leontief input-output system, these researchers showed the backward and forward linkages of agribusiness: inputs to agricultural production and the outputs of agricultural production to processing, distribution, finance, and consumption industries. We observed that mostly literature focused on the total exports as the only source of growth, but agriculture's share to total exports is generally substantial in under developed economies. It is very astonishing that empirical research on the contribution of agricultural exports to economic growth has been to some extent ignored in the literature despite its role in the development process being long recognized. But it is argued by the various economists that rising agricultural exports play a crucial role in economic growth. (Professors Davis and Goldberg Harvard University 1957)

### 2.4.2 Empirical Studies on Export Performance

- Ekanayake (1999) analyzed the causal relationship between economic growth and export growth by using error correction and co integration models. The author had used the time series data of eight *Asian* developing countries covering the period from 1960 to 1997. The results of the study concluded that there was a bi – directional causality between export growth and economic growth in all the developing countries included in the analysis except *Malaysia.* There existed strong evidence for long run Granger causality in all countries.
- Erfani (1999) examined the causal relationship between economic performance and exports over the period of 1965 to 1995 for several developing countries in *Asia and Latin America.* The results showed the significant positive relationship between exports and economic growth. This study provides the evidence of export-led growth hypothesis.
- Giles and Williams (2000) urged authors to exercise caution when using time series tests for the ELG, although they did not discredit these tests outright. Chan and Dang (2010) identified some evidence of reverse causality between export performance and economic growth when they tested the ELG empirically. The same period Chang and Dang study is important because the authors aggregated total international export performance and total international economic growth into one model to test the ELG.

- Vohra (2001) showed the relationship between the exports and economic growth in *India, Pakistan, Philippines, Malaysia, and Thailand* for the period 1973 to 1993. The empirical results indicated that when a country has achieved some level of economic development then the exports have a positive and significant impact on economic growth. The study also showed the importance of liberal market policies by pursuing export expansion strategies, and by attracting foreign investments.
- Shirazi et al (2004) studied the short-run and long-run relationship among real exports, real imports, and economic growth on the basis of co-integration and multivariate Granger causality test as developed by Toda and Yamamoto (1995) for the period 1960 to2003.This study showed a long-run relationship among imports, exports, and economic2003.This study showed a long-run relationship among imports, exports, and economic growth and found unidirectional causality from exports to output. But, it did not find any significant causality between imports and exports.
- Thurayia (2004) studied the relationship between exports and economic growth experience in *Saudi Arabia and Sudan***.** Results showed that the growth rate in total exports in *Saudi Arabia* had an active role in achieving economic growth while it had a weak influence in Sudan. The results of co integration and error *correction models* showed a positive effect of exports on GDP in the short- and long- run, which confirms the validity of the hypothesis of export-led growth in *Saudi Arabia, and Sudan.*
- Aurangzeb (2006) studied the relationship between economic growth and exports in *Pakistan* based on the analytical framework developed by (Feder, 1983). Auther tested the applicability of the hypothesis that the economic growth increased as exports expanded by using time series from 1973 to 2005.The findings of the study showed that export sector had significantly higher social marginal productivities. Hence the study concluded that an export oriented and outward looking approach was needed for high rates of economic growth in *Pakistan.*
- Jordaan (2007) analyzed the causality between exports and GDP of *Namibia* for the period 1970 to 2005. The export-led growth hypothesis is tested through Granger causality and co integration models. It tests whether there is unidirectional or bi-directional causality between exports and GDP. The results revealed that exports Granger-cause GDP and GDP per capita, and suggested that the export-led growth strategy through various incentives has a positive influence on growth.
- Rangasamy (2008) examined the exports and economic growth relationship for *South Africa*, and provides the evidence that the unidirectional Granger causality runs from exports to economic growth.

- Ullah et al (2009) re-investigated the ELG hypothesis using time series econometric techniques over the period of 1970 to 2008 for *Pakistan*. The results reveal that export expansion leads to economic growth.
- Kaplinsky and Morris (2009) also highlighted how *Sub-Saharan Africa (SSA)* struggled to compete with *Asia* on a global scale in terms of exports. Thus, as *Asian* exports grew, there may have been an indirect decline in SSA due to the region being less competitive in the global market than Asia. Therefore, even if Asia was driving global economic growth and *Africa-Asia* trade is growing, there may still be other factors that prevent the African countries from capitalizing on this improvement in Asia's economic performance. In order to analyses the effect of the global economy over time, it will be important to compare export performance and the GDP performance of the trading partners over different time periods. This will support or oppose Guo and N'Diaye's (2009) and Vlasiuk's (2010) opinions of deteriorating export performance during a recession. *China's* biggest African trading partners, who mainly are oil-exporting, tend to cut themselves off from the *African* market as their exports to *China* increase (Montinari & Prodi, 2011). On the contrary, a rise in exports to *China* from nonoil- exporting countries (including Ethiopia) increased trade between *African* countries (Montinari & Prodi, 2011).
- Elbeydi (2010) and Gazda (2010) investigated the relationship between exports and economic growth for *Libya* for the period 1980 to 2007. The findings indicate that there exists a long-run bi-directional causality between exports and income growth, and thus, the export promotion policy contributes to the economic growth of Libya. (P. K. Mishra 2015)
- Sanjuan-Lopez and Dawson (2010) estimated the contribution of agriculture exports to economic growth in under developed countries. They estimated the relationship between Gross Domestic Product and agrarian and non agrarian exports. Panel co integration technique was used in analyzing the data set of 42 underdeveloped countries. The results of the study indicated that there existed long run relationship and the agriculture export elasticity of GDP was 0.07. The non agriculture export elasticity of GDP was 0.13. Based on the empirical results, the study suggested that the poor countries should adopt balanced export promotion policies but the rich countries might attain high economic growth from non agricultural exports.

Therefore the above studies supported on economic theory; the agricultural export product is the major development on economic growth according to the theory of Export Led Growth (ELG) refers to the positive benefits that may accrue to a country when it pursues a strategy of increasing demand to foreign countries (Awokuse, 2008). The interest in a country pursuing export-oriented growth strategies is not

new as there may be direct or indirect benefits for pursuing this strategy (Awokuse, 2008); direct benefits include the resultant increase in output, which can translate into an increase in employment or income. Indirect effects include greater economies of scale in non-export industries and related improvements in technology (Awokuse 2008); the basic concept of ELG is generally expressed in the same manner in literature, with similar definitions being provided by Chan and Dang (2010), Huang and Wang (2007) and Nain and Ahmad (2010).

### 2.4.3 Empirical Studies on Agricultural Export Commodities

#### 2.4.3.1 Soya Bean Exports

*Argentina and Brazil* are considered as *U.S.* competitors in the soybeans export market. The coefficients for income, relative price, and R&D for soybeans have the expected signs and are significant at 1%. Exchange rate volatility for soybeans has the expected sign but is not significant. It should be noted that soybean is directed to the richer countries where it is used in feeding animals compared to commodities like wheat employed for direct human food use. These countries have stable financial markets, which might reduce the volatility of exchange rates; thus reducing its impacts on imports. Income coefficient is significant at the 5% level, while both relative price and R&D coefficients are significant at the 1% level. The R&D coefficient for *Argentina* soybeans has the expected sign and is significant at 1%. This indicates that Argentina's soybean exports sector accrue the highest benefit with increases in R&D expenditure, The R&D coefficient for Brazil has a negative sign and is significant at the 1% level. That Brazil has continued to increase its soybean exports even with reduced investment in R&D can be attributed to technology borrowing.

#### 2.4.3.2 Wheat Exports

*Australia and Canada* are considered to be U.S. competitors in the wheat export market. The overall human capital coefficient for wheat is significant at the 1% level, but with a negative sign. This indicates that in general, human capital increases are not associated with increases in the level of wheat exports. However, the human capital coefficient for the Canada is significant at the 1% level, indicating that *Canada* wheat exports benefit most from increases in human capital The overall Michaely Index coefficient of trade specialization for wheat is positive and significant at the 1% level, The Michaely Index coefficient for *U.S. and Canada* are positive and highly significant at 1% with the U.S. being the most significant, followed by *Australia and Canada.*

#### 2.4.3.3 Cotton Exports

The human capital coefficient for cotton exports from the U.S. and Australia is positive but not significant. This indicates that, overall, cotton exports are positively influenced by investments in human capital. Brazil has a negative but significant human capital coefficient. One explanation for Brazil's negative human capital coefficient could be that as farmers invest more in technology (R&D), less human capital is needed for the same unit of output. Also, as in corn, human capital according to Kagochi & Jolly, labor augmenting with the ability to increase the supply of labor without increase in its physical stock. The overall Michaely Index coefficient of trade specialization for cotton has a positive sign and is significant at the 1% level. When compared to its competitors, Australia has a positive and most significant Michaely Index coefficient. On the other hand, Brazil has a negative Michaely Index coefficient. This indicates that Australia is more specialized in cotton exports when compared to the U.S. and Brazil. (John M and Curtis M, 2010)

### 2.4.4 Empirical Studies on Agricultural Export Growth

The role of R&D and human capital in the competitiveness of corn, cotton, soybeans, and wheat is evaluated in this paper. The study uses volume of exports, commodity prices, nominal exchange rates, GDP of the major importing countries, R&D expenditure of exporting countries, and secondary school enrolment of exporting countries. Exchange rate volatility is calculated using nominal exchange rate data. Michaely Index is calculated to represent a measure of competitiveness. The results of this study indicate that R&D investment and commodity trade specialization, as measured by the Michaely Index, are important factors that positively influence agricultural commodity exports. The four commodities of corn, wheat, cotton and soybeans that were studied had positive relationship between R&D and their exports. Results based on R&D variable show that U.S. corn production and Argentina soybean production are most responsive to increases in R&D investments. The results also indicate that the level of commodity competitiveness influences exports. Exports, most competitive exporter of corn and wheat based on the Michaely Index results. On the other hand, Argentina is most competitive in soybeans exports, while Australia is most competitive in cotton exports. The human capital coefficient for the overall model is negative and only U.S. corn sector has a positive and significant human capital coefficient. Thus, U.S. corn sector benefits most when compared to other competitors based on the human capital coefficient. These results, although contrary to our expectations, are consistent with some earlier studies. Chuang's (2000) study on human capital accumulation, exports, and economic growth in Taiwan found no direct effect of skilled labor accumulation on exports growth, while Courakis (1991)

study in Portugal found that for natural resource dependent industries, gross exports are unskilled labor intensive and human capital scarce.

Overall, the results of this study indicate that investments in R&D and commodity trade specialization influence agricultural commodity exports while we did not obtain consistent results to show that human capital has any effect on agricultural commodities export. This shows that R&D measure can be included when evaluating the competitive position of U.S. agriculture. The results of this study could open an avenue for more research on the impact of R&D and human capital on non-bulky agricultural export commodities so as to enhance the empirical findings of the study. (John M and Curtis M.2010) Total Factor of Productivity (TFP) growth theory including are: farm size, public and private research investments, extension expenditure, crop specialization, human capital, infrastructure (including roads, irrigation, power, etc.), vintage of capital, technology purchase expenditures, education, exposure or orientation to market, urbanization, etc. (Iain Gordon 2017) While analyzing trends in productivity growth, (Byerlee and Murgai,2001 ) suggested incorporating a wide range of variables such as conventional production inputs (land, labor, etc.) along with non-conventional inputs (education, infrastructure, etc.) and technology variables (e.g., high- Yielding varieties, knowledge stock in the form of investment in research) and variables representing resource degradation (e.g., soil erosion, nutrient status, etc.), and weather variables. Avila and Evenson mentioned human, social and technological capital as factors influenced agricultural TFP performance in developing countries. They have constructed two new indexes named the Invention-Innovation Capital and Technology Mastery Capital to explain TFP growth.

The Invention-Innovation Capital Index was constructed based on two indicators: agricultural scientists per unit of cropland and R&D as a percentage of GDP, to measure the adaptive invention and innovative capacity following us have constructed the Technology Capital variable. Based on the existing literature mentioned above, we have constructed five categories of explanatory variables to explain changes in TFP growth using the framework of capital endowment. These are: technology capital, mechanization level, human capital, financial capital, natural capital and the Herfindahl index of crop diversification. Furthermore, the available governance related cross-country indicators are mostly perception based, for instance the Corruption Perception Index prepared by the Transparency International, (Avila and Evenson 2010). According to Jain Gordon study South Asian agriculture by computing multi-lateral multi-period TFP indices for a 34-year period (1980–2013) The study then decomposes the computed TFP index into six finer components (i.e., technical change, technical-, scale- and mix-efficiency changes, residual scale- and residual mix-efficiency changes). The study also examines the role of capital

in driving agricultural productivity growth in South Asia. Results reveal that all countries sustained agricultural productivity growth but at variable rates. Bangladesh recorded the highest annual TFP growth rate estimated at 1.05%, followed by India (0.52%), Pakistan (0.38%) and Nepal (0.06%), respectively.

During the period, the countries experienced little or no variation in technical, scale and mix efficiency changes, but differential changes were observed for residual scale and mix efficiency changes amongst countries which are largely responsible for differential rate of TFP growth. For Bangladesh, both residual scale and mix efficiency increased by 0.44% p.a. In India, both these components were unchanged, whereas in Nepal, both components were reduced by - 0.39% p.a. In Pakistan, residual scale efficiency increased by 0.12% p.a., whereas the mix efficiency decreased by the same rate. The major drivers for the TFP growth are natural and technology capital. Financial capital and crop diversification retards TFP growth. Based on the results of the study, several interventions can be offered. First, land reform and tenurial policies aimed at consolidating farm size and smooth functioning of the land rental market are important as this measure will improve natural capital. Given the nature of land scarcity of these South Asian countries, effective implementation and modernization of tenurial policies will have more discernible impact on enhancing access to natural capital by large masses of landless farming population who will then be able to enter farming and will thus contribute towards agricultural productivity growth. Rahman and Salim also noted land reform measures aimed at consolidating average farm operation size to improve productivity in Bangladesh agriculture. Second, investment in agricultural R&D aimed at improving production technologies and modernization of farming will contribute significantly to agricultural productivity growth in South Asia. (Rahman and Salim 2013)

# CHAPTER THREE
# METHODOLOGY

## 3.1 Research Design

This Chapter of the study is a brief presentation of the approach of the study, design of the research instruments, the selection of the study model and the research participants. , most empirical work based on time series data assumes that the underlying time series is stationary ,therefore this study depend on the time series data collection and the technical econometrics part used to ordinary least square(OLS) method because the method of least squares has very attractive statistical properties that have made it one of the most powerful and popular methods of regression analysis , it also provides a comprehensive picture of the methods of data collection, presentation, and analysis, the study has focused on empirical relevant inputs past studies and data from those government and non-government institutions. And theoretical facts are those which are from the past studies and are supported with theories from agri-business, economics, marketing, international trade and other related disciplines, The mixed research methodology to address this study, while mainly based on secondary annual export data on sesame product contribution to national economy growth; thus data are taken from domestic government bodies such as NBE,MOT,ERCA,EPOESPEA,CSA and various international publications organizations such as IMF,WB,FAO,WTO,GAIN,UNDP, and AFEXIMBANK covering the period from 1988 to 2018

The very focus of this study was the "Agricultural Export contribution on Economic growth in the case of sesame product in Ethiopia." The major sesame growing areas are located in the Northwest; in Humera area in Tigray near to the border with Sudan and Eritrea; in Metema in North Gondar and in Wollo area of Amhara region, Chanka area in Wellega of Oromiya, and in Pawi area in Benshangul Gumuz region. The area is one of the three most important sesame production area of Ethiopia and there are more than 21,000 small holder farmers, 47 Investors and 523 traders in the north and western parts of the country. Generally the country; the export standard sesame production comes from Amhara region specifically in Metama, from Tigray region in Hummera and Oromiya region in Wellega.

This study was used to quantitative research approach and the data used to secondary data which is extracted from various sources also more appropriate to gather variety of data related to the study; we are looking the specific and macroeconomics factors the correlation between the real GDP and agricultural export in Ethiopia.

## 3.2 Model Development

### 3.2.1 Determine Variables

**Real Gross Domestic Product** (**RGDP**) is a macroeconomic measure of the value of economic output adjusted for price changes either inflation or deflation. This adjustment transforms the money-value measure nominal GDP into an index for quantity of total output. Although GDP is total output, it is primarily useful because it closely approximates the total spending of the country these are the sum of consumer spending, investment made by industry, trade balance which means the excess of exports of goods or service over the imports of goods or service, and government total spending of the country. That is why the GDP must be divided by the inflation rate to get the growth of the real GDP. Different organizations and governments use different types of 'Real GDP' measures. In economics term used Solow Swan production function express as "Y" The production function takes the general form Y=f(K, L,X). Another way annual percentage growth rate of GDP at market prices based on constant local currency. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. (Oyejide, 1986 and Eita, 2009)

**Gross Labor Force (GLF)** The labor force is the number of people who are employed plus the unemployed who are looking for work and the size of the labor force depend not only on the number of adults but also how likely they feel they can get a job. So, the labor pool shrinks during and after a recession. It is therefore expected that labor force will have a positive relationship with economic growth. Labor force participation rate the World Bank provides data for Ethiopia from 1990 to 2017 the average value labor force the last eighteen years data show that the country a minimum of 77.95 % GLF in 1990 and a maximum of 84.54 % GLF in 2005 ; thus is the country one of the competitive advantage of the economy growth. Also the economy theory Gross labor forces define as Labor (L) is a measure of the work done by human beings. It is one of the dependent variable (input) of the produce output, conventionally contrasted with such other factors of production as land and capital. There are theories which have developed a concept called human capital his referring to the skills that workers possess, not necessarily their actual work. There are two sides to labor economics. Labor economics can generally be seen as the application of microeconomic or macroeconomic techniques to the labor market and microeconomic techniques study the role of individuals and individual firms in the labor market. (World Bank 2017) Macroeconomic techniques look at the interrelations between the labor markets. most of

LDCs country advantages; for instance in Ethiopia labor market attractive for FDI so its competitive advantage in the labor market because Ethiopia is next to Nigeria the largest population in Africa; out of this most of peoples are young and productive.

Similarly the Labor (Human capital) is an important factor of production and has a direct impact on competitiveness. Therefore, the higher the stock of human capital, the more output can be delivered per labor unit. Improvement in the quality of human capital leads to lower unit costs of production and decreases marginal cost of production, enabling firms to trade better quality commodities at lower prices, this efficiency is the result of factors such as better technology, better farming practices, and increased human capital. Then these factors lead to production of the quantity and quality of goods sought in the market - production results in sales.(Kleynhans 2006).

For instance international agricultural concept in Ethiopia still weak also the production system using traditional production system and poor management practices by farmers and investors, farmers use traditional plowing system, sesame grower has market related limiting factors which includes limited access to market information, lack of modern storage facilities, lack of modern packaging materials, product quality lack of enforceability of cont of producer reacts and existence of so many brokers were few to mention. And also the bold point is lack of agri-business knowledge the result of thus the Ethiopia exporter to happen trade default from international market. It begins with effective demand for agricultural products that is transmitted to the commodity chain for sources of agricultural production. Since demand in a competitive market place is usually based on desired quantity and quality of goods, response to this demand in a competitive marketplace requires the supply side to respond with an increase in the efficiency of production at lower unit costs.

**Gross Capital Formation (GCF):** this concept come from the capital, Capital (K) is a factor of production or input into the process of production, in accounting term the result of total liability deduct from the total asset in economy term different from thus define only asset consisting of machinery, land buildings, computers, and the like. The production function takes the general form $Y=f(K, L)$, where $Y$ is the amount of output produced, $K$ is the amount of capital stock used and $L$ is the amount of labor used. In economic theory, physical capital is one of the three primary factors of production, also known as inputs in the production function. The others are natural resources (including land), and labor the stock of competences embodied in the labor force. "Physical" is used to distinguish physical capital from human capital a result of investment in the human agent, circulating capital, and financial capital.

Capital market in developed country more advantage than Lowest Developing Country. and than the original definition of Fixed capital formation/investment is includes land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, commercial and industrial buildings. The neoclassical theory, stipulates that an increase in capital as an input in production leads to increases in output. It is therefore expected that Gross Fixed Capital Formation will have a positive relationship with economic growth. Capital formation is a term used to describe the net capital accumulation during an accounting period for a particular country which means the higher the capital formation of an economy, the faster an economy can grow its aggregate income. Gross fixed capital formation (GFCF) consists of resident producers' investments, deducting disposals, in fixed assets during a given period. It also includes certain additions to the value of non-produced assets realized by producers or institutional units.

The World Bank also reports the amount of government debt that a country's central government has outstanding, as compared with the country's gross domestic product (GDP), which is the total of all goods and service produced by a country. If a country's rate of capital formation increases, so does the country's GDP also increase. From this Gross fixed capital formation which measures country's infrastructure development. This measures countries fixed assets that facilitate the production and supply of goods and services. These fixed assets inventories of a country include plant developments, public services such as road, utilities etc., schools, hospitals, private and commercial residents, marketing infrastructure including market information systems. Improved infrastructure and institutional support systems including the public and private sector are important components of export minimizing transaction cost and reducing trade barriers. According to Elbadawi, 1999 and Collier 2002, GCF and export performance are strongly correlated and has positive impact.

**Sesame Exports (SMX):** Sesame (Selete) is the oilseeds sector is one of Ethiopia's fastest-growing and important sectors, both in terms of its foreign exchange earnings and as a main source of income for over seven million Ethiopians and It is the second largest source of foreign exchange earnings after coffee. Export expansion is a significant catalyst in improving productivity growth. Therefore, export expansion helps to concentrate investment in agricultural sectors which in turn increase the overall total productivity of the economy. Additionally, export growth may also relieve the foreign exchange constraint, allowing capital goods to be imported to boost economic growth. Therefore positive relationship will be expected on economic growth.

**Foreign Direct Investment (FDI):** The relationship between foreign direct investment and economic growth is an important issue among economists and many of the researchers who are studying in the field of international economics. Revealing this relationship is more important for developing countries, as they suffer more from economic problems. FDI was the principal source of flow to developing countries in 1990. Unlike other capital flows, FDI has a fewer degrees of volatility and does not follow a pro-cyclical behavior. The FDI inflows have increased rapidly since the late 1980s and the 1990s almost worldwide. This issue makes it necessary to reveal the costs and benefits of FDI inflows (Acaravci & Ozturk, 2012 Acaravci, A., & Ozturk, I. (2012).based on this foreign direct investment on the most countries a positive impact but some Africa's countries are may be negative impact on economic growth. Jeon (1992), Aseidu (2004), and Amanuel (2014)

**Real Exchange Rate (RER):** is simply a nominal exchange which has been adjusted so as to cater for differences in the price level between countries. When the real exchange rate of a currency of a given country depreciates relative to the currencies of its trading partners, the exports of that country becomes cheaper because more units of the exporter's currency will be exchanged for a unit of the currency of importing country. This enhances the exporting country competitiveness in the international market as its exports will tend to be cheaper. Bilateral trade between two countries depends upon, among other things, exchange rates and the relative price level of the two partners (Todani and Munyama, 2005). Writing in the same vein, Rowlatt (1992) indicate that the price competitiveness of a economy's goods compared to those of another is indicated by the real rate which the currencies have exchanged, for lowest developing countries exchange rate not compute developed countries, the RER one of the national economy adjustment system. for instance in Ethiopia as of October 2017 decided to devalue the Ethiopian Birr (ETB) by 15 percent, the National Bank of Ethiopian hopes the measure would boost the current fiscal year's export performance, mainly targeted to Support the export of Ethiopia's agricultural products as price decrease in global market for agricultural products that negatively affected the country's export trade while for manufactured export sector its good; the reveres true for agricultural export product including sesame product affected the October,2017 devaluation policy so do not compute for international market; Therefore the governments his alert and make decision on time agricultural export product because this sector is the base of Ethiopia economy and almost 80 percent foreign income generated from agricultural export product. The real exchange rate computes:

$$RER = NER \times \frac{P}{Pw} \quad \text{----------} \quad (1)$$

Where

NER Nominal Exchange Rate

P Domestic Consumer Price index (from ECX)

Pw Foreign Consumer Price index (from international market)

**Consumer Price Index (CPI):** The consumer price index is a measure that examines the weighted average of prices of a basket of consumer goods and services it is calculated as a proxy for inflation since is in terms of their exchange value over years. So in order to compute the effect of inflation a consumer price index is employed. Consumer price index reflects changes in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. Therefore consumer price index is expected to have negative relationship with economic growth

Consumer Price Index equation:

$$CPI = {}^{Pc}/_{Pb} * 100 \quad \text{----------} \quad (2)$$

Where

CPI Consumer price index

Pc Current year price

Pb base year price

**Real Interest Rate (RIR):** Real interest rate is one of the macroeconomics factor and measure economic growth as it relates to the gross domestic product from one period to another, adjusted for inflation and it's the cost of investment or borrowing. All investments have cost of raising capital either or through equity and debt. Investment in the production and processing for export require finance and the cost can be captured by the real interest rate which can be measured as

$$RIR = NIR - INF \quad \text{----------} \quad (3)$$

Where,

RIR Real Interest Rate

NIR Nominal Interest Rate

INF Inflation rate

**Table 3.3: The Expected Variables Sign**

| No | Variables Abbreviation | Variables Name | Expected Sign |
|---|---|---|---|
| 1 | RGDP | Real Gross Domestic Product | = |
| 2 | SMX | Sesame Export | + |
| 3 | LF | Labor Force | + |
| 4 | GCF | Gross Capital Formation | + |
| 5 | FDI | Foreign Direct Investment | + |
| 6 | RIR | Real Interest Rate | +/- |
| 7 | RER | Real Exchange Rate | +/- |
| 8 | CPI | Consumer Price Index | - |

*Source: own the study*

### 3.2.2 Unobserved Variables

Other external and internal factors of agricultural export the main impact on economy growth but these are they couldn't compute or we could not determine available organized data from undeveloped country including in Ethiopia; while high impact on economy growth of the country. These are:

**Research and Development (R&D):** Thus, over the past century, mechanical, chemical, and biological revolutions have represented fundamental changes in agriculture productivity which has impacts on economy growth. most of the developed country (USA,EU and Other developed country ) the result of economy growth and biotechnological innovations played a significant role in enhancing competitiveness and economic development in the last part of the 20th century. (Heboyan and House 2003)

**Skilled Human Resources:** Skilled profession among human capital is an important factor of production and has a direct impact on competitiveness for each sector. Therefore, the higher the stock of quality human capital, the more output can be delivered per labor unit. Improvement in the quality of human capital leads to lower unit costs of production and decreases marginal cost of production, enabling firms to trade better quality commodities at lower prices, this efficiency is the result of factors such as better technology, better farming practices, and increased human capital. Then these factors lead to production of the quantity and quality of goods sought in the market - production results in sales.(Kleynhans, 2006)

**Modern Agricultural Technology:** The implication for applying the farmer would decide to adopt modern agricultural production technologies at a given point in time when the combined effects of certain factors exceed the inherent resistance to change in him/her. The preference for the probability model to the conventional linear regression models, in analyzing the factors influencing the decisions of farm households' to adopt modern agricultural production technologies is based on the fact that, the parameter estimates from the former are asymptotically consistent and efficient. The estimation procedure employed also resolves the problem of heteroscedasticity and constrains the conditional probability of making the decision to adopt technology to lie between zero (0) and one (1). (Green 2008)

**Weather Condition:** For this analysis, a stochastic single market model has been developed. The model consists of supply and demand equations; rainfall is incorporated as an environmental element in the supply equation; especially in LDCs including Ethiopia's highly significant impact on production and those is one of the major cause of fluctuation production is weather condition instability for instance in Ethiopia per ten years to happen drought its effect all agricultural production including sesame production. (Kirschke 2002 and Jechlitschka 2002)

**Political Institution:** Political institutions in an economic system provide such things as law and order which allows economic exchange to take place by providing norms of economic behavior. Political institutions also allow for the distribution of resources and the unity economic agents need for the success of national economic goals. Political institutions are also involved in the creation, maintains, and protection of other institutions. Fei and Paauw in 1972 have stated that for economic growth to occur nationalism must be present. Nationalism is a cohesive bond that unites people based on national interests. The unity associated with nationalism is also essential in getting economic agents to work together like Ethiopia in sesame export volume affected by the country political intuition problem; for instance decline was mainly due to Ethio-Ertirai conflict during in 1995-2001 and the last five years the export volume is decline in the case of the country political system was affected national economy.

**Infrastructure:** The dual economy models inspired by the work of typically feature a distinction between a stagnant, traditional rural sector and a dynamic modern manufacturing sector the direct linkages between infrastructure and agricultural development can easily be ascertained within a region. The experiences have shown that increase in the stock of infrastructure is associated with increase in output. The progress of agriculture achieved in some parts of the country can be attributed directly with the rural infrastructure, where technological push alone could hardly achieve similar success without interplay of other infrastructure attributes. (Hayami and Ruttan, 1985)

## 3.3 Model Specification

In the study of the Agricultural export and Economic growth linkage, a number of variables that might be important in the analysis can be considered. However, the limited number of available observations often necessities the use of simple models that capture the basics of the relationships of interest. According to economy authors Tyler and Kavoussi ; the assessment of the effect of sesame export performance on economic growth is carried out in a production function framework in which exports enter as an additional 'input' in the production process.( Tyler,1981 and Kavoussi,1984)

Different economic growth theory have been discussed in this study under theoretical theory, such as Agricultural business theory, Business cycle theory and National competitive advantage theory and empirical theory which assumes external and internal environmental factors of production; macroeconomics variables and control variables, our model specification such as Labor force, public capital investment, foreign direct investment, sesame export, consumer price index, real interest rate for investment, and real exchange rate , Thus all are the main impact of economic growth our study; Endogenous growth theory depends on the implication that, policies which embrace openness, competition, change and innovation will promote growth and conversely, policies which have the effect of restricting or slowing change by protecting or favoring particular existing industries or firms are likely over time to slow growth to the disadvantages of the communities. This theory use the simple production function Y=f(L,K,X) where Y is output, the input factors such as L is Labor , K is capital of the production and X is agricultural export and therefore all are dependent variables of the production and assumes non-diminishing return to capital which criticized by different authors.

This study using the Solow-Swan production function, an economic model of long-run economic growth set within the conceptual framework of economics as a base to develop the economic growth model. This model attempts to explain long-run economic growth by looking at capital accumulation(K), labor force (L) and agricultural export progress(X) and due to its particularly attractive mathematical characteristics, Solow-Swan shows to be a convenient starting point for various extensions. Therefore, Ethiopia is one of the countries whose export performance depends on overseas economic situation and the model to be used for export contribution on economic can be derived from a general production function as follow:

$$Yt = f(Lt, Kt, Xt) \text{ ---------- } (4)$$

Where,

Yt the aggregate real output of the country (GDP) a given period

L t the conventional Labor used a given period

Kt Capital in put

Xt Real Export on a given period

Which is introduced as an additional input Using equation (4) expressing the variables in logs, the introduction model of this study can be specified as natural logarithm:

$$LOGRGDPt = \beta 0 + \beta 1\, LOGLABt + \beta 2\, LOGINVt + \beta 3\, LOGSMXt + \varepsilon t \text{ ------- } (5)$$

Where in equation (5): $LOGRGDP_t$ is the natural logarithm of real gross domestic product, LOGLABt is the natural logarithm of labor force, LOGINVt is the natural logarithm of the domestic investment and $LOGSMX_t$ is the natural logarithm of sesame export product; The constant term is $\beta_{0,}$ the coefficients $\beta$ 1, $\beta$ 2 and $\beta$ 3 are elasticities independent variables to be estimated and $\varepsilon$t is error term.

According to Tyler (1981) and Sheehey (1990) argued that if evidence is found in support of the export-led growth hypothesis, then this could be biased by the built-in correlation between GDP and exports which is a component of GDP; also Sheehey(1990) alternative measures of the export variable not subject to this bias should be used to test the desired relationship. Hence this argument equation (5) above will be re-estimated using the share of sesame exports to GDP as an alternative export variable. Will be re-estimated using the share of exports to GDP as an alternative export variable. In equations (5), it is expected that coefficient of the export variable to be positive and significantly different from zero (H≠0). In addition coefficient of the investment variable ($\beta$ 2) is expected to be positive. However, the labor force coefficient ($\beta$ 1) will be positive or negative depending on whether the country is labor surplus or not.

The above models have been conventionally used by many authors to test the agricultural export and economic growth relationship. Estimation of the models is based on the assumption that export is exogenous caused by factors of external model .However, if export is truly endogenous caused by factors of internal model, then the OLS will underestimate the export growth coefficient. Hence, a simultaneous equation model will be estimated this study which takes into account the feedback relationship between exports and economic growth; according to Sprout and Weaver (1993)

The estimation model of this study specified as follows:

$$LOGRGDPt = \beta o + \beta 1 LOGGLFt + \beta 2 LOGGCFt + \beta 3 LOGSMXt + \beta 4 LOGFDIt + \beta 5 LOGCPIt + \beta 6 LOGRERt + \beta 7 LOGRIRt + \varepsilon t \quad (6)$$

Where:

| | |
|---|---|
| RGDPt | Real Gross Domestic Product |
| GLFt | Gross labor force capital |
| GCFt | Growth Capital Formation |
| RERt | Real Exchange Rate |
| RIRt | Real Interest Rate |
| GSMXt | Growth Sesame Export Product |
| FDIt | Foreign Direct Investment |
| CPIt | Consumer Price Index |

Where equation (6) $RGDP_t$ is the annual real gross domestic product is the dependent variable of the equation from this; the independent variables of the economic growth of this study are GLAB is the total labor force, gross capital formation (GCF) , foreign direct investment (FDI),gross sesame export product (SMX), consumer price index (CPI)or inflation, real exchange rate (RER) and real interest rate(RIR) in order to discard the differences in the units of measurements for the variables and to minimize the gap between independent variables and dependent variables. It is then used to analyze the impact of agricultural exports on economic growth in Ethiopia during 1988 to 2018.

In equation (5) it is hypothesized that economic growth (RGDPt) is a positive function of the growth of the two primary factors of sesame production, capital and labor, In equation (6) it is hypothesized that investment sesame business depends on the level of labor force ,capital investment, from domestic and foreign while foreign investment this sector it is nil there is no invest the sesame agricultural sector as well as FDI for the country economic growth positive and negative impact on the economy the theorized that investment in LDCs is limited by an inadequate rate of domestic savings and insufficient foreign capital inflows. The domestic saving rate a positive function of the level of income, growth of income and the size of the sesame export sector; higher levels of income generate from greater savings as well as consumption. Hence, it is expected that the coefficients of domestic investment t and GLABt be positive. And a large sesame export sector result in greater savings and investments for a number of reasons. to argued the following points ; A large export to GDP ratio produces a higher propensity to save than the rest of the economy; The income generated from export is easier to tax than more diffused wage or profit income thus increasing public savings. And the final points of this model are the foreign exchange

generated from exports enables the purchase of the intermediate goods, which are deemed to be important for investment. The opposite true; it is argued that a higher developed export sector is responsive to the demands of the world market rather than to internal development needs.

Therefore, while a large export sector may initially induce investment by attracting foreign capital, most of the benefits will accrue outside the country's borders. The specific model data collected from domestic public organization and international organization ;the specific sectors agricultural export sub sectors sesame the model indicated that; Sesame export (SMX) this data collect from domestic organization Ethiopia Central Static Agency (CSA) and Ethiopian, Pulses, Oilseeds & Spices Processors Export Association (EPOSPEA). The macroeconomics variables affect on economic growth; physical investment and human capital investment the name indicated in to the model gross capital formation (GCF), and labor force (GLF) these data collected from National Bank of Ethiopia also real exchange rate (RER) data his collected from National Bank of Ethiopia (NBE) , foreign direct investment (FDI) data his collected from international organization that is world bank(WB), because the Ethiopia governmental organization they have not well organized data especially the oldest data they have not available ,also the dependent variable real GDP data collected from international organization from International Money Fund organization, some interest rate and consumer price index (CPI) data collected from world Bank(WB) . Generally most of the data collected from the international organization and then collected all the data in order to summarize based on econometrics data input system; using natural logarithm, change and growth mathematical ,then input in to statistical soft ware; this study using the latest statically analytical soft ware; EVIEWS 8 version software to apply the study. These all are true; it also focus on other undetermined external and internal environment factors are consider; such as weather condition, political intuition, research& development, skilled human resources, modern agricultural technology, and infrastructure impact on economic growth but thus factors are challenge to determine analysis for undeveloped country including in Ethiopia.

### 3.3.1 The Variables Hypothesis Development

Hypothesis is an educated guess. We formulate an economic question, create a hypothesis about this question, and test to accept or reject that hypothesis. In the process, we are able to create hypothetical environments and evaluate economic behaviors. And hypothesis testing is an act in statistics where by an analyst tests an assumption regarding a population parameter. The methodology employed by the analyst depends on the nature of the data used and the reason for the analysis this study the data collected annually data from macroeconomic as well as micro economic the country data.

Hypothesis testing is used to infer the result of a hypothesis performed on sample data from a larger population, also all hypotheses are tested using a four-step process.

i. The first step is for the analyst to state the two hypotheses so that only one can be right.
ii. The next step is to formulate an analysis plan, which outlines how the data will be evaluated.
iii. The third step is to carry out the plan and physically analyze the sample data, and
iv. The fourth step is the results and either accept or reject the null hypothesis.

So based on the above step this study cover all steps using the following hypothesis (HP) are one dependent and six explanatory variable are developed and tested to answer the research questions:

**HP1: There is a positive relationship between Sesame Export and Real GDP.**

The object of this study is the agricultural export sub sector sesame product how much contribution to the nation economy growth generally for the developing country including Ethiopia agricultural export the major impact on economy growth based on this the expected result is a positive hypothesis; Sesame export – real GDP relationship

**HP2: There is a positive relationship between Labor Force and Real GDP.**

It is for macroeconomics as well as microeconomics human capital important factors on development of economic growth from this study the labor force one of the explanatory variables affecting real growth domestic product, in economy theory the major factor on the out of product (Y) is labor force direct impact on economic growth and labor force a positive hypothesis; Labor force - real GDP relationship.

**HP3: There is a positive relationship between Gross Capital Investment and Real GDP.**

It is hypothesized capital investment is the major impact on real gross domestic product economy theory without capital there is no economy development for this study that one of explanatory variables on economic growth so affecting real growth domestic product based on this a positive hypothesis; gross fixed capital formation-real GDP the expected result is positive relationship.

**HP4: There is a positive relationship between Real Exchange Rate and Real GDP.**

The real exchange rate was defined as the product of the nominal effective exchange rate and domestic consumer price index divided by the foreign consumer price index. An increase in the real exchange rate (depreciation) makes the exports cheap in the international market, thereby increasing the exports of the country. The opposite happens when it increases. Consequently, in this study, the expected sign of the real exchange rate was positive; real exchange rate – real GDP

**HP5: There is a positive or negative relationship between Foreign Direct Investment and Real GDP.**

Foreign Direct Investment (FDI) has been subject to both developing and developed countries. FDI has been considered as an important source of financing investments especially in emerging and developing economies. As global economies are growing and becoming more and more open due to relaxation of regulations on international trade; integration among countries has also increased resulting to global capital movement flows which are normally facilitated by the operations of Multinational enterprises. Based on this most countries his positive hypothesis FDI and real GDP relationship but some a few countries especially lowest developed countries (LDS) his negative hypothesis; FDI-real GDP relationship.

**HP6: There is a positive or negative relationship between Real Interest Rate and Real GDP.**

Real interest rate was defined as the nominal lending rate adjusted for inflation. The lower the interest rate, the higher the investment in production of agricultural export product and the high will be the volume of exports. Consequently, a positively relationship was expected between agricultural exports and the real interest rate. Or the higher the interest rate, the lower the investment in production of agricultural export product and the low will be the volume of exports. Consequently, a negatively relationship was expected between agricultural exports and the real interest rate. Real interest rates are higher than real GDP growth then the stock of debt will tend to grow explosively as a proportion of real GDP and this isn't something that can be sustained forever so it won't. If real rates are lower than real GDP then borrowers can do very well by investing in some asset that grows at least as fast as real GDP ; real interest rate (RIR) - real GDP growth relationship either positive hypothesis or negative hypothesis.

**HP7: There is a negative relationship between Consumer Price Index (inflation) and Real GDP.**

Consumer price index/ inflation most research has found a negative relationship between consumer price index (CPI) and economic growth. According to economy theory Consumer Price Index (CPI) is a measure that examines the weighted average of prices of a basket of consumer goods and services, such as transportation, food and medical care. It is calculated by taking price changes for each item in the predetermined basket of goods and averaging them. Changes in the CPI are used to assess price changes associated with the cost of living; the CPI is one of the most frequently used statistics for identifying periods of inflation or deflation. hence on this study a negative hypothesis; Inflation-real GDP .

# CHAPTER FOUR

# ANALYSIS AND DISCUSIONS

This study is the results of the analysis in the long run relationship between agricultural export growth and economic growth; depending on the model selected agricultural export based on Neo-classical growth model which is a generalized Cobb Dougles theory to include some selected agricultural exports that indicates as additional inputs of the production functions using macroeconomics variables; These are labor force, investment domestic& foreign, exchange rate ,consumer price index and interest rate.

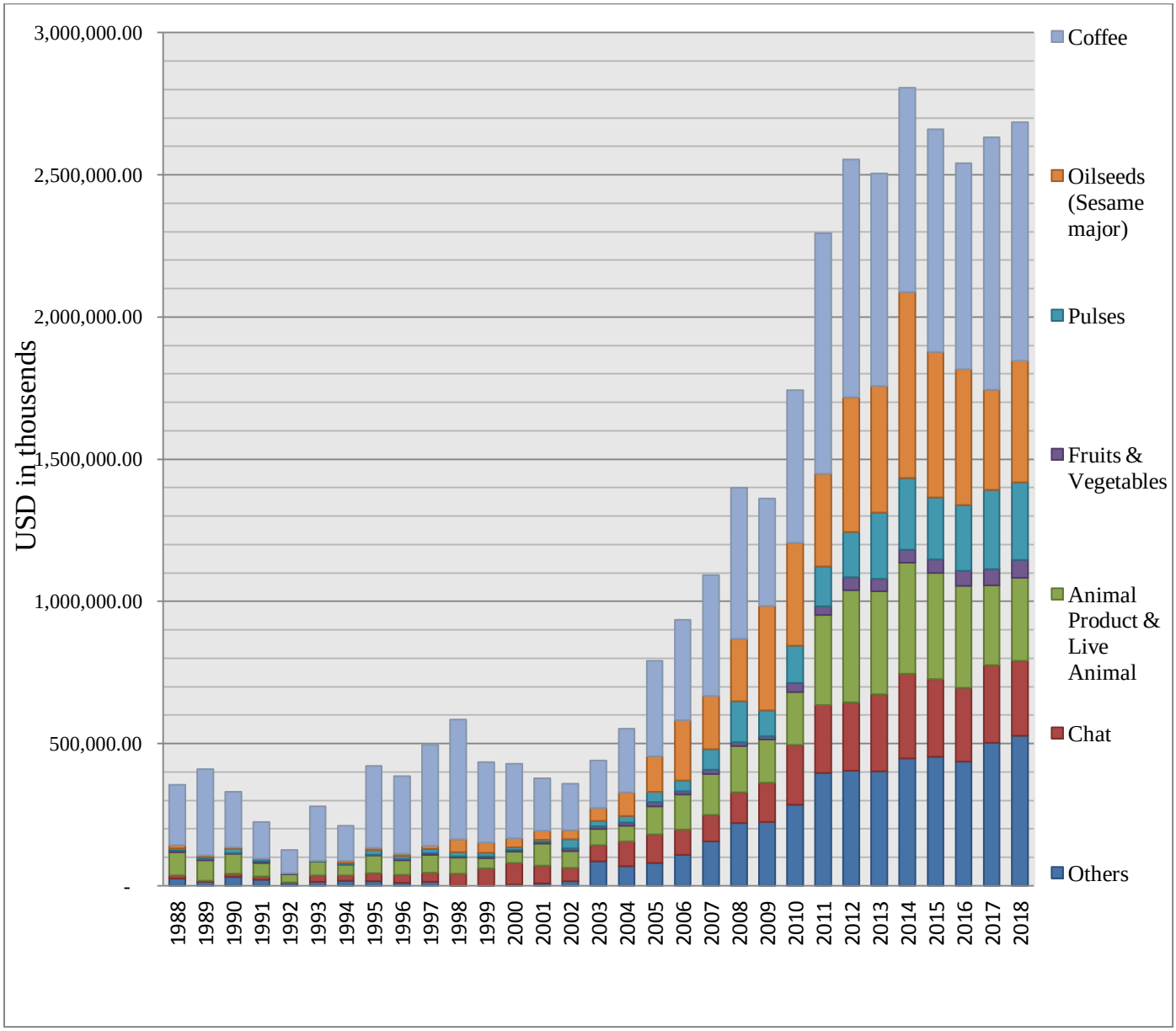
## 4.1 Documentary Analysis

### 4.1.1 Agricultural Export Trade in Ethiopia

Agriculture is the most important sector in the Ethiopian economy. It generates about 86 percent of the export earnings. ; The country's leading agricultural exports products include coffee, oilseeds (major sesame), pulses, livestock, and Animal products, vegetables and flowers. From these; coffee, oilseed, and pulse are the major source of export revenue in total major agricultural values 12.7, 5.5 and 2.7 billion US dollar respectively for the last three decades ;however the agricultural export for the past decades has been poor performance , 1988 to 2002 account there is no change in values; the Ethiopia agricultural export earnings 356 million to 359 million US dollar respectively; after that, the agricultural export has been relatively remarkable in the period from 2002 to 2014 in values has radical changes; which is the country foreign export earnings from 439 million US dollar in to 2.5 billion US dollar revenue generated and exhibited an average growth of 23 %.(NBE 2018)

However, in the last five years from 2014 to 2018 in values 2.8 billion US dollar in to 2.7 billion US dollars which is a million dollars declining; generally the recent five years, the trend of the Ethiopian agricultural export GDP his decline performance due to external and internal factors; such as; the less rain condition happens due to drought, the country instability due to political condition, to declining international prices in case of most agricultural import countries due to economic crises; those are the major impact of recent poor performance of agricultural goods exports a decomposition of export value growth into its value and volume effects.(NBE,2018 and IMF 2018)

**Figure 4.5: Trend in Agricultural Exports in Ethiopia in US dollar from 1988-2018**

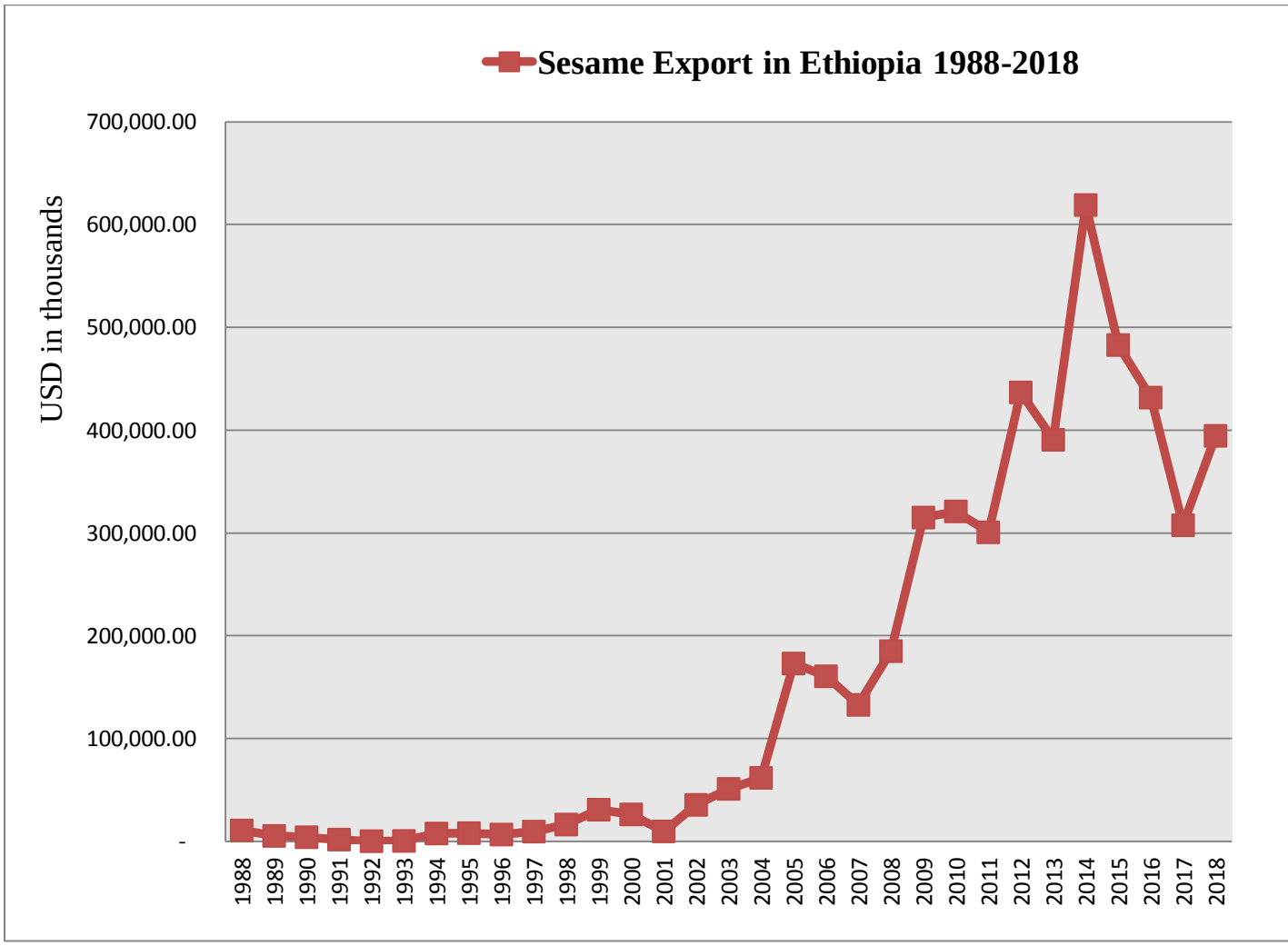



*Source: Author's calculation based on data from NBE*

### 4.1.2 Sesame Export Trade in Ethiopia

African's Sesame product his contributes more than 60% of the world market; especially east Africa countries such as; Ethiopia, Sudan, and Tanzania are the major supply countries in the global market which accounts for around two thirds of continent's total output. From general to specific views Ethiopian sesame production is a great deal to the national economy next to coffee which is the main foreign currency earnings among agricultural export products. This croup has a high impact on economic growth. This study focus on the last 30 years sesame export performance which grows about from ten thousand dollar to growing six hundred million dollars; which means annually the growth rate increase by ten thousand dollar for the last thirty years; for further explanation we will show the Ethiopia sesame trend in a graphical chart from 1988 to 2018 annual time series data.

**Figure 4.6: Trend in Sesame Exports in Ethiopia from 1998-2018**




*Source: Author's calculation based on data from CSA and EPOESPEA*

### 4.1.3 Descriptive Statistics

**Table 4.4: Descriptive Statistics**

| Statistics | RGDP | GCF | LF | SMX | FDI | RER | RIR | CPI |
|---|---|---|---|---|---|---|---|---|
| Mean | 6.49 | 24.66 | 22.65 | 159.25 | 206.15 | 127.88 | 0.61 | 10.35 |
| Maximum | 13.50 | 39.40 | 35.56 | 619.03 | 546.00 | 320.60 | 9.24 | 44.40 |
| Minimum | -8.90 | 10.80 | 12.43 | 0.18 | 0.50 | 86.80 | -0.77 | -8.20 |
| Std. Dev. | 6.13 | 8.43 | 6.90 | 184.42 | 188.54 | 42.30 | 2.12 | 11.18 |

*Source: Author's calculation*

The above **Table 4.4** shows that the descriptive statistics of the study during 1988 to 2018 which includes the average, maximum, maximum, and the standard deviations; the study has used eight variables for the analysis purpose including seven explanatory variables and one dependent variable. Those are real gross domestic product (RGDP) as a dependent variable and sesame export (SMX), gross capital formation (GCF), labor force (LF), foreign direct investment (FDI) as an independent variables and, real exchange rate (RER), real interest rate (RIR), and consumer price index (CPI) as a control variable. As indicated in **Table 4.4**, the average real GDP is 6.49 rate, which is nearly equivalent to maximum and minimum real GDP of the country growth to 13.50 and decline to negative 8.90 rates respectively and, the standard deviation is 6.13 of real GDP over the last thirty years. The main object of this study (i.e. sesame export) average export value is 159.5 thousand US dollar, the maximum and minimum sesame export of the country is 619 thousand US dollar and 180 US dollar respectively the relation between max and min is high gap. The other variables are positive relation to the economic growth for the last thirty years; such as; the average public investment is 24.6 million US dollar public in proportion to real GDP. which is nearly equivalent to maximum and minimum public investment for the country economic growth to 39.4 and 10.8 million US dollar respectively and, the standard deviation is 6.13 million US dollar; the average labor force used to the real GDP of the country is contribution to 22.6 million population of the country economic growth; and the maximum and minimum labor force is 35.5 and 12.4 million population respectively also the standard deviation of the labor force is 6.9 million population has used to contribute the country real GDP , the average real exchange rate of the country is 127.8 US dollar and the maximum and minimum real exchange rate is 320.6and 86.8 US dollar the country exchange rate respectively also the standard deviation is 42.3 US dollar; real exchange rate of the country Birr to US dollar exchange rate , The lending investment of the national bank of Ethiopia average real interest rate is 0.6 and ; the maximum and minimum real interest rate is 9.2 and negative 0.7 real interest rate respectively also the standard deviation is 2.1 real interest rate which is consider us inflation/defilation of the country based on the National Bank of Ethiopia standard .

## 4.2 Econometrics Analysis

Econometrics analyzes: is data using statistical methods in order to test or develop economic theory. These methods rely on statistical inferences to quantify and analyze economic theories by leveraging tools such as frequency distributions, probability and probability distributions, statistical inference, correlation analysis, simple and multiple regression analysis, simultaneous equation models, and time series methods. This study applied on the common econometrics analysis; Series statistics (i.e. Stationery test), Group statistics (i.e. Correlation among variables), Residual diagnostic (i.e. Normality), and Stability diagnostic (i.e. Model stability test).

### 4.2.1 Test and Results

#### 4.2.1.1 Unit Root - Stationery Test Result

The unit root test provides the order of integration at which the variables can be stationary**.** Time series data are rarely stationary means; a type of stochastic process that has received a great deal of attention and scrutiny by time series analysts is the so-called stationary stochastic process. Broadly speaking, a stochastic process is said to be stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the distance or gap or lag between the two time periods and not the actual time at which the covariance is computed. Regression involving non-stationary variables that have no clear tendency to return to a constant value or linear trend time series often lead to the problem of spurious regression spurious regression is a regression result of unrelated variables but strongly related as per the result (Gujarari 2004)

This study tests were performed on all series, such as; Real Gross Domestic Product, Labor Force, Gross Fixed Capital Formation, Foreign Direct Investment, Sesame Export, Real Interest Rate, Real Exchange Rate and Consumer Price Index by using the Augmented Dickey-Fuller (1978) and Phillips-Peron (1988) tests. The results of Augmented Dickey fuller test and Phillips-Peron tests were applied to the variables mentioned in the model of this study ADF test is first level at difference level the Ho accept or not reject the Ho and PP tests is first level Ho accept Ho accept or not reject the Ho so based on thus both test first guide line of the unit root test method ;this study the all variables are stationery at first level by this implication all critical value at 1%,5% and 10% are proved the critical value and the second guide line of the unit root test his the total absolute value t- test value greater than each critical absolute value and final the third guild line of the unit root test all variables p value less than 5% and significant at all level.

**Table 4.5: Augmented Dickey-Fuller (ADF) Test Result**

| Variables | | LOGRGDP | LOGGLF | LOGGCF | LOGFDI | LOGGSMX | LOGCPI | LOGRIR | LOGRER |
|---|---|---|---|---|---|---|---|---|---|
| t-Statistic | | -3.8946 | -6.0686 | -5.9449 | -5.6452 | -7.1615 | -5.7257 | -7.1668 | -6.5284 |
| Prob.* | | 0.0067 | 0.0000 | 0.0000 | 0.0001 | 0.0000 | 0.0001 | 0.0000 | 0.0000 |
| Critical Values | 1% | -3.7241 | -3.6892 | -3.6892 | -3.6892 | -3.6892 | -3.6999 | -3.6999 | -3.6999 |
| | 5% | -2.9862 | -2.9719 | -2.9719 | -2.9719 | -2.9719 | -2.9763 | -2.9763 | -2.9763 |
| | 10% | -2.6326 | -2.6251 | -2.6251 | -2.6251 | -2.6251 | -2.6274 | -2.6274 | -2.6274 |

*Significance level at 1%,5% & 10%*

**Table 4.6: Phillips-Perron (PP) Test Result**

| Variables | | LOGRGDP | LOGGLF | LOGFDI | LOGGSMX | LOGCPI | LOGRIR | LOGRER | LOGGCF |
|---|---|---|---|---|---|---|---|---|---|
| t-stastitcs | | -8.4892 | -7.0772 | -7.1519 | -8.1908 | -9.6005 | -7.898 | -6.9225 | -5.9449 |
| Prob.* | | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 | 0.0000 |
| Critical Values | 1% | -3.6793 | -3.6793 | -3.6793 | -3.6793 | -3.6793 | -3.6793 | -3.6793 | -3.6892 |
| | 5% | -2.9678 | -2.9678 | -2.9678 | -2.9678 | -2.9678 | -2.9678 | -2.9678 | -2.9719 |
| | 10% | -2.6230 | -2.6232 | -2.6230 | -2.6230 | -2.6230 | -2.6230 | -2.6230 | -2.6251 |

*Significance level at 1%,5% & 10%*

*Source: Own the study from EVIEWS*

**ADF Test Analysis: 1$^{St}$ Level with Intercept**

The analysis of the ADF output presented in **Table 4.5** looks at first level form with intercept the dependent variable LOGRGDP is the absolute t-statics value (-3.8946) is greater than the critical value 1%(-3.7241),5%(-2.9862) and 10%(-2.6326) also the dependent variables the p- values 0.0067 which is less than 5% so those variables significant at all level; The next four independent variables are the absolute t-statistics value LOGGLF(-6.0686),LOGGCF(-5.9449),LOGFDI(-5.6452) and LOGSMX(-7.1615) are greater than the critical value 1%(-3.6892),5%(-2.9719) and 10%(-2.6251) also these all variables are the p-value 0.0000 which is less than 5% at significant all level therefore labor force ,domestic investment, foreign direct investment and sesame the factors on the economy growth based on this test. The remain three variables LOGCPI(-5.7257),LOGRIR(-7.1688) and LOGRER(-6.5284) are greater than the absolute critical values 1%(-3.6999),5%(-2.9763) and 10%(-2.6274) moreover those variables the p-values 0.0000 which is less than 5% so these variables are significant at all level.

**PP Test Analysis: 1$^{St}$ Level with Intercept**

The analysis of the PP output presented in **Table 4.6** looks first at first level with intercept all the variables except LOGGCF are the same critical value that is 1%(-3.6793),5%(-2.9678) and 10%(-2.6230) less than the absolute t-statistics value which are LOGRGDP(-8.4892),LOGGLF(-7.0772) ,LOGFDI(-7.1519), LOGGSMX(-8.1908),LOGCPI(-9.6005),LOGRIR(-7.8980)and LOGRIR(-6.9225) also all variables the p- values 0.0000 which is less than 5% so those variables significant at all level. The exception LOGGCF all the critical absolute values of t-statistic value(-5.9449) greater than at 1%(-3.6892) ,5%(-2.9719), & 10%(-2.6251) and also this variable the p- values 0.0 which is less than 5% so this variables his significant at all level ;such as, labor force ,domestic investment ,foreign direct investment, agricultural export ,inflation, interest rate and exchange rate are the factors on the Ethiopian economy growth however other unobserved variables to consider on this study.

Therefore the above unit root test analysis show that the ADF test statistic and Phillips-Peron (PP) in absolute term is greater than the set of critical values provided by Davidson and MacKinnon (1993) at1%, 5% and 10% .The dependent, constant and independent variable, thus the *t* statistics value obtained is compared with the critical value given at 1%, 5% and 10% and those indicated that the t statistics values are greater than the critical values at 1%, 5% and 10%. The P-values are also less than the 5% that means it is significant, so the null hypothesis of no co-integration is rejected for the entire model. The evidence of co-integration by both methods indicates the existence of long run relationship among the variables. Hence there are significance at first level both ADF and PP analysis; hence the data of the study are stationarity.

**4.2.1.2 Autocorrelation Test Result**

Autocorrelation is one of the basic assumptions in linear regression model (LRM) is that the random error components or disturbances are identically and independently distributed. The Durbin-Watson (DW) statistic tests for first-order autocorrelation only. Also, it does not work properly if a dependent variable from a preceding time period is used as an independent variable in the model; most econometric software programs calculate the Durbin-Watson statistic automatically.

This study the Durbin-Watson test statistic value in **Table 4.7** was 1.917296. As mentioned in the previous chapter to empirically analyze factors affecting Ethiopia economic growth 30 observations were used in the model. Moreover, there were 7 independent variables and an intercept term in the model.

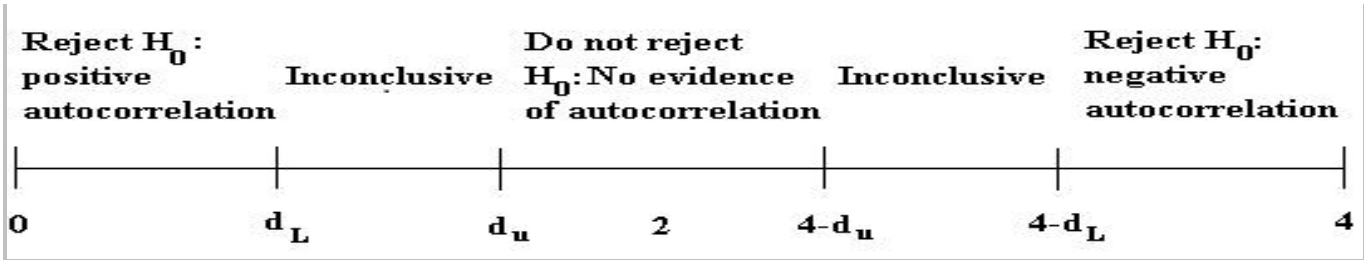
Therefore, the relevant Durbin-Watson test statistic values in **Figure 4.7** the test are dL= 0.748, dU = 1.814, i.e., for 30 observations and eight variables excluding the constant term. Hence, 4 - dU = 4-1.814=2.186; 4 - dL = 4-0.748=3.252. The Durbin- Watson test statistic of 1.917 is clearly between the upper limit (dU) which is 1.814and the critical value of upper limit which is 2.186 and thus the null hypothesis of no autocorrelation is within the non- rejection region of the number line all the variables. Therefore, this study proved by **Table 4.7** and **Figure 4.7** in the Durbin-Watson test. And more ever the R –squared in the **Table 4.7**, equals 0.800655; the study can be made that 80% of variation in the dependent variable is explained by its regression on the independent variables. Which means the explanatory variables are highly explained in the dependent variables; because in the regression model, most of the econometrics researchers' proved that, a good regression model the R-squared is greater than 60 %.That is it will increase as long as explanatory variables, regardless of their true significance.

**Table 4.7: Regression result of Durbin-Watson Test**

| | | | |
|---|---|---|---|
| R-squared | 0.800655 | Mean dependent var | 0.824611 |
| Adjusted R-squared | 0.737227 | S.D. dependent var | 0.470563 |
| S.E. of regression | 0.241217 | Akaike info criterion | 0.216941 |
| Sum squared resid | 1.280087 | Schwarz criterion | 0.590594 |
| Log likelihood | 4.745878 | Hannan-Quinn criter. | 0.336476 |
| F-statistic | 12.62305 | Durbin-Watson stat | 1.917296 |
| Prob(F-statistic) | 0.000002 | | |

*Source: Own the study from EVIEWS*

**Figure 4.7: Durbin-Watson has 2 critical values: (dU) and (dL) the study result**




| | | | | | | |
|---|---|---|---|---|---|---|
| | 0.748 | 1.814 | **1.917296** | 2.186 | 3.252 | |

*Source: Own the study Calculation and using Durbin-Watson Statistic:Significance Points of dL and dU*

Where:

Observation = 30 Independent Variables = 7

dL = 0.748 ,dU = 1.814 4 - dU = 4-1.814=2.1864 - dL = 4-0.748=3.252

#### 4.2.1.3 Model Stability

Stability test the most common measurement was Ramsey RESET (Regression Equation Specification Error Test) test among the many "diagnostic tests" that econometricians routinely use, some variant or other of the RESET test is widely employed to test for a non-zero mean of the error term; that is, it tests implicitly whether a regression model is correctly specified in terms of the regressors that have been included. Among the reasons for the popularity of this test are the fact that it is easily implemented, and the fact that it is an exact test, whose statistic follows an F-distribution under the null. The construction of the test does, however, require a choice to be made over the nature the null. The construction of the test does, however, require a choice to be made over the nature of certain "augmenting regressors" that are employed to model the misspecification, the RESET test statistic has a non-null distribution which may be doubly non-central F, or may be totally non-standard. Although this has no bearing on the size of the test, it has obvious implications for its power.

The Ramsey RESET test was performed to find out the stability of the model. Ramsey RESET test was aimed at testing for specification errors or non-normality which violate the assumption that the disturbances are distributed N (0, I). It tests for the omitted variables (that is; the vector of the regressors does not include all relevant variables), incorrect functional form and the correlation between the dependent and independent variables. Under such specification errors, Ordinary Least Squares estimators would be biased and inconsistent, and conventional inference procedures would be invalidated (Ramsey, 1969). The null hypothesis that the model is stable (H0: Model is stable) was tested against the alternative hypothesis of no stability in the model (H1: No stability in the model). The null hypothesis is rejected in favour of the alternative hypothesis if the probability F-statistic of the Ramsey RESET test statistic is significant at five percent. The results from Ramsey RESET test are presented in appendix F and $X^2$ versions of the test show that the functions are linear and are stable since the *p*- value of the dependent variable **Table 4.8** is significant at 5%. So using number of fitted term two our model was the probability F-statistic of the test (0.0023) is significant at five percent level. Therefore, based on this result we fail to reject the null hypothesis that the models are linear and stable.

**Table 4.8: Ramsey RESET Test Result**

| | Value | df | Probability |
|---|---|---|---|
| F-statistic | 8.378150 | (2, 20) | 0.0023 |

*Source: Own the study from EVIEWS*

#### 4.2.1.4 Hetroscedasticity Test Result

Heteroscedasity test is the popular which include Bruserch –Pagan-Godfrey (BPG) test and White test would be employed in this study. To generally definition this test involves testing the null hypothesis that the variance of the errors is constant (homoscedacticity) or no heteroscedasticity versus the alternative that the errors do not have a constant variance while auto-correlation an assumption that the errors are linearly independent of one another (uncorrelated with one another). If the errors are correlated with one another, it would be stated that they are auto correlated. This test is conducted in order to ascertain that the disturbance or the errors has the same variance such that OLS estimators are best leaner unbiased error (BLUE), that is the coefficient estimates are efficient, consistent and unbiased. In order to detect heteroskedasticity, there are different techniques that can be used. In this study we will use the white test to assess the stability of the variance for both models.

The null hypothesis of no heteroskedasticity is stated as follows for both models:

H0 = no heteroskedasticity and

The null hypothesis is tested against the alternative hypothesis for both models:

H1 = there is heteroskedasticity

The null hypothesis, which in this case is a hypothesis for value of export model and volume of export model, will not be rejected in favor of the alternative hypothesis if the probability F-statistics of the white heteroskedasticity test is significant at five percent. For the economy growth model, as we can be seen under next chapter, both the common heteroskedasticity model this study focus on heteroskedasticity Breusch – Pagan –Godfrey and White heteroskedasticity; and the F-and X2 (LM) version of the test statistics give the same conclusion that there is no evidence for the presence of heteroskedasticity since the p-values are considerably in greater than 5 % or 0.05.

Heteroscedasticity an important assumption assumed by the classical linear regression model is that the error term should be homogeneous in nature. Whenever that assumption is violated, then one can assume that heteroscedasticity has occurred in the data. In this study as shown in **Table 4.9** and **Table 4.10** , both the F-statistic and Chi-Square versions of the test statistic gave the same conclusion that there is no evidence for the presence of heteroscedasticity, since the p-values were in excess of 0.05. The third version of the test statistic, Scaled explained SS, which as the name suggests is based on a normalized

version of the explained sum of squares from the auxiliary regression, also gave the same conclusion that there is no evidence for the presence of heteroscedasticity problem, since the p-value was considerably in excess of 0.05 the common heterosedasticity test are Breusch-Pagan-Godfrey and White tests approved this study.

**Table 4.9: Breusch-Pagan-Godfrey Test Result**

| | | | |
|---|---|---|---|
| F-statistic | 0.66448 | Prob. F(7,22) | 0.6994 |
| Obs*R-squared | 5.235788 | Prob. Chi-Square(7) | 0.6312 |

*Source: Own the study EVIEWS*

**Table 4.10: White Test Result**

| | | |
|---|---|---|
| F-statistic | Prob. F(7,22) | 0.6765 |
| Obs*R-squared | Prob. Chi-Square(7) | 0.6081 |

*Source: Own the study EVIEWS*

#### 4.2.1.5 Normality Test Result

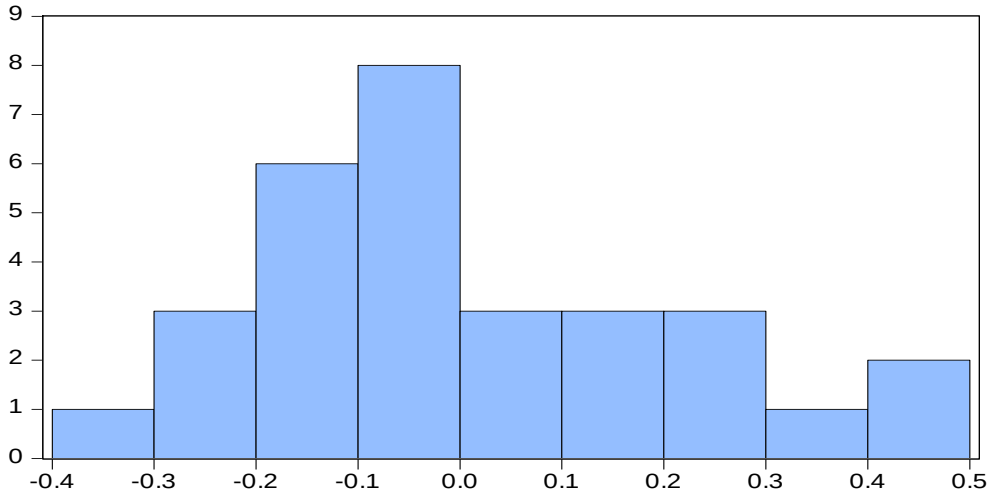
Normality test: In statistics, it is needed to assess the normality of a given set of data; for many statistical processes, and used to determine if a data set is well-modeled by a normal distribution and to compute how likely it is for a random variable underlying the data set to be normally distributed. It is prerequisite to make the assessment of the normality of the data, since it is an important assumption in parametric testing. There are various normality tests are available for the determination of normality of a data. In statistics, the normality tests are used in order to determine whether a given set of data is well-defined by a normal distribution. They are also used to measure how likely a set of data to be normally distributed for a random variable. In probability theory and statistics, the probability distributions are the set of probabilities assigned to all the possible outcomes for an event or a set of events. There are several different types of probability distributions. Normality test among the many "diagnostic tests" that econometricians routinely use, several tests of normality are discussed in the literature, we will consider two common normality test: histogram of residuals and the Jarque–Bera test.

A) **Histogram of Residuals:** A histogram of residuals is can be used to check whether the variance is normally distributed or the variance is a constant. A symmetric bell shaped histogram of residual which is distrubited around zero indicates that the normality assumption is likely to be true. This Study we show **Figure 4.8** in the right side look like a bell shaped normal distribution curve on the histogram, you will get some idea as to whether normal approximation may be appropriate. It is always a good practice to plot the histogram of the residuals as a rough and ready method of testing for the normality assumption.

B) **Jarque–Bera (JB) Test of Normality:** Jarque–Bera (JB) Test of Normality has created by two econometrics scientists from the second named; Carlos Jarque and Anil K.Bera; The Jarque–Bera (JB) test is goodness of fit of whether sample data have the skewness and kurtosis matching a normal distribution. Become our study 30 sample size observation and 9 variables including one dependent and constant variable we will show the left side **Figure 4.8**. And Jarque–Bera (JB) Test normality is an asymptotic, or large-sample, test. It is also based on the OLS residuals. This test first computes the skewness and kurtosis measures of the OLS residuals and uses the following test statistic:

Therefore, the JB test of normality is a test of the joint hypothesis that S and K are 0 and 3, respectively. In that case the value of the JB statistic is expected to be 0. Under the null hypothesis that the residuals are normally distributed; Jarque and Bera showed that asymptotically (i.e., in large samples) the JB statistic given in equation (7) follows the chi-square distribution with 2 df. If the computed p value of the JB statistic in an application is sufficiently low, which will happen if the value of the statistic is very different from 0, one can reject the hypothesis that the residuals are normally distributed. But if the p value is reasonably high, which will happen if the value of the statistic is close to zero, we do not reject the normality assumption; the sample size is rather small. Hence, strictly speaking one should not use the JB statistic. If we mechanically apply the JB formula to our assumption, the JB statistic turns out to be the value; the p value of obtaining such a value from the chi-square distribution with 2 df is about some value, which is quite high. In other words, we may not reject the normality assumption. The normality tests to applied only the mechanically formula for this study shown in **Figure 4.9** below in the right side where the coefficient of kurtosis is around 3, which is this study 2.803956 and the Bera-Jarque statistic had a P-value of 0.4244484 implying that the probability is greater than 5% therefore the data were consistent with a normal distribution assumption.

**Figure 4.8: Normality Test Result**




*Source: results from EVIEWS*

$$JB = n\left[\left(\frac{s2}{6}\right) + \frac{(k-3)2}{24}\right] \text{-----------------------} (7)$$

Where

n = sample size, n =30

S = Skewness, S = 0.577186

K = Kurtosis, K = 2.803956

$$JB = 30\left[\left(\frac{(0.57)2}{6}\right) + \frac{(2.80-3)2}{24}\right] = 1.6745 \text{ ---------------------} (8)$$

Therefore based on the above equation (8) the JB is 1.6745 and **Figure 4.8** Jarque-Bera is 1.713763; the two result almost equal the difference is only 0.0392 so by the Jarque –Bera assumption our model was normal also the shape of the residual some like to ball shape so we have be proved Histogram of Residuals assumption.

### 4.2.2 Correlation Analysis among Variables

The problem of multicollinearity usually arises when certain explanatory variables are highly correlated. Usually, Kennedy (2008) argued that as any correlation coefficient above 0.7 could cause a serious multicollinearity problem leading to inefficient estimation and less reliable results. Accordingly, this research paper utilizes Generalized Least Squares regression (GLS) which corrects the standard errors for

panel hetero-skedasticity and as the results are believed to be unbiased coefficients and consistent panel-corrected standard errors. most of the econometrics study suggest that all variables free from multicollinerty coefficient bellow 0.70 or 70% as thus assumption we become this study there is no multicollinerity problem through these all variables are below 70% or less than 0.70 .we observed in the **Table 4.11** for macroeconomic growth in Ethiopia was conclude that; public domestic investment, labor force ,agricultural export, foreign currency exchange rate and interest rate on investment were respectively the most positively correlated variables with real GDP.

On the other hand, the inflation and foreign direct investment ratio are negatively correlated with the economy growth. so the consumer price index was expected the negative relation to economy growth however foreign direct investment was not predictable negatively relation to economy growth hence most of the studies foreign direct investment and economy growth were the positive relation so this study and other some studies the result of economy growth and foreign direct investment were negative relation .

**Table 4.11: Correlation Analysis**

| Correlation | LOGRGDP | LOGGCF | LOGGLF | LOGGSMX | LOGRER | LOGRIR | LOGFDI | LOGCPI |
|---|---|---|---|---|---|---|---|---|
| LOGRGDP | 1.00000 | | | | | | | |
| LOGGCF | 0.51318 | 1.00000 | | | | | | |
| LOGGLF | 0.04014 | 0.10062 | 1.00000 | | | | | |
| LOGGSMX | 0.10377 | -0.12203 | 0.11523 | 1.00000 | | | | |
| LOGRER | 0.01844 | 0.05270 | 0.04243 | 0.02823 | 1.00000 | | | |
| LOGRIR | 0.02613 | -0.17707 | -0.05609 | -0.07944 | -0.16984 | 1.00000 | | |
| LOGFDI | -0.01785 | 0.68474 | 0.13325 | -0.01818 | 0.14389 | 0.20933 | 1.00000 | |
| LOGCPI | -0.03015 | 0.24574 | 0.29112 | -0.08895 | -0.10205 | -0.65290 | -0.07507 | 1.00000 |

*Source: Results from correlation analysis done using EVIEWS*

### 4.2.3 Results of Regression Analysis

This section presents the empirical findings from the econometric results agricultural export contribution for Ethiopia economy growth the section covers the empirical regression model used in this study and the results of the regression analysis. Empirical estimation model: As presented in the third chapter the empirical model used in the study in order to identify the factors that can affect Ethiopia economy growth how much percent contribution agricultural export especially sesame export our model regression as follows.

$$LOGRGDP = +C(0) + C(1) * LOGGLF + C(2) * LOGGCF + C(3) * LOGGSMX + C(4) * LOGFDI + C(5) * LOGCPI + C(6) * LOGRER + C(7) * LOGRIR + - - - - (9)$$

*Source: Estimation Equation from EVIEWS*

$$LOGRGDP = -5.206 + 0.081 * LOGGLF + 4.210 * LOGGCF + 0.249 * LOGGSMX - 0.974 * LOGFDI - 0.130 * LOGCPI + 0.285 * LOGRER + 0.105 * LOGRIR + \varepsilon t - -(10)$$

*Source: Substituted Coefficients from EVIEWS*

**Table 4.12: Regression Result**

Dependent Variable: LOGRGDP
Method: Least Squares
Date: 03/29/19 Time: 11:02
Sample (adjusted): 2 31
Included observations: 30 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. | |
|---|---|---|---|---|---|
| C | -5.206714 | 0.835283 | -6.233474 | 0.000000 | |
| LOGGSMX | 0.249351 | 0.092971 | 2.682034 | 0.013600 | * |
| LOGGLF | 0.081674 | 0.115028 | 0.710034 | 0.485100 | |
| LOGGCF | 4.210181 | 0.451962 | 9.315350 | 0.000000 | * |
| LOGRER | 0.285858 | 0.183115 | 1.561083 | 0.132800 | |
| LOGRIR | 0.105655 | 0.032967 | 3.204875 | 0.004100 | * |
| LOGFDI | -0.974110 | 0.133360 | -7.304334 | 0.000000 | * |
| LOGCPI | -0.130006 | 0.147054 | -0.884066 | 0.386200 | |

| | | | |
|---|---|---|---|
| R-squared | 0.800655 | Mean dependent var | 0.824611 |
| Adjusted R-squared | 0.737227 | S.D. dependent var | 0.470563 |
| S.E. of regression | 0.241217 | Akaike info criterion | 0.216941 |
| Sum squared resid | 1.280087 | Schwarz criterion | 0.590594 |
| Log likelihood | 4.745878 | Hannan-Quinn criter. | 0.336476 |
| F-statistic | 12.623050 | Durbin-Watson stat | 1.917296 |
| Prob(F-statistic) | 0.000002 | | |

**** denote significance at 5% levels***

*Source: Regression results from EVIEWS*

The estimation result of the operational time series regression model used in this study is presented **Table 4.12** the R-squared statistics and the adjusted-R squared statistics of the model was 80% and 73% respectively. The result indicates that the changes in the independent variables explain 73% of the changes in the dependent variable. Which is the above all variables; collectively explain 73% of the changes in real gross domestic product in Ethiopia. The remaining 27% of changes was explained by other factors which are not included in the model thus unobserved variables to may explain chapter three empirical analysis .Thus independent variables collectively, are good explanatory variables of the agricultural export of the Ethiopian economy growth. The null hypothesis of F-statistic (the overall test of significance) that the R-squared is equal to zero was rejected at significant level as the p-value.

Based on the results shown in **Table 4.12**, four of seven independent variables had statistically significant impact on economic growth in Ethiopia. Among the significant variables, sesame export, gross capital formation, real interest rate, and foreign direct investment movement were significant at 5% significance level since the p-value for all the three variables were greater than 5% or insignificance level these are consumer price index, labor force and real exchange rate. The results of the tests for the classical linear regression model showed that the data fits the basic assumptions On the other hand; the remaining results of the documentary analysis were used to assess the link that exists between factors affecting agricultural export and economy growth.

### 4.2.4 Hypotheses of the Study

The previous section presented mainly the outputs of the documentary analysis and checked appropriateness of the model selected. Accordingly, based on the outputs presented in the previous section, this section presents the analysis and discussion which is organized in two parts, 4.2.4.1 presents the research hypotheses presented in chapter three and part 4.2.4.2 discusses the results and attempts to test hypotheses.

As stated in chapter one the broad objective of this study was to identify the factors agricultural export in case of sesame product on economy growth in Ethiopia Further, as noted in the previous chapters (chapter one and three), in order to achieve this chapter objective the study developed and analysis the

following seven Research Hypotheses and three corresponding Research Questions. Are the following details

#### 4.2.4.1 Research Hypotheses

HP1: There is a positive relationship between sesame export and real gross domestic product

HP2: There is a positive relationship between labor force and real gross domestic product

HP3: There is a positive relationship between gross capital formation and real gross domestic product

HP4: There is a positive relationship between real exchange rate and real gross domestic product

HP5: There is a negative relationship between foreign direct investment and real gross domestic product

HP6: There is a positive relationship between real interest rate and real gross domestic product

HP7: There is a negative relationship between inflation and real gross domestic product

#### 4.2.4.2 Research Questions

RQ:1 What are the problems of the Ethiopian Sesame production inconsistency for the last ten years?

RQ:2 How can to the government support for the Ethiopia Sesame exporter companies' challenges in the international market?

RQ:3 What is the trend in agricultural exports in Ethiopia?

In order to be able to investigate whether each of the research hypotheses presented above hold in the context of agricultural export in Ethiopia problem and in order to address the specific research question presented above, the next section tries to present the analysis concurrently.

### 4.2.5 Analysis Results and Impact

This section of the chapter discusses the analysis of the results. The analysis is based on the theoretical framework and the data collected through the data collection instruments. The data are analyzed in light of the specific research question and hypotheses stated. Hence, the analysis focuses mainly on the results of the regression analysis for the selected factors that have an impact on Ethiopia economy growth. These

selected factors are, agricultural export, labor force, domestic public investment, foreign direct investment, real interest rate, real exchange rate and consumer price index.

#### 4.2.5.1 Impact of on Sesame Export (SMX) on Economic Growth

Sesame export (SMX) is Ethiopia main exported product after coffee. This baseline study result is concerned with sesame export for Ethiopia export earnings the result of our study the same true to show the above **Table 4.12** reveals that sesame export has a positive and significant effect on economic growth of Ethiopia indicating a 1 percent increase in sesame export results in 0.24 percent increase in economic growth and stands high elastic. Ethiopia has been significantly increasing its supply to world markets. The main importers of Ethiopian Sesame are China, Israel, and Turkey (Wijnands, 2007). In the long term, there is high potential for increasing the export of oilseed, especially sesame seed to the European market. Europe is a major user of sesame seed for bakery applications and confectioneries.

Currently, the main suppliers to European Union countries are India and Sudan. Like China, India could well reduce its sesame supply to the world market as it focuses increasingly on industrialization instead of agriculture. Therefore, the European market presents Ethiopia with a good opportunity to complement existing suppliers and even replace them should their supply decline. The only requirement Ethiopian farmers and traders need to meet is to adequately prevent the adulteration of seeds (Wijnands,. 2007). Growth and improvement of the oilseed sector can substantially contribute to the economic development at national, regional and family level. Oilseeds are considered as a high value export product by the Ethiopian government and enhance it by investment incentives such as duty and tax exemptions for foreign investments (EIA, 2018).

#### 4.2.5.2 Impact of Gross Capital Formation (GCF) on Economic Growth

The natural logarithm of gross fixed capital formation (LOGGCF) proxy for investment has positive sign and statistically significant in explaining the economic growth in the long run. And a back bone of the Ethiopia economy growth and has allocate adequate finance for infrastructure to grow up agricultural export ,human capital, which will help to work on quality of education and providing basic health services to the society. From the above **Table 4.12** the result of economy growth and capital formation has major contribution than other control variables that is a positive sign indicate the direct relationship between domestic public investment and economic growth by confirming the theory mentioned and accepted sign the previous chapter. The significance condition of the capital is indicating high level of investment and high capital intensive economy of Ethiopia. The country follows agricultural led

industrialization economic policy where agriculture is bridge to manufacturing sector and the manufacturing sector is also concentrate on labor intensive than capital intensive to avoid unemployment since the country have high level of human resource .This result was found to significantly and positive impact on economy growth in line with Muhammed (2015), and Gemechu (2002) and Kagnew (2007) who looked at the Agricultural export and economic growth in Pakistan and become our study to significant impact of gross capital formation on exports that Ethiopia can improve and keep on its agricultural export through increased investment by increasing agricultural product and compute the global market.

#### 4.2.5.3 Impact of Real Interest Rate (RIR) on Economic Growth

Real interest rate affects the performance of the agricultural exports through the nominal lending rate adjusted for inflation .The higher the interest rate, the lower the investment in the production of agricultural exports and the less will be the volume of exports. the reverse true; the lower the interest rate ,the higher the investment in the production of agricultural exports and the high will be the volume of exports; based on thus principle become our study the results presented in **Table 4.12** was a positive and significant effect on economic growth of Ethiopia so indicating a 1 percent increase the real interest rate result was 0.10 percent increase in economic growth and stands high elastic.

This implies that policy measures regarding the interest rate have paramount importance in improving agricultural exporters lending and supports the government (commercial and non commercial farmer) in the short- and long-run; because agricultural export has the back bone on the country economy. Also other similar researchers were found that the impact of the real interest rate positively and significant impact on agricultural export.

#### 4.2.5.4 Impact of Real Exchange Rate (RER) on Economic Growth

Real exchange rate affects the performance of the agricultural exports through volatility and depreciation or appreciation in its value; sesame has in Ethiopia remained the largest contributor to foreign earnings next to coffee .the value of the local currency makes in Ethiopia relatively to other similar exporter country the cheaper price supplier in global market; the result of this obtained more revenue have been obtained. based on this, according to the above **Table 4.12** resulted has the Ethiopia economy increased by 1 percent ,consequence the real exchange rate was 0.28 percent increased and positively affected the real GDP. The founding suggests the need to shift in the structure of agricultural export towards products with demand elastic and high value added products since the relationship found is inelastic.

The implies that policy measures regarding the exchange rate have importance the agricultural exports in both the short-run and long – run In the recent period, devaluation has become the basic macroeconomic policy issue in most less developed countries. The effect is contractionary or expansionary; depending on the structure of the economy. During the structural adjustment program, the International Monetary Fund (IMF) and World Bank (WB) suggested for developing countries to devalue their currency for the development of domestic firms. Devaluation increases the demand for domestic product and protects infant firms from outside competition (Genye, 2010). Krugman T. (1978) examines the negative effect of currency devaluation on output in developing countries which has used devaluation as a policy strategy.

#### 4.2.5.5 Impact of Labor Force (GLF) on Economic Growth

The long-run result showed that, labor force (LOGGLF) directly influence economic growth. The relationship is positive and significant. The result of the labor force (LOGGLF) indicates that the above **Table 4.12** the Ethiopia economic growth increases by 1 percent in the long run due to an addition of 0.08 percent in labor force has increased the positive coefficient. This means that labor force expansion and economic growth in this study moves in the same directions. The reason may be that Ethiopia is the second densely populated country in Africa next to Nigeria and labor force is constantly and consistently growing. Human capital is growing due to expanding education, skill and training facilities.

Therefore, Human capital is considered as the primary source of economic growth. This is supported by Gemechu G.(2002) and Shewengizawu H. (2003) who has previously looked at exports and economic growth in Ethiopia the main impact on the production output .farther human capital analysis's suggested that the labor force important value of the agricultural output, from this; the largest the population country to consequence obtained the largest export volume.

#### 4.2.5.6 Impact of Foreign Direct Investment (FDI) on Economic Growth

The long-run result showed that, foreign direct investment (LOGFDI) the inversely relationship on economic growth. The relationship is negative but significant. Nevertheless this study and the expected result on the previous study positively relation economy growth and Other similar researches including Jeon (1992), IMF(2013), Amanuel Mekonnen (2014), M. Epaphra and J.Massawe (2016), and Beatrice Farkas (2012) were found the result of the previous study FDI and economy growth for Africa countries was negative impact . For instance African countries firms are far behind their Chinese competitors, these displacement effects have to be seen in perspective as Chinese firms dominate many sectors/product categories where there are no African competitors. Still, the question arises whether China's rise on

world markets may obstruct export opportunities for African firms in (other) labor-intensive products, partly by export diversification or by moving up the value chin. So far, the evidence is not that favorable for African countries, as China (and other Asian countries) may block that market segment (Kaplinsky and Morris, 2009). In terms of foreign direct investment, many developing countries have benefited greatly from FDI, especially China. The negative results from the regressions concerning FDI from both China and the rest of the world may point to an insufficient FDI environment in African countries rather than a display of FDI not playing a role for African growth. So far, most foreign investment in African has been resource-seeking FDI with few linkages with other sectors. African governments should thus focus on attracting efficiency-seeking (or vertical) FDI by creating a better environment for the private sector. (IMF, 2013)

Also these results show a robust negative relationship between outward FDI and the rate of domestic investment driven by the presence of distortions and domestic bottlenecks in the local economies, such as scarcity of capital and imperfect financial markets. The types of policy prescription needed to address these distortions could help to mitigate the negative impact of outward FDI, and, in some cases, to boost domestic saving and investment. Become our result domestic investment and foreign investment opposite result also from total variable of the study highly elasticity on real GDP the finding of this result Africa country including Ethiopia focus on domestic investment rather than foreign investment.

The problem of FDI asking the Ethiopia Investment Agency officers Ato Keya said that many foreign investor to invest in Ethiopia starting the project by less amount budgeted but not fully invested rather than the initial investment not operation fully amount however the Ethiopia government the last five years highly capital invested this sector to established and invested in billions dollars for industry park ,however the result is still no progress which means there is no fuggier out foreign currency earning in Ethiopia economy. And another problem many foreign investor to invested the service and manufacture sector so the country 80% GDP from agricultural sector but this sector small amount foreign investor.

Mean will most of foreign investor to invest agricultural sector using for resource seeking; for instance the well resource region of the country like Gambela, Afare, South people and Oromia region target only resource seeking cheep labor force and tax free land rent after that all to cancellation the project. Then the Ethiopian government all costs covers this one of the problem for the country foreign investment police weak and unorganized system also international knowledge gap. to argued the resulted the pervious study such as Haile (2015) and Admasu(2017) FDI can also be classified into the following three groups: Market seeking, resource/asset-seeking and efficiency seeking (UNCTAD, 2007). A resource/asset

seeking FDI is attracted by availability of low-cost unskilled & skilled labor, strategic natural resources and raw materials. An efficiency-seeking FDI is significantly determined by productivity of labor resource, costs of inputs and intermediate goods (UNCTAD, 1998).

#### 4.2.5.7 Impact of Consumer Price Index (CPI) on Economic Growth

The study has found an inverse relationship between growth and inflation (LOGCPI).Increases of inflation by 1 percent decreases economic decline by -0.13 percent. The coefficient of LOGCPI is negative 0.13 and insignificant. This result is confirming the negative relation between growth and inflation rate. Therefore economic growth can be facilitated even by lowering moderate inflation. This result was share the following researcher such as; Ghosh and Phillips (1998), Christoffersen and Doyle (1998), Khan and Senhadji (2001),Gokal and Hanif (2004) and Noula (2014) who have previously examined the relationship between inflation and economic growth and found the inverse relationship between them. far the evidence is not that favorable for African country, as China(and other Asian countries)may block that market segment chain. and also the recent period study According to African Export-Import Bank (AEIB,2018), inflation has been a tendency of being higher in Ethiopia and reached13.6% in December 2017 up from 6.7% in December 2016 partly on account of the devaluation of the Birr in October 2017 and poor weather conditions.

# CHAPTER FIVE

# SUMMARY, CONCLUSSION AND RECOMMENDATIONS

This chapter is organized into three subsections. The first section presents the conclusions where as the second section presents there summery of the result and finally sections presents the recommendations; And the conclusions and summery overall the study concluded and summarized ,recommendations some policy recommendations which need to be applied in order to increase the agricultural exports efficiency using a favorable climate, water resources, fertile soils, extensive areas of arable land and high population in rural areas all contribute to making Ethiopia an agrarian country and agricultural export trade is often considered as an engine of economic growth in Ethiopia.

## 5.1 Summary of the Results

1. **Sesame Export and economy growth**: as expected result on the methodology development and the found result showed a positive relationship between specific factors of sesame export and economic growth with strong statistical significance, showing that an increase in sesame export result in increased economic growth. The previous empirical study proved this resulted. Agricultural exports trends in Ethiopia have shown increasing patterns over time .The results of the long run showed a positive and significant association between oilseeds and economic growth in economics analyzed the relationship between exports and economic growth within the main framework of a general production function.
2. **Fixed Capital Formation and economy growth**: as expected result on the methodology development and the found result showed was positively and significantly affected economic growth in the long run but not in the short run; The impact on domestic capital formation relatively highest as compared with other all variables, showing that an increase in domestic public investment increased consequence increase the country economic growth. Growth has been driven by public investments in agriculture and infrastructure as well as expansion of the services and manufacturing sectors. Therefore agriculture is the dominant sector in Ethiopian economy, consequence the higher public investment to have obtained the more agricultural export volume.
3. **Real Interest Rate and economy growth**: as expected result and the found result showed a positive relationship between real interest rate and economic growth .The evidence from this study suggests that real gross domestic product and interest rate significantly influence

agricultural export performance. In standard economic theory, the natural interest rate that is, the short term real interest rate at which the economy would stay at full employment is related positively to the growth rate of potential output and higher potential growth economic can affect the real interest rate.

4. **Real exchange rate and economy growth:** as expected result and the found result a positive relationship between real exchange rate and economy growth but insignificance. Real exchange rate has direct effects on trade particularly on international trade and has indirect effects on productions and employments, the economic theory suggest that real exchange rate affects economy, through its impact on key economic variables, Changes in the real exchange rate,affect the competitiveness of domestic products, resulting in increased exports or imports, affecting trade balance e growth.
5. **Labor Force and economy growth**: as expected result on the methodology development and the found result a positive relationship between labor force and economy growth but insignificance. According to economic theory production function; human capital is an important factor of agricultural productivity and has a direct impact on competitiveness, from this the higher the stock of human capital, the more output can be delivered per labor unit. Economics theory suggested that labor force impact of economic growth on productive depends not only on the rate of growth, but also on the efficiency by which growth translates into productivity.
6. **Foreign direct investment and economy growth:** as expected result on the methodology development was a positive but we found result opposite on the expectation result that was a negative relationship between economy growth and significance. the previous study suggested that FDI negative impact on domestic environment FDI inflows into Sub- Saharan African countries are resource seeking. few researcher argued that negative effect economy growth ; Jeon (1992),Aseidu (2004), and Amanuel Mekonnen (2014) argues that natural resources and market size are the chief determinants of FDI in Africa and natural resource is the chief determinant of FDI in Africa, particularly in least developed African countries. Nevertheless, the natural resource base of Ethiopia is not attractive for foreign investors, as Ethiopia does not have sufficient stock of minerals and petroleum, the most important natural resources that attract FDI in Africa (World Bank 2004) thus also the result of FDI negative impact on economy growth in Ethiopia.

7. **Consumer Price Index (inflation) and economy growth**: as expected result on the methodology development and the found result a negative relationship and insignificance on economy growth. The prices of goods and services fluctuate over time, but when prices change too much and too quickly, the effects can shock an economy. The economic theory suggested that one of the major instrument to stable the country economy; it is used to adjust wages, retirement benefits, tax brackets, and other important economic indicators. According to NBE argued this study; Inflation in Ethiopia both in the short and long run is not only a monetary phenomenon such as money expansion via credit and money printing; government spending and the real interest rate but also the result of structural factors like shocks to the real sector mainly agricultural GDP as the agriculture sector dominates the country's GDP.

## 5.2 Conclusions

The study examined the contribution of agricultural export to economic growth in Ethiopia time series data from 1988-2018 by including macroeconomics variables conventional production function shows that all important variables on the study model such as; labor force ,public capital investment, foreign direct investment ,real exchange rate, consumer price index and real interest rate for investment; In addition to this time series econometrics method is employed to identify determinants of Ethiopia's agricultural export performance. In order to know the long run and short run determinants, Econometrics methodology test and analysis's employed. A reviewing of the empirical studies conducted in this study showed that the key determinants that significantly affected the economic growth of Ethiopia impact on agricultural export, as per their order of significance; the model includes determinants specific sector and macroeconomics control variables.

The main objective of this study was to understand the overall sesame export performance and economic growth of Ethiopia for the last thirty years annual data. And descriptive and time series techniques were used to determine the trends of agricultural exports and to evaluate the impact of agricultural exports on economic growth respectively. In econometrics empirical analysis using such as; Unit root tests (ADF and PP tests), Autocorrelation test, Stability test(Remsay RESET test), Heterodisisty test and finally Normality test to know the existence of long-run relationships between economic growth and agricultural exports; Based on the review on the previous related studies and theories relevant to agricultural export contribution on economic growth observed for the last thirty year time series annual data of the country; which is related this study to analyzed the macroeconomic variables .

In the long –run Sesame export, gross capital formation and real interest rate are positively and significantly affect economy growth of Ethiopia, while labor force and Real exchange rate are positively and insignificantly affect economy growth of Ethiopia ; finally foreign direct investment and consumer price index (Inflation) are negatively affect economy growth of Ethiopia.

## 5.3 Recommendations

Based on the findings of the study, the following policy recommendations are advised.

1. In order to increase the impact of agricultural export on economic growth, a concerted effort should be directed towards productive channels of sesame in the economy so as to enhance sustainable economic growth through increased sesame export. Modern production systems of sesame must be quickly introduced to upgrade the traditional methods and encouraging large commercial farms by providing sesame growth opportunities and enforcing the implementation of different export incentives given for the exporters. The government should emphasize towards value addition than exporting raw sesame since the relationship of this study with economic growth is inelastic.
2. Policy recommendations are necessary to ensure a steady and sustainable increase in the sesame export volumes. Sesame production and export have increased in recent years perhaps owing to profitable in global prices, improved road networks, price information, extension services and close policy support from the government. Therefore sesame product is now a priority crop for the government because it is the most important export crops and source of foreign exchange earnings next to coffee in Ethiopia.
3. It recommends to the Ethiopian government show that at future either domestic export companies to support and improve the value add product rather than raw seeds or joint ventures from sesame value add international companies, both are to increase the sesame foreign export earnings, it is important to invest on value addition have higher bargaining power and attraction in the world market.
4. The Ethiopia government should increase the sesame market channels in to international market, and assess new sesame destination countries, because currently, the major sesame destination countries are so few; not more than ten destination countries, among which China is the first and covering to absorb 60% Ethiopia sesame export destination which can affect the Ethiopia sesame price computation in the world market.

5. The Ethiopia government shall revised the transportation and logistics system especially sesame business, according to Ethiopian Agricultural Transformation (ATA) senior officer Tigray region Ato Fishea Baraki suggested that most of the sesame export product in Ethiopia is the wholesalers have to collect large quantities of sesame product from the main producing region area around boarder of Sudan (Humera and Metema) and then the port of Sudan to producing region about 730 km; and most of the main roads are in good condition and the transport cost about 25 USD/ton . Also, the improvements in the quantity and/or quality of transportation and distribution systems would give farmers better access to productivity-enhancing and agricultural inputs at lower costs. However the Ethiopian government usually prefer to use Djibouti port which is about 1,500 km far to Djibouti port and it's a long way and the road density is very low , for this and other related reason the transportation cost become over 50 USD/ton. This found to be a challenge for sesame supplies as a result the government should work more on the agricultural export logistics.
6. It is recommended that the Ethiopia government need to establish sesame oil processing factories and also the previous oilseed factories need to improve fully utilized; the reason for these could be the nation's annual refined oil imports for consumption is increasing in a million dollars investment to this sector. Therefore the government shall have to promote and provide incentives for domestic oilseeds processing companies.

# APPENDIX

## Appendix 1: Ramsey RESET Test

Equation: UNTITLED
Specification: LOGRGDP LOGGSMX LOGGLF LOGGCF LOGRER LOGRIR LOGFDI LOGCPI C
Omitted Variables: Powers of fitted values from 2 to 3

| | Value | df | Probability |
|---|---|---|---|
| F-statistic | 8.379857 | (2, 20) | 0.0023 |
| Likelihood ratio | 18.26011 | 2 | 0.0001 |

F-test summary:

| | Sum of Sq. | df | Mean Squares |
|---|---|---|---|
| Test SSR | 0.583625 | 2 | 0.291813 |
| Restricted SSR | 1.280087 | 22 | 0.058186 |
| Unrestricted SSR | 0.696462 | 20 | 0.034823 |
| Unrestricted SSR | 0.696462 | 20 | 0.034823 |

LR test summary:

| | Value | df |
|---|---|---|
| Restricted LogL | 4.745878 | 22 |
| Unrestricted LogL | 13.87593 | 20 |

Unrestricted Test Equation:
Dependent Variable: LOGRGDP
Method: Least Squares
Date: 04/04/19 Time: 16:00
Sample: 1989 2018
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| LOGGSMX | 0.805226 | 0.167491 | 4.807584 | 0.0001 |
| LOGGLF | 0.388072 | 0.122907 | 3.157449 | 0.0050 |
| LOGGCF | 14.29411 | 2.770648 | 5.159120 | 0.0000 |
| LOGRER | 0.972519 | 0.231578 | 4.199538 | 0.0004 |
| LOGRIR | 0.345026 | 0.070682 | 4.881413 | 0.0001 |
| LOGFDI | -3.305023 | 0.645887 | -5.117031 | 0.0001 |
| LOGCPI | -0.489496 | 0.144488 | -3.387795 | 0.0029 |
| C | -17.72740 | 3.489627 | -5.080026 | 0.0001 |
| FITTED^2 | -3.532430 | 0.891452 | -3.962558 | 0.0008 |
| FITTED^3 | 1.348385 | 0.330073 | 4.085118 | 0.0006 |

| | | | |
|---|---|---|---|
| R-squared | 0.891542 | Mean dependent var | 0.824611 |
| Adjusted R-squared | 0.842735 | S.D. dependent var | 0.470563 |
| S.E. of regression | 0.186610 | Akaike info criterion | -0.258395 |
| Sum squared resid | 0.696462 | Schwarz criterion | 0.208670 |
| Log likelihood | 13.87593 | Hannan-Quinn criter. | -0.108977 |
| F-statistic | 18.26693 | Durbin-Watson stat | 1.452010 |
| Prob(F-statistic) | 0.000000 | | |

*Source: Own the study from EVIEWS*

## Appendix 2: Heteroskedasticity Test: Breusch-Pagan-Godfrey

| | | | |
|---|---|---|---|
| F-statistic | 0.664480 | Prob. F(7,22) | 0.6994 |
| Obs*R-squared | 5.235788 | Prob. Chi-Square(7) | 0.6312 |
| Scaled explained SS | 2.539690 | Prob. Chi-Square(7) | 0.9241 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/04/19 Time: 15:51
Sample: 1989 2018
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.041841 | 0.210551 | 0.198721 | 0.8443 |
| LOGGSMX | 0.007972 | 0.023435 | 0.340150 | 0.7370 |
| LOGGLF | 0.025356 | 0.028995 | 0.874492 | 0.3913 |
| LOGGCF | 0.140779 | 0.113927 | 1.235698 | 0.2296 |
| LOGRER | -0.058525 | 0.046158 | -1.267919 | 0.2181 |
| LOGRIR | -0.002664 | 0.008310 | -0.320614 | 0.7515 |
| LOGFDI | -0.014732 | 0.033616 | -0.438252 | 0.6655 |
| LOGCPI | -0.021278 | 0.037068 | -0.574011 | 0.5718 |

| | | | |
|---|---|---|---|
| R-squared | 0.174526 | Mean dependent var | 0.042670 |
| Adjusted R-squared | -0.088124 | S.D. dependent var | 0.058290 |
| S.E. of regression | 0.060804 | Akaike info criterion | -2.539144 |
| Sum squared resid | 0.081337 | Schwarz criterion | -2.165491 |
| Log likelihood | 46.08715 | Hannan-Quinn criter. | -2.419609 |
| F-statistic | 0.664480 | Durbin-Watson stat | 2.185345 |
| Prob(F-statistic) | 0.699353 | | |

*Source: Own the study from EVIEWS*

## Appendix 3: Heteroskedasticity Test: White

| | | | |
|---|---|---|---|
| F-statistic | 0.693974 | Prob. F(7,22) | 0.6765 |
| Obs*R-squared | 5.426147 | Prob. Chi-Square(7) | 0.6081 |
| Scaled explained SS | 2.632027 | Prob. Chi-Square(7) | 0.9168 |

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 04/04/19 Time: 15:25
Sample: 1989 2018
Included observations: 30

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.093610 | 0.088019 | 1.063522 | 0.2991 |
| LOGGSMX^2 | -0.005445 | 0.018160 | -0.299828 | 0.7671 |
| LOGGLF^2 | -0.007816 | 0.007609 | -1.027170 | 0.3155 |
| LOGGCF^2 | 0.028737 | 0.028631 | 1.003699 | 0.3264 |
| LOGRER^2 | -0.012450 | 0.008801 | -1.414644 | 0.1712 |
| LOGRIR^2 | -0.000395 | 0.000699 | -0.564689 | 0.5780 |
| LOGFDI^2 | -0.023285 | 0.034092 | -0.683014 | 0.5017 |
| LOGCPI^2 | -0.014246 | 0.019058 | -0.747516 | 0.4627 |

| | | | |
|---|---|---|---|
| R-squared | 0.180872 | Mean dependent var | 0.042670 |
| Adjusted R-squared | -0.079760 | S.D. dependent var | 0.058290 |
| S.E. of regression | 0.060570 | Akaike info criterion | -2.546860 |
| Sum squared resid | 0.080712 | Schwarz criterion | -2.173208 |
| Log likelihood | 46.20290 | Hannan-Quinn criter. | -2.427325 |
| F-statistic | 0.693974 | Durbin-Watson stat | 2.304535 |
| Prob(F-statistic) | 0.676495 | | |

*Source: Own the study from EVIEWS*

**Appendix 4: Regression Variables** (Uses: logarithms, growth, rate)

Measure: US dollar

| YEAR | LOGRGDP | LOGGCF | LOGGSMX | LOGFDI | LOGCPI | LOGGLF | LOGRIR | LOGRER |
|---|---|---|---|---|---|---|---|---|
| 1988 | -0.221849 | - | 0.096000 | -0.301030 | 0.850033 | -1.566289 | -0.071882 | 2.146128 |
| 1989 | 0.000000 | 1.235528 | -0.498955 | 0.000000 | 0.892651 | -1.955523 | -0.114500 | 2.089905 |
| 1990 | 0.415000 | 1.184691 | -0.240000 | -0.698970 | 0.711807 | -1.358090 | 0.066344 | 2.089905 |
| 1991 | 0.000000 | 1.152288 | -0.570000 | -0.170000 | 1.552911 | -0.711600 | -0.774760 | 2.505964 |
| 1992 | 0.000000 | 1.136721 | -0.890000 | -0.300000 | 1.022016 | -1.561700 | -0.118926 | 2.152900 |
| 1993 | 1.127100 | 1.064458 | 0.109048 | -1.397940 | 0.549003 | -1.547300 | 0.597125 | 2.152594 |
| 1994 | 0.544100 | 1.033424 | 1.232914 | -0.602060 | 0.880242 | -1.521400 | 0.276004 | 2.114277 |
| 1995 | 0.785300 | 1.271842 | -1.318010 | -0.744727 | 1.000868 | -2.769000 | 0.177534 | 2.070000 |
| 1996 | 1.130334 | 1.250000 | -0.170000 | -0.590000 | -0.045757 | -1.521900 | 1.189085 | 2.027350 |
| 1997 | 0.747000 | 1.212188 | -0.362358 | 0.526339 | 0.000000 | -1.532200 | 7.421189 | 2.020361 |
| 1998 | 0.000000 | 1.326336 | -0.141554 | 0.522444 | 0.556303 | -2.598706 | 0.464887 | 2.014940 |
| 1999 | 0.799300 | 1.340444 | -0.055125 | -0.040959 | 0.897627 | -2.506100 | 0.126859 | 2.014940 |
| 2000 | 0.991000 | 1.307496 | -0.150000 | 0.212188 | -0.154902 | -2.278170 | 1.191930 | 2.964260 |
| 2001 | 0.869000 | 1.332438 | -0.630000 | 0.627366 | 0.000000 | -1.556100 | 9.236230 | 1.938520 |
| 2002 | 1.204000 | 1.421604 | 0.425767 | 0.511883 | 0.230449 | -1.434200 | 0.707069 | 1.969416 |
| 2003 | 0.000000 | 1.385606 | -0.357305 | 0.731589 | 1.250420 | -0.957400 | -0.405322 | 1.954243 |
| 2004 | 0.875000 | 1.462398 | -0.678237 | 0.730782 | 0.505150 | -1.440300 | 0.339948 | 2.965672 |
| 2005 | 0.926000 | 1.414973 | 0.255139 | 0.330414 | 1.068186 | -1.398700 | -0.223088 | 2.811147 |
| 2006 | 1.060698 | 1.440909 | -0.070000 | 0.552668 | 1.133539 | -1.461200 | -0.288441 | 2.035029 |
| 2007 | 1.071882 | 1.383815 | -0.170000 | 0.053078 | 1.235528 | -1.526500 | -0.360467 | 2.091667 |
| 2008 | 1.049218 | 1.389166 | -0.404628 | -0.397940 | 1.647383 | -1.473900 | -0.744293 | 2.105169 |
| 2009 | 1.000000 | 1.396199 | -0.153568 | -0.167491 | 0.929419 | -1.441500 | 0.070581 | 2.039414 |
| 2010 | 1.025306 | 1.431364 | -1.721170 | -0.017729 | 0.908485 | -1.451600 | 0.091515 | 2.029384 |
| 2011 | 1.056900 | 1.506505 | -0.060000 | 0.292256 | 1.521138 | -1.461600 | -0.479745 | 2.110253 |
| 2012 | 2.220000 | 1.569374 | -0.344218 | -0.193820 | 1.382017 | -1.470000 | -0.321319 | 2.107210 |
| 2013 | 0.995600 | 1.532754 | -0.110000 | 0.450249 | 0.908485 | -1.476700 | 0.152213 | 2.111599 |
| 2014 | 1.012837 | 1.579784 | -0.233049 | 0.523746 | 0.869232 | -1.470100 | 0.191466 | 2.155943 |
| 2015 | 1.017033 | 1.595496 | -0.220000 | 0.609594 | 1.004321 | -1.477700 | 0.056376 | 2.202216 |
| 2016 | 0.903090 | 1.585461 | -0.110000 | 0.737193 | 0.863323 | -1.485500 | 0.215858 | 2.235276 |
| 2017 | 1.037426 | 1.591065 | -0.290000 | 0.698101 | 0.995635 | -1.499500 | 0.083546 | 2.208979 |
| 2018 | 0.875061 | 1.498173 | -0.548343 | 0.521138 | 0.932474 | -1.603400 | 0.146707 | 2.184975 |

*Source: WB, IMF, NBE, CSA, EPOESPEA, EIA*

## Appendix 5: Agricultural Export in Ethiopia: 1988-2018

US dollar in thousand

| Year | Coffee | Oilseed | Pulses | Vegetables | Animal Product | Chat | Others |
|---|---|---|---|---|---|---|---|
| 1988 | 212,165 | 10,635 | 7,774 | 5,694 | 82,369 | 10,301 | 25,808 |
| 1989 | 302,632 | 5,328 | 7,883 | 4,347 | 72,056 | 3,819 | 13,896 |
| 1990 | 195,702 | 4,052 | 17,372 | 1,965 | 70,541 | 10,157 | 31,587 |
| 1991 | 129,686 | 1,755 | 7,592 | 5,798 | 47,531 | 9,866 | 22,481 |
| 1992 | 81,316 | 185 | 186 | 3,091 | 28,565 | 2,451 | 10,262 |
| 1993 | 191,453 | 423 | 1,444 | 973 | 48,580 | 23,434 | 13,304 |
| 1994 | 124,345 | 7,652 | 4,798 | 1,189 | 37,240 | 18,691 | 18,007 |
| 1995 | 287,822 | 8,020 | 16,525 | 2,911 | 61,959 | 27,572 | 16,613 |
| 1996 | 272,881 | 6,638 | 12,223 | 3,329 | 51,069 | 27,611 | 11,080 |
| 1997 | 354,945 | 11,420 | 13,515 | 7,044 | 62,705 | 30,694 | 14,908 |
| 1998 | 419,886 | 45,724 | 14,960 | 4,574 | 56,324 | 39,577 | 3,009 |
| 1999 | 281,279 | 36,141 | 13,534 | 5,401 | 37,334 | 59,244 | 1,485 |
| 2000 | 262,035 | 31,357 | 9,827 | 5,434 | 40,933 | 75,992 | 3,624 |
| 2001 | 182,531 | 32,373 | 8,742 | 5,486 | 78,006 | 61,301 | 9,092 |
| 2002 | 163,162 | 32,630 | 32,942 | 9,378 | 57,475 | 49,011 | 15,085 |
| 2003 | 165,288 | 46,098 | 19,956 | 9,570 | 55,412 | 58,020 | 85,522 |
| 2004 | 223,520 | 82,687 | 22,585 | 12,722 | 53,547 | 88,040 | 68,760 |
| 2005 | 335,344 | 125,086 | 35,439 | 16,072 | 97,818 | 100,188 | 80,836 |
| 2006 | 354,394 | 211,412 | 36,974 | 13,194 | 121,566 | 89,072 | 109,585 |
| 2007 | 425,474 | 188,157 | 70,450 | 16,170 | 144,205 | 92,879 | 155,895 |
| 2008 | 529,781 | 220,366 | 144,268 | 12,808 | 163,789 | 108,262 | 219,995 |
| 2009 | 377,355 | 366,530 | 90,862 | 11,902 | 151,379 | 138,964 | 224,123 |
| 2010 | 536,299 | 362,337 | 130,149 | 32,007 | 187,147 | 210,252 | 284,678 |
| 2011 | 844,897 | 327,773 | 138,523 | 31,805 | 316,578 | 238,013 | 397,108 |
| 2012 | 836,049 | 473,762 | 160,120 | 44,940 | 395,191 | 240,201 | 404,421 |
| 2013 | 747,352 | 444,995 | 233,667 | 43,905 | 361,585 | 271,313 | 402,683 |
| 2014 | 718,650 | 654,120 | 251,140 | 45,988 | 390,669 | 297,287 | 447,984 |
| 2015 | 783,004 | 511,022 | 219,412 | 47,603 | 372,590 | 272,101 | 454,632 |
| 2016 | 723,360 | 477,435 | 231,545 | 53,448 | 357,303 | 261,159 | 435,923 |
| 2017 | 887,741 | 352,078 | 280,032 | 56,115 | 280,196 | 272,766 | 503,469 |
| 2018 | 838,567 | 428,557 | 272,875 | 61,417 | 293,274 | 263,604 | 526,963 |
| Total | 12,788,916 | 5,506,750 | 2,507,315 | 576,284 | 4,574,934 | 3,451,840 | 5,012,817 |

*Source: NBE*

## Appendix 6: Sesame Export in Ethiopia: 1988-2018

US dollar in thousand

| Year | Amount |
|---|---|
| 1988 | 10,634.78 |
| 1989 | 5,328.50 |
| 1990 | 4,052.17 |
| 1991 | 1,755.07 |
| 1992 | 185.02 |
| 1993 | 422.85 |
| 1994 | 7,652.22 |
| 1995 | 8,020.16 |
| 1996 | 6,638.07 |
| 1997 | 9,520.00 |
| 1998 | 16,392.00 |
| 1999 | 30,830.00 |
| 2000 | 26,214.00 |
| 2001 | 9,684.00 |
| 2002 | 35,496.00 |
| 2003 | 51,087.00 |
| 2004 | 61,804.00 |
| 2005 | 173,017.00 |
| 2006 | 160,590.00 |
| 2007 | 132,764.00 |
| 2008 | 185,058.00 |
| 2009 | 314,997.00 |
| 2010 | 320,983.00 |
| 2011 | 300,656.00 |
| 2012 | 436,754.00 |
| 2013 | 390,625.00 |
| 2014 | 619,033.00 |
| 2015 | 482,812.00 |
| 2016 | 431,709.00 |
| 2017 | 307,512.00 |
| 2018 | 394,512.00 |
| Total | 4,936,737.84 |

*Source: CSA, EPOESPEA*

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