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THE CONTRIBUTION OF EXPORT TO ETHIOPIA'S ECONOMIC GROWTH

By

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DECLARATION

The project is my original work, has not been presented for a degree in any other university and that all sources of material used for the project have been fully acknowledged.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

LIST OF ACRONYMS

ACP	African, Caribbean and Pacific
AD	Aggregate Demand
ADF	Augmented Dickey Fuller
AfDB	African Development Bank
AGOA	African Growth and Opportunity Act
AIC	Akaike Information Criteria
ARDL	Autoregressive Distributive Lag
AS	Aggregate Supply
COMESA	Common Market for Eastern and Southern Africa
CUSUM	Cumulative Sum of Recursive Residuals
CUSUMSQ	Cumulative Sum of Squares of Recursive Residuals
EAC	East African Community
EC	European Community
ECM	Error Correction Representation Model
ECOWAS	Economic Community of West African States
ECT	Error Correction Term
EEC	European Economic Community
ELG	Export-Led Growth
EPRDF	Ethiopian People's Revolutionary Democratic Front
EU	European Union
FDI	Foreign Direct Investment
FE	Fixed Effects
GDP	Gross Domestic Product
GE	Gravity Equation
GIRF	Generalized Impulse Responses Function
G2SLS	Generalized Two Ttages Least Squares
GLS	General Least Square
GMM	Generalized Method of Moments
GNP	Gross National Product
GSP	Generalized System of Preferences
GTP	Growth and Transformation Plan

IGAD	Intergovernmental authority on Development
ILG	Import-Led Growth
IMF	International Monetary Fund
ITC	International Trade Center
LDC	Least Developed Countries
LM	Lagrange Multiplier
MNCs	Multinational Corporations
MoFED	Ministry of Finance and Economic Development
NBE	National Bank Of Ethiopia
NPC	National Plaaning Commission
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least Squares
PASDEP	Plan for Accelerated and Sustained Development to End Poverty
RE	Random Effects
RESET	Regresstion Equation Specification Error Test
RTAs	Regional Trade Agreements
SAP	Structural Adjustment Program
SSA	Sub-Saharan Africa
TEX	Total Export
UAE	United Arab Emirates
UNCTAD	United Nations Conference on Trade and Development
USA	United States of America
UK	United Kingdom
VAR	Vector Autoregressive
VEC	Vector Error Correction
VECM	Vector Error Correlation Model
WTO	World Trade Organization

Abstract

This study empirically investigated the impact of export growth on economic growth in Ethiopia. The study employed theoretical framework of aggregate demand model developed by J.M. Keynes using annual time series data for the period 1960/61 - 2015/16 for Ethiopia. The ARDL approach is applied to examine both the short-run and long-run relationships between export and economic growth. The main finding of the study, at a broad level, is that the rate of growth of real export has a positive and significant effect on the rate of economic growth both in short-run and long-run. The effect of real export growth to economic growth is higher in long-run than in short-run.

Keywords: *Economic Growth; Export; Autoregressive Distributive Lag Model (ARDL); Ethiopia.*

CHAPTER ONE
INTRODUCTION

1.1. Background of the Study

International trade is the exchange of goods, services and capital across the international territories. It is believed to be the backbone of a certain country because such trade represents a significant share of Gross Domestic Product (GDP) in many countries. There are many reasons as to why trade across national borders occurs, including lower production costs in one region versus another, specialized industries, lack or surplus of natural resources and consumer tastes. According to Todaro (1994), international trade acts as an engine of growth which stimulates the development of the currently economically advanced nations. This is because the rapidly expanding export markets have the ability to provide additional stimulus to growing local demands that led to the establishment of large-scale manufacturing industries.

Countries are dependent on each other through international trade due to various reasons. These are, among others (1) no nation, not even a technologically advanced one, can produce all of the products that its people want and need; (2) even if a country did become self-sufficient, other nations would seek to trade with that country in order to meet the needs of their own people; and (3) some nations (ex. China, Russia) have an abundance of natural resources but limited technological know-how, while other countries (ex. Japan, Switzerland) have sophisticated technology but few natural resources (Lee &Huang, 2002).

International trade has also played a crucial role in the historical development of many developing countries. It has been largely contributed to the performance of the external sector where the export sector was given a greater emphasis. Strong political commitment towards export promotion and the application of appropriate policies together with efficient institutional mechanisms helped many Least Developing Countries attain a higher growth rate of exports and hence of the overall economy (Lee &Huang, 2002).

The relationship between export growth and economic growth has been a popular subject of debate among development economists and literatures. There are two extreme views about the relationship between export and economic growth. According to the first group of view export have positive contribution to export. The second group have regarded export have no

contribution at all to economic growth. In addition to these two extreme views some argued that export have negative contribution to economic growth (Faye, 2001). For instance, the successful records of the 'Four Dragons' or even 'Four Asian Tigers' have received much attention in the literature on economic growth and have revived the debate on the effectiveness of outward orientation as a strategy for economic development. The literature on exports and economic growth has its source in the late 1970s.Broadly speaking, export growth can promote economic growth and vice versa(Lee& Huang, 2002).

The Ethiopian economy has experienced strong and broad-based growth over the past decades and in return the economic growth has brought positive results in poverty reduction both in urban and rural areas. Expansion of the services and agricultural sectors accounts for most of this growth, while the manufacturing sector performance was relatively modest (World Bank, 2017). For rapid economic growth, most literatures emphasize that internationally active countries tend to be more productive than countries which only produce for the domestic market. Above all due to globalization, in one way or another, a country's economy has become much more closely associated with external factors such as openness to trade (Sun & Heshmati, 2010). Thus, conducting a study on the contribution of export to economic growth has great significance for proper policy directions.

1.2. Statement of the Problem

The economic growth of a country depends on the various policy measures that a country adopts to stimulate the growth and performance of the economic sectors. The contribution of the main economic sectors, agriculture, industry and services to the economic growth varies depending on the development of the country and the level of policy measures. Countries may take different policy measures and develop strategies that suits to their specific contexts.

It can be argued that developing countries or emerging market economies that are more open to the rest of the world have a greater ability to absorb technologies developed in moreadvanced nations. On the other hand, it has been argued that some forms of protectionism, e.g., infant industry protection to develop certain industries or sectors or a strategic trade policy in key sectors, can be beneficial for economic development.

Accordingly, Ethiopia as developing country with the ultimate aim of transforming the economy from agricultural base to industries and services with industries and services at infant stage, the level of contribution that trade is making to the country's economic growth needs to be clearly known. In addition, appropriate policy measures that can accelerate the performance of trade need to be identified for proper policy actions. There are huge literatures conducted on Ethiopia on the contribution of export to economic growth through analysis of the supply side of the economy, which is originated from the neo-classical economic growth theory (Simon, 2014; Debele, 2002; Senait, 2014 and Woinshet, 2014). On the contrary, the demand side approach has not been used widely; In case of Ethiopia, the Government interventions have significant contribution in the improvements of social and economic developments of the country.

The study tries to explore / examine the contribution of export to economic growth in Ethiopia, during a specified period, 1960/61 – 2015/16. This period is purposely selected to examine export contribution to economic growth across different regimes and different economic policies as there are no up-to-date comprehensive studies done for this period.

1.3. Research Objective

The general objective of the study is to examine the effect of export trade on economic growth of Ethiopia. The specific objectives are:

- To describe the current trend of Export in Ethiopia
- To examine the short-run and long-run effect of exports on economic growth,

1.4. Research Questions

Having the above stated general and specific objectives, the research tries to answer the following questions.

- What is the trend of export in Ethiopia?
- What is the short-run and long-run effect of export on the economic growth?

1.5. Significance of the Study

In the process of the economic development, understanding the real contribution of trade to the different economic sectors and continuously examining the performances would play key role for proper planning and policy measures. It will give opportunity to focus, prioritize and identify issues that halts sustainable economic growth.

The Ethiopian Government is striving for the transformation of the country's economy from agriculture to services and industries. In this transformation process, it is expected that the contribution of trade will be significant. There are no much empirical studies that present systematically the contribution of export on the growth performance of the country during the indicated specific period (1961/62– 2015/16) based on the demand-side approach where the research will fill the gap in these regards and motivate others for further study. The result of this study may inform the policy formulation process in Ethiopia with regard to the attention to be taken to maximize the contribution of international trade in the Ethiopian economic performances.

1.6. Scope and Limitation

The results of this study can be limited with the availably and quality of the data in different institutions. The limitation may be arising from the problem of inconsistency of data as represented by different institutions. Sometimes, even data from the same institution may show different figures for the same year.

1.7. Organization of the Paper

The study is organized into five chapters. The first chapter deals with introduction presenting background information and justification of the study. Chapter two consists of review of some relevant literatures and documents which are found to be important and supportive to the objective of the study. This chapter provides extensive summary to the researches that are related to international trade and economic growth. Chapter three outlines the research methodology used to undertake the study. Major discussion and findings presented in chapter four. Finally, chapter five presents conclusion and policy implications.

CHAPTER TWO
REVIEW OF LITERATURE

2.1. An Overview of Ethiopia's Trade Policy (1960/61– 2015/16)

Various studies indicate that the performance of trade in an economy depends on the policy measures that a certain country follows. Different augments exist some favoring trade protection while others favoring free trade as an appropriate policy measures for trade to perform better in an economy. According to African Development Bank Report (2015), the growth performance of the African continent saw significant improvement from the 1990s, with per capita GDP annual growth soaring from essentially zero percent in the 40 years preceding the new millennium, to almost 3 percent in the last fifteen years. It is evidenced that African economies have been growing for more than a decade and for this to happen, a set of interrelated factors appears to have contributed to the current acceleration of the pace of growth.

The performance of trade has taken different shapes in the history of the Ethiopian economic performances. According to Alemayehu (2001), an examination of the external trade policy of the three successive regimes in Ethiopia (pre-1974, 1974–1991, and post-1991) reveals that the country's external trade policy has moved from a free trade policy to a controlled trade policy regime and back to a free trade policy. The trade policies during Imperial regime were free and there were two major economic development strategies: export- oriented and import substitution. Until 1960 focused on export oriented strategy and after import substitution strategy in order to protect infant domestic industries (Abebe, 2014). During the Imperial regime before1974, various measures aimed at improving the quality and quantity of imports and exports as well as facilitating trade both by the public and private sector were made. Imports of capital goods and raw materials were free of duty, while others were taxed (Alemayehu, 2001).

The period between 1974 and 1991 was characterized by a centralized economic system, where the state was dominant to control the participation of private capital in trade and in strengthening the state's role both in export and import (Mulugeta, 2014). In addition to this, the period is very well known for closely monitoring the price, quantity and distribution of goods; attempts to diversify the type and destination of goods externally traded, especially

from developed capitalist countries toward socialist countries; and emphasize on external trade sectors deemed essential for economic growth (Alemayehu, 2001).

In 1991 the government took major steps in reforming the post-Derg government's foreign trade policy has mainly focused on ensuring private sector participation mainly through providing incentive to the export sector (Mulugeta, 2014). With respect to post-Derg trade policies, Alemayehu (2001) also further indicated that the post-Derg government's foreign trade policy is designed to manage the sector through foreign exchange and import-export regulation; design and provide adequate incentives to the export sector; replace quantitative restrictions with tariffs; encourage diversification of exports; and carry out restructuring of state-owned trading enterprises.

The Ethiopian Government has given attention to trade and industry during the Plan for Accelerated and Sustained Development to End Poverty (PASDEP) and Growth and Transformation Plan I (GTP I) period for which various policy measures were taken to develop the sector. As indicated in GTP I (MoFED, 2010) a trade registration and licensing system was introduced in order to regulate the sub sector and measures were taken to ensure competitive trade practices and protect consumers from unfair trade practices during the PASDEP period. It was during this time that various trade partnerships and negotiations were made to benefit the country more and to create new opportunities. Similarly, during this period, support was given to micro, small, medium and large-scale industries, particularly, to industries that used agricultural inputs and were capable of generating foreign exchange

2.2. Theoretical Literature

A number of theories were developed trying to explain the basis and use of international trade. Those theories form the foundation for a present-day analysis of international trade and formulation of trade policy. Under this section theories of international trade; Keynes's theory of aggregate demand; economic contribution of export trade; and determinants of export performance has been examined.

2.2.1. Theories of International Trade

Theories of international trade can be broadly classified into Early, Classical, Neo-classical, New/modern trade theories. The following discussions present the various trade theories.

2.2.1.1. Early Trade Theory

Mercantilism refers to the collection of economic thought that came into existence in Europe during the period from 1500-1750. It is often referred to as the political economy of state building. Based on a mercantilist thinking a nation's wealth is reflected in their holdings of precious metals. For bringing precious metal, according to them a country should focuses on maximizing export. The more gold and silver that a country accumulates; the richer it is (Viner, n.d.; Appleyard & Field, 2004; Farrokh & Petter., 2014). According to Mercantilists, a country could accumulate gold and silver by exporting more and importing less. They argued that a government should do everything possible to maximize exports and minimize imports through applying quota and high tariff to reduce imports while subsidy to encourage exports. In this way, it possible to attain a positive trade balance and this could ensure an economic benefit to the country (Viner, n.d.; Appleyard & Field, 2004; Farrokh & Petter., 2014).

Over time, the ideas concerning international trade began to change. The most common criticism of the mercantilists is that they regarded the precious metals as the sole constituents of the wealth of the nation; the concepts of wealth, the role of trade, and the whole Mercantilist tenets of economic thought were challenged by writers such as David Hume and Adam Smith (Viner, n.d.; Appleyard & Field, 2004; Farrokh & Petter., 2014).

David Hume, in 1752, challenged a mercantilist explanation of country's wealth in terms of accumulated precious metals in his idea of price-specie-flow mechanism. He argued that increasing the amount of specie in the economy does nothing to increase real wealth; instead, it just means that more money is required to trade for the same goods and services as before. Similarly, Adam smith in his famous book "The Wealth of Nations", published in 1776, argued against the idea that the mercantilist policies favored producers and disadvantaged the interests of consumers. As per his explanation nation's wealth will be reflected in its ability to produce final goods and services (its productive capacity), not in its holdings of precious metals (Appleyard & Field, 2004).

2.2.1.2. The Classical Trade Theories

In his absolute advantage theory of trade, Smith stated, if two countries have an absolute advantage in the production of two different commodities, then it is more advantageous to

buy from one another. In other words, countries should specialize in the export of those commodities in which they had an absolute advantage and should import those commodities in which the trading partner had an absolute advantage. Each country should export those commodities which produced more efficiently because the absolute labor required per unit was less than that of the prospective trading partner. In his explanation he used two countries and two commodities models and takes labor as homogenous and only factor of production (Appleyard & Field, 2004, Alemayehu, 2009).

Smith's argument was significant at the time because it indicated that both countries could benefit from trade and trade was not a zero-sum game as the Mercantilists had believed but rather it is a positive not a zero-sum game. However, Smith's idea of international trade was not free from critics. The two most important critics were on taking labor as the only factor production and homogenous and the other is on failure to explain what will happen if a nation is more efficient than its trading partner in the production of both goods and vice versa. The absolute advantage theory of trade was the dominant trade theory until David Ricardo, a 19th-century English economist, developed the theory of comparative advantage (Appleyard& Field, 2004).

In his principle of comparative advantage Ricardo follow a two country and two commodities frameworks. He takes labor as the only factor of production and homogeneous within a country but heterogeneous across countries to explain a mutually beneficial trade can still exist because of the differences in opportunity costs or relative costs. In addition, he takes cost of production to be constant in his explanation.

David Ricardo expanded upon Smith's concepts and demonstrated that gains from trade occur even if a country is absolutely more or absolutely less efficient in the production of all of its goods than other countries. The source of these gains according to him lies in the relative prices with trade differ from relative prices in autarchy. He explained that the comparative advantage exists whenever the relative labor requirements differ between the two commodities and this in turn differentiates the internal opportunity cost of the commodities in the two countries i.e. internal price ratio differ in the two countries. However, the base for Ricardian explanation of trade was also challenged at in two ways. The first challenge comes from his assumption of labor as homogenous and the other is on costs of production (Appleyard & Field, 2004).

2.2.1.3. The Neo-Classical Trade Theories

The development of neoclassical economic theory in the late nineteenth and early twentieth century provided tools for analyzing the impact of international trade in a more rigorous and less restrictive manner. The neo-classical theory of trade emerged by focusing on 'factor endowments' variability as the source of trade. The two Swedish economists Eli Heckscher and Bertil Ohlin developed the neo classical theory of trade, Heckscher-Ohlin (H-O) Model, through making modification on classical theory of trade and taking in to account differences in factor supplies that is mainly land, labor, and capital (Todaro & Smith, 2012; Appleyard & Field, 2004, Alemayehu, 2009).

As stated in the theory, the pattern of international trade is determined by differences in factor endowments. It explains that a country that is abundant in factor of production exports the good whose production is intensive in that factor. According to this theory, a country will export those goods that make intensive use of locally abundant factors and will import goods that make intensive use of factors that are locally scarce. This model was criticized due to its practical contradiction. Wassily Leontief in early 1953 has shown the contradiction of the model. He has shown that in spite of being capital abundant, USA mostly exports labor-intensive goods and imports capital intensive goods (Krugman, Obstfeld, &Melitz, 2012).

2.2.1.4. The New/Modern Trade Theories

The traditional trade theories argue that trade occurs due to difference exist between countries in terms of technology and factor endowments. As per the theories those countries should export goods that they are relatively good at producing while importing goods and services from other countries that have relatively good at producing that good. However, empirical data shows that a significant amount of trade occurs between countries with similar technology and similar factor endowments. Thus, recognizing these growing differences observed in trade patterns; the new trade theory was developed in 1970s and 1980s through focusing on industries rather than countries (Ciuriak, et al, 2011).The new trade theory comprises the Intra-Industry model, the technology gap theory, product life-cycle theory, country similarity theory, global strategic rivalry theory, National Competitive Advantage Theory and the Gravity Model of trade.

Intra-Industry trade refers to the existence of trade when country simultaneously imports and exports similar type's goods and services (same product classification). A number of possible explanations are mentioned for the occurrence of intra-industry trade. Among them existence of product differentiation, differences in transport costs, dynamic economies of scale, degree of product aggregation, difference in income distributions in countries and differences in factor endowments and product variety were important (Appleyard & Field, 2004).In other words, it's about the exchange of differentiated or similar products belonging to the same industry (Bernhofen, 1999). Cars, food items, beverages, electronic goods, minerals, chemicals, machinery, transport equipment, power-generating equipment, office machines, telecommunications equipment, apparel and clothing trades could be good typical example for this model of trade.

In the late 1950s and 1960s the importance of the **technology gap** among countries in explaining world trade patterns led to the emergence of trade theories based on technological gaps between trading partners called technological gap model. (Arestis & Sawyer, 1994; Alemayehu, 2009).

According to the technological gap model, a great deal of trade is based on the introduction of new products and new production process. These give the innovating firm and nation a temporary monopoly in the world market. Such temporary monopoly is often based on patent and copyright. The technology gap theory tries to describe the advantage enjoyed by an industrial country that introduces new product in a market. The innovating country enjoys a monopoly until other countries learn to produce these goods. As explained by Posner (1961), international trade consists in a "temporary" trade between an innovative country (exporter country), in which a new product appears, and a follower country (importer country) that tries to imitate the new good (Salvatore, 2008). However, the model was not free from short comings. It does not explain the size of technology gap and does not explore the reason that technological gaps arises or how they are eliminated over time (Salvatore, 2008; Alemayehu, 2009).

The **product life cycle theory** of international trade is a generalization and extension of the technology gap model developed by R.Vernon in 1966. It concerned with the life cycle of a typical "new product" and its impact on international trade. As per this model, when a new product is introduced, it usually requires highly skilled labor. As the product matures and gain massive acceptance, then it can be produced through a mass production techniques and

less skilled labor because it becomes standardized (Salvatore, 2008; Appleyard & Field, 2004).As per the Vernon explanation of the product life cycle theory, first a new good is produced in a developed region, then the technology and product are standardised. Then this allow the possibility of relocating the industry to a low wage region (less developed region), which may export back to the developed region (Alemayehu, 2009).

A **country similarity/overlapping demand theory** of international trade was developed by the Swedish economist Stefan Linder in 1961. The theory was entirely different from H-O model (supply based) since it is almost exclusively demand oriented. It is based on an assumption that consumers living in countries that have similar levels of per capita income and development may well have the same tastes and could proportionally consume the same quality products. Therefore, those countries are likely to trade and consume the same quantity and quality of goods and services. The theory postulates that products are mostly traded based on similar demand structures in countries (Verter, 2015).

Global strategic rivalry theory of international trade was developed by Paul Krugman & Kelvin Lancaster in 1980 to examine the impact of a global strategic rivalry between Multi-National Corporations on the flows of trade. The theory focuses on strategic decisions that firms adopt as they compete internationally. It explains that a new firm will face barriers to entry into an industry or new market which includes research and development, ownership of intellectual property rights and patent rights, economies of scale, unique business culture. According to this view, firms struggle to develop some sustainable competitive advantage, which they can then exploit to dominate the global marketplace (Griffin & Pustay, 2010; Ibrahim & Wang, 2013).

The **national competitive advantage theory** of international trade was pioneered by Michael Porter (1990). The theory argued that, a nation's competitiveness in an industry depends on the capacity of the industry to innovate and upgrade. It tried on explaining why some nations are more competitive in certain industries. In explaining his idea, Porter identified four determinants that he linked together. These are local market resources and capabilities (factor conditions), local market demand conditions, local suppliers and complementary industries and local firms' characteristics (Verter, 2015; Ibrahim & Wang, 2013).

Factor conditions refer to a country's endowment of factors of production which affects its ability to compete internationally. Demand conditions on its part indicate the existence of a

large, sophisticated domestic consumer base often stimulates the development and distribution of innovative products as firms struggle for dominance in their domestic markets. On the other hand, related and supporting industries is about the emergence of an industry often stimulates the development of local suppliers who are eager to meet that industry's production, marketing, and distribution needs. Finally, local firms' characteristics include firm strategy, structure, and rivalry (Griffin & Pustay, 2010).

The **gravity model** of international trade was first used by Jan Tinbergen in 1962. The model able to provide an empirical explanation for international trade and uses an equation framework to predict the volume of trade on a bilateral basis between any two countries. It differs from most other theories in that it tries to explain the volume of trade but not on the composition of that trade. It considers economic sizes and distances between nations are the primary factors that determine the patterns of trade across national boundaries (Appleyard & Alfred, 2004; Shepherd, 2012).As per this model, larger economies are more likely to produce goods and services for domestic consumptions and exports than small economies. In addition, the distance or geographical location between individual countries or markets has an influence on the cost of imports and exports of products (Verter, 2015).

The variables that are nearly always used in the equation as determining factor to the flow of volume of exports from a country I (exporting country) to a country II (importing county) are national income variables (GDP or GNP) and Distance as proxy for transportation cost. A national income variable expected to have a positive relationship with the volume of exports from country I to country II. This is because higher income in importing country would cause it's consumers to buy more of all goods, including goods from country I. Similarly, a greater income (increased GDP or GNP) in the exporting country may reflect a greater capacity to produce and hence to exports more goods to country II. On the other hand, a distance variable expected to have a negative impact on the volume of export since being at greater distance would reduce the volume of exports from country I to country II (Appleyard & Field, 2004).Sometimes other variables are introduced, such as population size in the exporting and/or importing country (to get at large market size and thus perhaps to economies of scale) or a variable to reflect an economic integration arrangement (such as a free-trade area) between the two countries (Appleyard & Field, 2004).

2.2.1.5. Summary of International Trade Theory

The main issues with respect to theories of international trade can be summarized as follows. The earlier theories (prior to1970s) assumed only two products, two commodities, two factors, two countries, perfect competition, constant returns to scale, constant technology, etc. While the new theories which are developed after 1970s are based on more realistic assumptions like – change in technology, imperfect competition, changing returns to scale, etc. Hence, the new theories which are developed after 1970s and 1980s are quite capable of explaining the pattern of world trade today.

2.2.2. Keynes's Theory of Aggregate Demand

John Maynard Keynes is often referred to as the father of macroeconomics. His pioneering work "The General Theory of Employment, Interest and Money" published in 1936 provided a completely new approach to the modern study of macroeconomics. It served as a guide for both macroeconomic theory and macroeconomic policy making during the Great Depression and the period later. The General Theory was a beginning of a new school of thought in macroeconomics which was referred to in later period as Keynesian Revolution in macroeconomic analysis (Harry &David, n.d.).

Keynesian theory cried out for measures of national income, Private final consumption expenditure, government final consumption expenditure, savings, and investment spending (gross capital formation). He constructed a new theoretical structure to address the aggregate economy (demand) that had significant effects on both economic theory and policy. The concept of aggregate demand (AD) refers to the total demand for goods and services in an economy. It consists of Consumption demand by the households (C), Investment demand, i.e., demand for capital goods (I) by the business firms, Government expenditure (G), Net income from abroad (X – M). Thus symbolically, AD = C + I + G + (X-M) (Harry & David, n.d).

Keynes's theory of the determination of equilibrium income and employment focuses on the relationship between aggregate demands (AD) and aggregate supply (AS). According to him equilibrium employment (income) is determined by the level of aggregate demand (AD) in the economy, given the level of aggregate supply (AS). Thus, the equilibrium level of employment is the level at which aggregate supply is consistent with the current level of

aggregate demand. The theory believes that the principle of effective demand and, therefore, give emphasis to sources of aggregate demand. Hence, in Keynesian models growth is a demand-led process or "demand creates its own supply" rather than the Classical claim of "supply creates its own demand"(Soressa, 2013).

According to Keynesian theory, an increase in exports is one of the factors that can stimulate increases in demand and thus will surely lead to increases in outputs.Unlike the previous studies this study aimed to see the effect of export on economic growth based on Keynes aggregate demand approach (from demand side). Unlike classical theory Keynesian economics advocates for government intervention would improve social and economic development that led to higher economic growth (Teshome, 2016). Ethiopia experienced different forms of government intervention in the last three regimes, Pre-1974, more government intervention in manufacturing and services sector. During Derg regimes between 1974 and 1991, full control of the economy which reduces economic growth and development in the country. Recently Ethiopia implemented the developmental state with higher government intervention. During this period, the country has achieved more than double economic growth (Teshome, 2016).

2.3. Empirical Literature

A number of researches have been conducted to identify the contribution of export on economic growth. For the purpose of this paper studies conducted on selected Asian and African countries are investigated including those studies done on Ethiopia.

2.3.1. Studies on Export and Economic Growth for Asian Countries

Muhammd (2015) estimated the relationship between Gross domestic product (GDP) and agricultural and non-agricultural exports for Pakistan employing Johansen co-integration technique by using secondary data for the period 1972-2008.The result showed that agricultural exports have a negative relationship with economic growth of Pakistan while non-agricultural exports have positive relation with economic growth. The study suggested that Pakistan have to do structural changes in agricultural exports by converting its agricultural exports into value added products.

Venkatraja (2015) measured the impact of domestic demand and export demand on the economic growth in China and compared with India by employing linear regression model

based on the theoretical framework of aggregate demand model developed by Keynes. The period of the study covers from1981 to 2013 for China and from 1991 to 2013 for India. The result showed that China's economic growth is driven mainly by its export demand, while that of Indian growth by domestic demand. To investigate whether such growth in China is sensitive to global economic fluctuations, export multiplier tool is used. The results indicate that such export demand-led growth of China is not sustainable. This is mainly due to very low household consumption spending among nationals of China. Hence; China's domestic market cannot absorb the surplus of national goods in the event of low export demand. This is visible from the on-going sluggish growth in China which is affected by European economic crisis.

Peng and Almas (2010) have investigated the effects of international trade on economic growth in China through undertaking review and analysis of conceptions as well as the evolution of China's international trade regime and the policy that China has taken in favor of trade sectors. In addition, both econometric and non-parametric approaches are applied based on a 6-year balanced panel data of 31 provinces of China from 2002 to 2007. For the econometric approach, a stochastic frontier production function is estimated and province specific determinants of inefficiency in trade identified. For the non-parametric approach, the Divisia index of each province/region is calculated to be used as the benchmark. Accordingly, the result of the study showed that increasing participation in the global trade helps China reap the static and dynamic benefits, stimulating rapid national economic growth. Both international trade volume and trade structure towards high-tech exports result in positive effects on China's regional productivity.

The relationship between trade and economic growth in China was further investigated using the ARDL approach by Qazi & Adnan (2012). They investigated the export-led growth, growth-led export, import-led growth, growth-led import and foreign deficit sustainability hypothesis using annual time series data from 1978-2009. ARDL approach is employed to determine the long run relationship, and the direction of long run and short run causal relationship is examined by using modified Granger causality test. The result confirmed that the bidirectional long run relationship between the economic growth and exports, economic growth and imports, and exports and imports. These findings guided the authors to conclude that the exports-led growth, growth-led exports,

imports-led growth and growth-led imports hypothesis is valid and foreign deficit is sustainable for China.

Similarly Adeel & Maqbool (2015) empirically investigated the exports-growth nexus using annual time series data for the period1973-2013 for Pakistan using the ARDL and the Granger causality test. They found that the short-run and the long-run coefficients conform to theoretical anticipation and demonstrate that exports, human capital and capital formation have a substantial and positive effect on GDP growth of Pakistan. The Granger causality analysis reports bi-directional causality, running between exports and GDP growth in the short-run and the long-run.

A study conducted by Denu (2015), to examine the connection between trade and economic growth in South Korea, where trade has been an important sector of the country's economy. The study reviewed the causal relationships between trade and economic growth by employing the Cobb-Douglas production function under the Vector Error Correction (VEC) model and Granger causality test, using time series data between 1960 and 2010. Accordingly, the study indicates that unidirectional long-run causality exists between exports and economic growth in South Korea, while it is bidirectional for imports. Moreover, this study has found unidirectional short-run causality running from exports and imports to economic growth; validating both Export-Led Growth (ELG) and Import-Led Growth (ILG) hypotheses in South Korea. In general, the implication of the study was that both exports and imports could play an important role in stimulating economic growth; and that a singular trade policy that accentuates export promotion might have difficulty in sustaining economic growth.

2.3.2. Studies on Export and Economic Growth for Africa

Neddy, ET al (2013) has conducted a study on the impact of international trade on economic growth in Kenya for the periods of 1960 to 2010. In their study they examined the effect of exchange rate, inflation and final government consumption on Kenyan economic growth using a multiple linear regression model and Barro growth model to estimate the existing relationship between variables and then applying ordinary least square method. Their findings have shown that exchange rate has no effect; inflations had negative and significant effect and while final government consumption had positive effect on GDP growth rate in Kenya. Finally, the study recommended the policy makers to emphasize on policies promoting

exports, maintaining low and stable inflation rates and encourage government expenditure on development projects so as to encourage economic growth in Kenya.

The impact of international trade on economic growth in Nigeria was conducted for the periods 1988 - 2012 by Adeleye, et al (2015) using net export, Balance of Payment and Gross Domestic Product by employing regression analysis as the method of analysis using co-integration and error correction modeling techniques to find the long-run relationship between economic performance and international trade. The result of the study shows only Total Export (TEX) remains positive and significant while others remain insignificant, showing that Nigeria is running a monoculture economy where only oil act as the sole support of the economy without tangible support from other sectors such as industrial/manufacturing and agriculture. The study recommends that the government should therefore pursue aggressive diversification of the economy by putting in place policies and incentives that will boost non-oil export, the manufacturing sector and overall promote the industrial growth of Nigeria.

Egbal (2013)empirically investigated the relationship between trade openness and economic growth in Egypt for period of 1970-2012 using ARDL bound testing as well as Johansen Maximum Likelihood approaches to test for a long run relationship between trade openness and economic growth and the VECM Granger causality and the Generalized Impulse Responses Function(GIRF) to test the direction of the causality between trade openness(imports, exports and trade volumes (exports imports) have been used as proxies)and economic growth. The results suggested that the existence of the co-integration between the series and the empirical evidence in support of a bi-directional causal relationship between imports as well as trade and GDP growth for Egypt, but a unidirectional causality for exports.

Mounir (2014) examined he dynamic causal relationship among the series of economic growth, foreign direct investment, and trade, labor and capital investment in Tunisia for the period of 1970-2008. This paper apply bound testing (ARDL) approach to investigate the existence of a long run relation among the above noted series; and the Granger causality within VECM to test the direction of causality between the variables. The bounds test suggested that there exists long run relationship among economic growth, foreign direct investment, and trade, labor and capital investment. The results also indicate that there is no significant Granger

causality from FDI to economic growth, from economic growth to FDI, from trade to economic growth and from economic growth to trade in the short run.

The relationship between Trade and economic growth investigated by Gwaindepi, Musara and Dhoro (2014) from 1975 to 2005 for Zimbabwe using the cointegration approach to establish the existence of a long run relationship between economic growth and trade variables. The results of the study indicate that trade and economic growth are cointegrated, but the relationship is strengthened by the stability of the macroeconomic policy since negative macroeconomic drivers such as rising inflation can constrain economic growth; openness to trade plays a crucial role; reduction and elimination of barriers to trade promote growth in trade and ultimately economic growth.

2.3.3. Studies on Export and Economic Growth for Ethiopia

When we come to Ethiopia, a number studies has been conducted empirically to investigate factors influencing the country's export performance in recent years. Girma (1982) conducted a study to establish and analyze the relationship between Ethiopia's foreign trade (export and import) and Gross Domestic Product (GDP). In the study, based on a priori theoretical knowledge and the nature of the scatter diagram, linear regression of GDP on export and import on GDP were formulated and regression and correlation coefficients were computed and interpreted with allowances given to non-econometric variables. The result showed that there is long run relationship between export and economic growth and import and economic growth.

Soressa (2013) conduct a study to identify the causal relationship between exports, domestic demand and economic growth in Ethiopia using time series data over the period 1960 to 2011.The analysis is based on Granger Causality and Johansen Cointegration tests. The result of Johansen Cointegration test indicates the existence of long run relationship among the variables and Granger Causality test result shows a dynamic relationship between export and economic growth, and between domestic demand and economic growth. Exports and domestic demands are important for economic growth and economic growth has an impact on exports and domestic demand in Ethiopia. A successful and sustained economic growth requires growth in both exports and domestic demand. Nevertheless, a balance emphasis should be on domestic demand, particularly household consumption to push the economy towards higher growth path.

The relationship between export and economic growth of Ethiopia for the periods from 1981 – 2012 examined by Simon (2014). In the study by combining production function, international trade and development theories, a five variable model is specified and estimated by using cointegration test and error correlation model. Different time series econometric techniques had been used to test and estimate the unit root of the time series, co-integration as well as single equation error–correlation models of the variables. The results of the single cointegration analysis indicate the long term relationship between export and economic growth; in the short-run export has a positive impact in economic growth; and the impact of export on ecnomic growth is significant. The study recommends that the government should concentrate on enhancing export sector which serves as an engine for economic growth and prosperity.

Senait (2014) empirically investigated the contribution of export earnings to economic growth of Ethiopia for the period 1960/61-2011/12 using econometric techniques of Johansen co-integration, vector error correction estimation and Granger causality test. The key finding of the study is that export growth positively and significantly affected economic growth and growth also stimulate export in the long run. This provided support for the adoption of both Export-Led Growth and Growth-Led Export growth strategies in case of Ethiopia.

The effect of exports on economic growth in Ethiopia for the period 1960/61-2000/01 has been investigated by Debele (2002) to empirically test the relationship between exports and economic growth using different techniques such as co-integration and error correction approaches in the regression analysis and a simultaneous equation model and the Granger causality test. The results from the cointegration and error correction models revealed that export significantly affected economic growth in the short run and also export indirectly affected economic growth as evidenced from the simultaneous equation models. Furthermore, the causality test conducted indicated that causality runs from exports to economic growth.

2.3.4. Summary of Empirical Litretures

In general, many studies were conducted in different period to determine the contribution of export to economic growth at a country level through employing various econometric models such as co-integration and error correction, vector autoregressive, ordinary least square

method Cobb-Douglas production function and autoregressive distributed lag model Almost all of the studies are based either on time series or panel data framework.

As observedin the above presented empecrical literatures it is understood that a number of emprical investigations have been done to determine the effects of international on economic growth. based on the above stated econometric models. Factors such as export, import, domesic demand, agricultural export, non-agricultural export, capital formation, and human capital were the main factors that are examined in those studies. Except in few studies the findings are inline with the existing theories in terms of their sign.

CHAPTER THREE
RESERCH METHODOLOGY

3.1. Research Design and Approach

This study adopted a quantitative research approach to test objective theories by examining the relationship among variables. The quantitative research aims to gather information on different variables such as real growth rate of gross domestic product, real growth rate of government expenditure, real growth rate of household expenditure, real growth rate of investment, real growth rate of export and real growth rate of import and examine the contribution of export on economic growth by using annual secondary time series data for the period of 56 years from 1960/61 to 2015/16. The selection of the period is based on the availability of data and purposely to cover three regimes in Ethiopia. The study uses computer program Eviwes Version 9.5 for statistical data analysis. In order to provide basic information about the data set, the study presented some descriptive statistics for all variables examined.

3.2. Theoretical Framework and Model Specification

Keynes (1936) developed one of his outstanding contributions to the economic spectrum regarding the national income account in which he argued that balanced economic growth is highly significant to achieve economic stability. The balanced macro-economic growth is based the equilibrium of aggregate demand and aggregate income. Mathematically it can be stated as:

$$\mathbf{C + T + S} = \boldsymbol{C + G + I} + (\boldsymbol{X - M}) \text{……..……..... (1)}$$

The left hand side represents aggregate income components and displays the allocation of households' income for consumption (C), for tax (T) or for saving (S). And then aggregating all these three components lead to aggregate income for the economy. Hence, the aggregate supply assumed the form of:

$$\mathbf{C + T + S} = \boldsymbol{Y} \text{…….. (2)}$$

Where, C= Aggregate Consumption of the households; T= tax paid by the households to the government, S= households' saving and Y= aggregate supply or income.

On the other hand, the right hand side of the equation (2) exhibited the aggregate demand (AD). It comprises the domestic and foreign sector demand. Total government expenditure (G), aggregate household expenditure and gross capital formation (I) are domestic demand of national goods, while foreign sector demand accounts foreigners' demand of national products (X) and domestic demand of foreign products. The changes in the domestic demand and foreign sector demand affects the national GDP thereby affects the aggregate demand of the goods. Generally, thus, the Kenyans GDP identity can be written as follows:

$$\mathbf{AD = GDP = C + I + G + X - M} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(3)}$$

Thus, based on Keynes model, an empirical model developed for the study as follows:

$$\boldsymbol{GDP_t = GE_t + HHE_t + I_t + X_t - M_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \mathbf{(4)}$$

Where:

$\mathbf{GDP_t}$ = Gross Domestic Product (Output) at time t,

$\mathbf{GE_t}$ = Government Expenditure at time t,

$\boldsymbol{HHE_t}$ = Household consumption at time t,

$\mathbf{I_t}$ = Investment at time t,

$\mathbf{X_t}$ = Export at time t, and

$\mathbf{M_t}$ = Import at time t,

However, all variables are expressed in terms of growth form in order to see the effect of the change of the growth of the regressors on economic growth. Moreover, policy dummy variable is included in ARDL model to account for structural break of a regime change during 1992/93. It is hypothesized that all independent variables have positive and significant effect on GDP growth except Real import growth in which it is hypothesized that it has negative impact on economic growth. Thus, the model becomes:-

$$\boldsymbol{RGDPg_t = RGEg_t + RHHEg_t + RIg_t + RXg_t - RMg_t + Dummy + \varepsilon_t} \ldots\ldots\ldots \mathbf{(5)}$$

Where,

$RGDPg_t$= the rate growth of real Real Gross Domestic Product at time t

RGEgt=the rate of growth of Real of Government Expenditureat time t

RHHEgt= the rate of growth of Real Household Expenditure at time t

RIgt= the rate of growth of Real Investment at time t

RXgt= the rate of growth of Real Export at time t

RMgt= the rate of growth of Real import at time t, and

D= policy dummy variable which takes one for the period 1992/93, zero Otherwise, and

εt = Stochastic error term

3.3. Data Sources and Description of Variables

3.3.1. Data Sources

This study has investigated the dynamic effect of export on economic growth based on Keynes aggregate demand perspective by using secondary data for the period 1960/61-2015/16. All necessary data for the sample are gathered from Ministry of Finance and Economic Cooperation, National Planning Commission, National Bank of Ethiopia, The Ethiopian Economic Association, and Central Statistics Agency. In addition to this essential and necessary information also collected from international sources like World Bank, IMF, OECD, AfDB.

3.3.2. Description of Variables

There are numerous numbers of variables which affects the contribution export on the economic growth of Ethiopia in various ways. Different variables have been taken by many researchers to find out the relation between those variables and economic growth. For the purpose of this research paper, growth rate of real GDP; growth rate of real government expenditure; growth rate of real household consumption expenditure; growth rate of real capital formation; growth

rate of real export; growth rate of real import; and policy dummy variable are used as conceptualized and summarized below.

Growth Rate of Real GDP ($RGDP_g$): shows the growth r of real total expenditure incurred by all entities on goods and services within the domestic boundaries of Ethiopia and real GDP is calculated by deflating the nominal GDP by GDP deflator.

Growth Rate of Real Government Expenditure (RGE_g): refers to the growth rate of all output of the general government minus sales of goods and services. It is estimated by growth rate of production costs (salary and wages, allowance and benefits and pensions contribution), net purchase of goods and services, consumption of fixed capital. It is thus the growth rate of the total current expenditure of the administrative departments for producing government services. And then, real government expenditure (GE) is calculated by deflating the nominal values of the government expenditure by GDP deflator.

Growth Rate of Real Household Consumption Expenditure ($RHHE_g$): refers to the growth rate of all the final consumption expenditure incurred by resident households and non-profit institutions serving households on final consumption of goods and services, whether made within or outside the economic territory. It is calculated by deflating the total household expenditure by GDP deflator.

Growth Rate of Real Capital formations (RI_g): refers to the growth of aggregate of gross additions to fixed assets (fixed capital formation) and changes in stocks during a period of account and net acquisition of valuable assets. In line with this, fixed assets are the sum of construction, machinery and equipment.

Construction activities refers to all new constructions and major alterations and repairs of buildings, highways, streets, bridges, subways, airports, parking areas, dams, drainages, wells and other irrigation sources, water and power projects, communications systems, land reclamations or land improvements, planting and cultivating new products, etc.

Machinery and equipment comprises all types of machinery like agricultural machinery, power generating machinery, manufacturing, transport equipment, furniture and furnishings and increments in livestock. Thus capital formation included all relevant items of new capital

goods which are produced domestically (exclusive of export) and new and second hand import goods. Thus, the real value of capital formation is calculated by deflating the nominal capital formation by GDP deflators.

Real Export Growth (RX_g): refers to growth rate of all goods and services produced domestically and sold to foreign residences and calculated by deflating nominal export by GDP deflator.

Real Import Growth (RM_g): refers to growth rate of all goods and services imported to the country but it didn't accounts intermediate and capital goods which are used for capital formation (investment) and are included in capital formation (investments). Thus, real import is calculated by deflating nominal import value by GDP deflator.

Policy Dummy variable (D): indicates the policy or government change that directly evolves the economic, political and social system of the country.

3.4. Estimation Technique

3.4.1. Stationarity and Non – Stationarity

The standard classical (the ordinary least square) method of estimation are based on the assumption that all variables are stationary. However, estimation of parameters and hypothesis testing using time series data requires an investigation of the data generating process of the variable under consideration. A series or a stochastic process is said to be weakly stationary or covariance stationary if and only if it has a constant mean, finite variance and the covariance of observations in the process is the function only of how far apart the observation are in time but not of the absolute location of either observation on the time scale (Gujarati, 2003)and (Greene, 2003), or the covariance between any two – time periods depends only on the distance or lag between the two periods and not on the actual time which it is computed (Harris, 1995).

As many scholars pointed out , regressing of two non-stationary variables one another by using OLS method results invalid estimates and leads to *spurious regression* and the outcome would be high R^2 values and high t-ratio with low value for Durbin Watson test

which is a non-economic meaning (Gujarati, 2003). As a result the conventional F and t statistical test might wrongly accept the null hypothesis of no relationship, In fact, they might have relationship, and most macroeconomic and financial variables are non-stationary trending in nature (Nelson and Plosser, 1982, Gujarati, 1995, Greene, 2012).Therefore, to avoid the problem of spurious correlation due to the presence of non-stationary variables in the regression model of this particular study, the time series properties of the variables has to be examined.

3.4.2. Unit Root Test

As discussed, before going to a formal estimation technique, it is imperative undertaking unit root test to check the properties of the data, specifically the stationarity of each variable. Several tests are usually employed to test whether time series variables are stationary or non-stationary; the Dick-Fuller (DF), Augmented Dickey Fuller (ADF), Phillips-Peron (PP), Kwiatkowski, Philips, Schmidt and Shin (KPSS) test, and Ng-Perron. In this study the researcher is going to employ the ADF test to determine the existence of a unit root.

The Augmented Dickey Fuller (ADF) Test

As pointed out by Gujarati (2004), the DF test regression does not include values of variables beyond one lag, the error terms may be serially correlated; results based on such tests may be biased and are not valid. The ADF test, on the other hand, avoids this problem because it corrects for serial correlation by adding lagged-difference terms (Greene, 2003).The ADF test is similar with the simple DF test, but it is augmented by adding lagged values of the first difference of the dependent variable as additional regressors which are required to account for possible occurrence of autocorrelation in the model.

The general form of the ADF equation in which have intercept term and time trend can be expressed as:

$$y_t = \alpha_0 + \beta y_{t-1+} + \sum_{i=2}^{p} \lambda i \Delta Y_{t-i+1} + \alpha_1 t + u_t \quad \text{.....(6)}$$

In the case where the regression has only the drift, ADF test can be stated as;

$$y_t = \alpha_0 + \beta y_{t-1} + \sum_{i=2}^{p} \lambda i \Delta Y_{t-i+1} + u_t \quad \text{.....(7)}$$

And where the regression model has no both intercept and time trend, the general equation can be stated as,

$y_t = \beta y_{t-1} + \sum_{i=2}^{p} \lambda i \Delta Y_{t-i+1} + u_t$.....(8)

Where:

y_t is any variable in the model to be tested for stationarity,

u_t is an error term and

Δ is the first-difference operator.

In the above three equations, the null hypothesis of ADF is $\beta=0$ against the alternative that $\beta<0$, where a rejection of this hypothesis indicates that the time series is stationary and it does not contain a unit root. After estimating the equations with OLS, the resulting calculated 't' statistics are compared with the respective critical values given in the Dickey-Fuller tables.

3.4.3. Estimation of Co-integrated Model

If two series variables are drifting upward with their own trend, and if the gap between them is growing over time and may create another trend unless there is some kind of relation between the series (Greene, 2012, p.p 990-1010). In such case, it is challenging to identify the exact long run relationship between the variables.

On the other hand, if the two series are both integrated order one (I (1)), the partial difference between them might be stable around a stable mean and they are drifting together roughly at the same rate. Thus, it is possible to distinguish the long-run relationship between the series. The two series are said to be co-integrated each other. And the long-run trend would be maintained, then the differencing of the data could be more stable and count productive (Greene, 2012).The short-run dynamic, that is, and deviation of the series from their long-run trend can be identified.

The Autoregressive Distribution Lag (ARDL) Approach

In most of the case, most researchers have used the Johansen and Juselius co-integration techniques to determine the long-run relationship between variables of interest. In fact, this technique remains the best choice for many researchers, scholars and academician who argued that this is the most accurate method to apply for I (1) variables.

However, Pesaran and Smith(1998), Pesaran et al. (2001), and Pesaran and Pesaran (1997) have introduced an alternative co-integration technique known as the 'Autoregressive Distributed Lag (ARDL)' bound test which is based on the unrestricted error correction model. Many researchers have been employing the technique starting from the past two decade. This is because the Pesaran et al.'s approach has certain advantages over the common practice of univariate and multivariate co-integration analysis (Engle and Granger (1987); Johansen (1988); Johansen and Juselius (1990)).

First, the ARDL model is the more statistically significant technique of determining the small sample co-integration and given that our sample size is limited with a total of 55 observations only, this approach will be appropriate (Ghatak and Siddiki, 2001), while the Johnson co-integration requires large sample data for to be valid.

Second, ARDL approach can be applied whether the explanatory variables are I(1) and/or I(0)integration, while other co-integration techniques, like Engle and Granger (1987) and Johansen and Juselius (1990), require all the explanatory variables to be integrated of the same order. In the ARDL method, the statistic underlying the procedure is the Wald or F-statistic in a generalized Dickey-Fuller regression, which is used to test the significance of lagged levels of the variables in an unrestricted equilibrium correction model (ECM) (Pesaran et al., 2001). As a result, ARDL approach avoids a pre testing problems associated with standard co-integration.

Third, yet another difficulty of the Johansen co-integration technique which the ARDL approach avoids concerns the large number of choices which must be made: including decisions such as the treatment of deterministic elements, the order of VAR and the optimal number of lags to be used, as well as the number of endogenous and exogenous variables (if any) to be included. Pesaran and Smith (1998) explained that the estimation procedures are very sensitive to the method used to make these choices and decisions.

According to Pesaran (1997), the ARDL approach requires the existence of a long-term relationship among the variable of interest is determined using F-test (bounce test), and to estimate the coefficients of the long-run relationship and determine their value, followed by the estimation of the short run elasticity of the variables with the error correction representation (ECM) of the model. The ECM determines the speed of adjustment if there is some shock for the long-run equilibrium.

Thus, due the aforementioned advantage, the researcher used the autoregressive distributed lag (ARDL) bounds test proposed by Pesaran and Shin (1997) and Pesaran, Shin, and Smith (2001), which is based on the unrestricted error correction model, by using Eviews 9.5.Augmented Dickey Fuller unit root tests would be used to determine the unit root test whether the variables of interest are I(0), I(1) or I(2).

Long –Run Integration Model relationship among variables

$$\Delta_{\text{RGDPgt}} = \phi_0 + \lambda_1 RGDPg_{t-1} + \lambda_2 \text{RGEg}_{t-1} + \lambda_3 \text{RHHEg}_{t-1} + \lambda_4 \text{RIg}_{t-1} + \lambda_5 \text{RXg}_{t-1} + \lambda_6 \text{RMg}_{t-1} +$$

$$\sum_{i=1}^{n} \phi_1 \Delta RGDPg_{t-i} + \sum_{i=0}^{n} \phi_2 \Delta RGEg_{t-i} + \sum_{i=0}^{n} \phi_3 \Delta RHHEg_{t-i} + \sum_{i=0}^{n} \phi_4 \Delta RIg_{t-i} + \sum_{i=0}^{n} \phi_5 \Delta RXg_{t-i}$$

$$\sum_{i=0}^{n} \phi_6 \Delta RMg_{t-i} + \phi_7 t + \phi_8 D + \mu_t \ldots\ldots \quad (9)$$

Where:

$\lambda_1, \lambda_2, \lambda_3, \lambda_4, \lambda_5, \lambda_6$, are coefficients that measure long run relationships

$\phi_1, \phi_2, \phi_3, \phi_4, \phi_5, \phi_6, \phi_7, \phi_8$, are coefficients that measures short run relationship

n shows lag length of the autoregressive process

t is time trend of the model

μt Stochastic error terms

D = policy dummy variable which takes one for the period 1992/93, zero otherwise

The bounds test for equation (9) is applied with lower and upper bound of F-statistics for finding long-run relationship among the variables. If the value of the bound of F-statistics is greater than the upper bounds, null hypothesis (H_0: $\lambda_1 = \lambda_2 = \lambda_3 = \lambda_4 = \lambda_5 = \lambda_6 = 0$) of no co-

integration is rejected and which evidences the existence of long-run relationship among the variables. Null hypotheses is assumed no co-integration and accepts if the value of F-statistics is below the lower bounds and if the F-statistics remains between the lower and the upper bounds, it is inconclusive to reject or accept the null hypothesis.

After establishing the long-run relationship, the ARDL method obtains the optimal lag length of each variable using the model selection criteria Akaike's Information Criteria (AIC). The ARDL methods estimates $(p+1)^k$ number of regression in order to obtain optimal lag length for each variable, where p is the maximum number of lag to be used and k is the number of variables in equation. For annual data, Pesaran and Shin (1999)and Narayan (2005) recommend choosing a maximum of 2 lags.

We can exhibit short run elasticity by developing the vector error correction model (speed of adjustment for long run equilibrium whenever there is short run disturbance) as follows.

$$\Delta RGDPg_t = \phi_0 + \sum_{i=1}^{n} \phi_1 \Delta RGDPg_{t-i} + \sum_{i=0}^{n} \phi_2 \Delta RGEg_{t-i} + \sum_{i=0}^{n} \phi_3 \Delta RHHEg_{t-i} + + \sum_{i=0}^{n} \phi_4 \Delta RIg_{t-i} +$$

$$\sum_{i=0}^{n} \phi_5 \Delta RXg_{t-i} \sum_{i=0}^{n} \phi_6 \Delta RMg_{t-i} + \phi_7 t_1 + \phi_8 D + \mu_{1t} + \psi_1 ECT_{1,t-1} + \varepsilon_{1t} \quad \text{..... (10)}$$

$$ECT_{1,t-1} = RGDPg_t - \phi_0 - \sum_{i=1}^{n} \phi_1 \Delta RGDPg_{t-i} - \sum_{i=0}^{n} \phi_2 \Delta RGEg_{t-i} - \sum_{i=0}^{n} \phi_3 \Delta RHHEg_{t-i} -$$

$$\sum_{i=0}^{n} \phi_4 \Delta RIg_{t-i} - \sum_{i=0}^{n} \phi_5 \Delta RXg_{t-i} - \sum_{i=0}^{n} \phi_6 \Delta RMg_{t-i} - \sum_{i=0}^{n} \phi_6 \Delta RMg_{t-i} - \phi_7 t_1 - \phi_8 D \quad \text{..... (11)}$$

Where:

ECT is error correction term and can be defined as equation (11)

$\Psi_1$is error correction coefficients that measure the speed of adjustment

n is the optimal lag length and Δ is the first difference operator.

Testing for structural break (parameter Stability) of regression model

In most of the time, using a time series data might involve a structural break in the relationship between the dependent and independent variable. Structural break (change) indicates that the values of the parameter of the model don't remain the same throughout the entire time period of study and it might be results from external forces, policy changes

(switching from closed economic system to open economic system, changing from fixed exchange rate system to flexible exchange system), ruling party change thereby leads to economic change or a variety of other causes. Accordingly, the Chow test (Gujarati, 2009) is used to examine significant structural break in during the study period. It is chosen 1992/93 as structural break because in 1992/93, Ethiopia shifted from the command economic system to a softy liberal economic system thereby leads to relatively a free marketing system in the economy. As the following table depicted the null hypothesis of no structural break at 1992/93 is rejected at one percent significant level and proves the existence of structural break at 1992/93.

Table 3.1: Chow Breakpoint Test Result

Chow Breakpoint Test: 1992/93

Null Hypothesis: No breaks at specified breakpoints

Varying regressors: All equation variables

Equation Sample: 1961 2015

F-statistic	7.296471	Prob. F(6,43)	0.0000
Log likelihood ratio	38.61894	Prob. Chi-Square(6)	0.0000
Wald Statistic	43.77882	Prob. Chi-Square(6)	0.0000

3.4.4. Diagnostic Checks

Post Estimation Test: requires verifying where the estimation from ARDL model are reliable. As we know ARDL model is a linear regression model and therefore the underlying assumption of Classical Linear Regression Model (CLRM): Normality, Serial Correlation, Heteroskedasticity, Linearity and Stability have to be verified.

3.4.4.1. Residual Vector Normal checking

One of the post estimation of the diagnostic checking in most of empirical studies is testing the normality of the residual. In this ARDL model, Jarque-Berra (JB) test for residual normality had been implemented, which is based on the test of Skewness and Kurtosis of the

residual. The test is based on the null hypothesis that the residual are normally distributed. Rejection of the null hypothesis indicates that the residuals are not normally distributed.

3.4.4.2. Serial correlation

The other diagnostic testing to evaluate the complete specification and robustness of the result in an economic model is testing the serial correlation of the residual. In this ARDL model the Breusch-Godfrey Lagrange multiplier (LM) test had been implemented. LM tests the null hypothesis of no serial correlation against the alternative hypothesis of auto correlated residual.

3.4.4.3. Heteroskedasticity test

Heteroskedasticity of the residuals is evaluated by using Breusch-Pagan Test. It tests the null hypothesis of homoscedasticity against the alternative hypothesis of heteroskedasticity.

3.4.4.4. Test for Functional Form Misspecification

A functional form misspecification generally means that the model does not account for some important nonlinearity. It causes bias in the remaining parameter estimators. Ramsey (1969) proposed a general functional form misspecification test, Regression Specification Error Test (RESET). In this particular research, Ramsey's RESET test, which is based on the square of the fitted values, tests the functional form of the model.

3.4.4.5. Stability Tests (consistency of co-integration space)

The last diagnostic test considered in this study is the stability test. Bahmani-Oskooee (2001) pointed out stability test is appropriate for time series data. Pesaran and Shin (1999) proposed that, in the ARDL model, the stability of the model is examined by displaying two graphs: the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ). Each graph has a pair of straight lines drawn at the 5% level of significance. If either of the lines is crossed, the null hypothesis that the regression is correctly specified must be rejected at the 5% level of significance. The CUSUM graph is critical in detecting systematic changes in the regression coefficients, while the CUSUMSQ graph detects any departure from the constancy of the regression coefficients in a sudden or haphazard way (Pesaran and Pesaran, 1997).

CHAPTER FOUR
RESULTS AND DISCUSSIONS

4.1. An Overview of Ethiopia's Trade and Economic Performance

4.1.1. Export and Economic Performance

As stated in Krugman & Obstfeld (2003), countries engage in international trade for two basic reasons. First, countries trade because they are different from each other and secondly, countries trade to achieve economies of scale in production. Nations, like individuals, can benefit from their differences by reaching an arrangement in which each does the things it does relatively well. If each country produces only a limited range of goods, it can produce each of these goods at a larger scale and hence more efficiently than it tried to produce everything.

There are ample evidences that international trade affects economic growth positively by facilitating capital accumulation, industrial structure upgrading, technological progress and institutional advancement. In the current economic environment of globalization, trade plays an increasingly important role in shaping economic and social performance and prospects of countries around the world, especially those of developing countries (UNCTAD,2005).

In an effort to achieve economic growth through engaging in international trade, export diversification and growth is a decisive contributor. As stated in UNCTAD (2008) report, economic growth is primarily a matter of increasing productivity and efficiency. Exporting in this case fosters productivity improvements through a number of channels, including providing foreign exchange earnings that finance imports of capital equipment. Perhaps most importantly, successful exporting is both indicative and conducive to technological upgrading. On the other hand, exporting promotes technological advance and efficiency through increasing labor productivity.

The report also added that, most importantly exporting also contributes to poverty reduction through employment generation and source of income. Exports might directly increase the incomes of the poor through being a source of employment and thus being source of wage. As indicated in a joint report of World Bank and WTO (2015), export contributes directly to poverty reduction by opening up new employment opportunities (for example for agricultural

producers) with the expansion of export sectors and by bringing about structural changes in the economy that increase employment of low-skilled and poor workers in the informal sector. The report also stated that, trade provides better access to external markets for the goods that the poor produce.

Export expansion is the key factor in promoting economic growth. According to Huang (2002), the growth of exports has a stimulating effect on total factor productivity growth through its positive impact on higher rates of capital formation. On the other hand, the growth of exports helps to relax the foreign exchange constraints, thereby facilitating imports of capital goods and hence faster growth. In addition, competition from overseas ensures an efficient price mechanism that fosters optimum resource allocation and increases the pressure on industries that export goods to keep costs relatively low and to improve technological change, thereby promoting economic growth.

In the absence of exports, the growth of an economy is constrained by domestic demand. Especially for developing countries where domestic markets are small, foreign markets provide demand for production levels not sustained by the domestic economy. Access to larger markets allows individual producers to benefit from economies of scale, reducing unit-cost of production and increasing productivity, necessary for sustained economic growth (Thelle, et al, 2015).Through understanding its contribution to economic growth, developing countries are increasing their participation in international trade and strengthening their capacity to export. As indicated in UNCTAD (2008) report, an increasing number of developing economies have benefited from integration into the global economy through export growth and diversification.

In most instances, promoting export played a critical role in long-run growth of an economy through supporting a vicious circle of investment, innovation and poverty reduction. Thus, easy to understand that involving in international trade and increasing the capacity to export contributes positively to economic progress. There are number of evidences that can be mentioned as export could be an important engine for growth if it is led by a right policy.

4.1.2. Structure, Trend and Destination of Ethiopia's Major Exports

Agriculture remains the leading sector in terms of contribution to overall Ethiopian economy. It is a major source of food for domestic consumption, of raw materials for the domestic

manufacturing industries and of primary commodities for export. However, the export performance has remained sluggish. The average value of export earnings and the value of merchandise exports remain very low. This was due to a fall in the volume of exports (such as coffee and pulses) and decreases in gold, oilseeds and pulses prices. To improve the value and volume export, the government tried to implement an export promotion strategy (Admit, Wakiaga, & Haile, 2016; Ciuriak, 2010).

4.1.2.1. Structure of Ethiopia's Major Exports

Being underdeveloped economy that heavily depends on agriculture, the structure of Ethiopian export is dominated by few agricultural products. The majority of Ethiopia's merchandize exports are primary agricultural commodities. Agricultural commodities such as flower, fruits and vegetables, coffee, sesame and cereals are the major exportable commodities of the agriculture sector. Like other Sub-Saharan African economies, Ethiopian economy is mainly based on Agricultural commodities. The performance of the economy is guided by the performance of the agricultural sector. Agricultural commodities remain dominate in the country's export baskets (Kagnew, 2007).

The export sector is characterized by over-dependence on a few commodities such as coffee, which on the average constitutes nearly 65 percent of export earnings where the combined share of other major export items constitute more than 85 percent of the total exports. Among the exports items, recently the contribution of chat is also becoming significant where it is the second highest export item next to coffee (Alemayehu, 2001).

4.1.2.2. Trend of Ethiopia's Major Exports

The value of Ethiopia's total merchandise exports has increased by more than 40 times during the last five decades, from USD 76 million in 1961 to over USD 3 billion in 2012. However, the increase has not been uniform over the three regimes. During the Imperial Regime the merchandise export has risen by more than 3.5 times from USD 76 million in 1961 to over USD 268 million in 1974 and in the Derg Regime, the export growth decelerated from USD 240.5 million in 1975 to USD 189 million in 1991 (Abebe, 2014).

In the post-Derg regime, the merchandise export has shown more than 17 times increment from USD 169 million in 1992 to USD 3 billion in 2012 (Abebe, 2014). During this period even though an overall increment is observed, there are certain years where decline is

registered. In 1999/2000, the country obtained USD 486 million from export and this has been declined by 9 percent to USD 441 million in 2000/01. From this the decline in the value of coffee export in 2000/01 was 33 percent compared to the previous year (AfDB/OECD, 2003).

In 1998/99 and 1999/2000 a number factors were stated for the poor performance in the export sector. According to OECD (2001), the performance of the country's export was affected by fluctuations in international price of the major export items, such as coffee export fell by about 30 percent and in addition to that internally due to a presence of illegal cross-border trade especially live animals. In the coming years however, encouraging results were obtained in the performance of the country's export sector. According to NBE (2005/06) report, due to a surge in global demand and a presence of Conducive policy environment, the export sector managed to register a robust growth in the coming three consecutive years starting from 2003/04.

Table 4.1: Value of Major Export Items and Percentage Changes 2003/04 – 2005/06 (In millions of USD)

Export Commodities	2003/04	2004/05	2005/06	Percentage Change	
	A	**B**	**C**	C/B	C/A
Coffee	223.5	335.2	354.3	5.7	58.5
Oilseeds	82.7	125.0	211.4	69.1	155.7
Leather &Leather Product	43.6	67.6	75.0	10.9	72.1
Pulses	22.6	35.4	37.0	4.3	63.7
Meat & Meat Products	7.7	14.6	18.5	27.1	139.4
Fruit & Vegetables	12.7	16.1	13.2	-17.9	3.7
Live Animals	1.9	12.8	27.6	115.1	1342.9
Chat	88.0	100.2	89.1	-11.1	1.2
Gold	48.7	59.4	64.7	9.1	32.9
Flower	2.3	7.8	21.8	177.8	832.1
Other	66.7	73.0	87.8	20.3	31.6
Total	**600.5**	**847.2**	**1000.3**	**18.1**	**66.6**
Non-Coffee	377.0	512.0	646.1	26.2	71.4

Source: National Bank of Ethiopia, 2005/06 Report

According to NBE (2005/06) report the total merchandise exports amounted to USD 1000.3 million in 2005/06, which was higher than 18.1 percent and 66.6 percent in 2003/04 and 2004/2005 respectively. The report indicated that the encouraging performance in the export sector was mainly attributed to improvements in earnings from all major exports items, except chat and fruits & vegetables. Export items such as oilseeds, meat and meat products, live animals and flowers recorded a noticeable performance.

As observed from NBE (2005/06) report, in 2005/06 the Ethiopian foreign exchange earnings from Coffee was USD 354.3 million which was higher than USD 335.2 million and USD 223.5 million in 2004/05 and 2003/04 respectively. On the other hand, revenue obtained from oilseeds was USD 82.7 million and USD 125 million in 2003/04 and 2004/05 respectively. However, the amount increased by 5.7 percent and reached USD 354.3 million in 2005/06. The earning from leather and leather products increased to USD 75 million in 2005/06 from USD 43.6 million in 2003/04. Similarly, the revenue obtained from Gold, Pulses live animal, fruit and vegetable flower, meat and meat products show a consistent increment in the mentioned period. On the other hand revenue obtained from chat and fruit &vegetable decline in the middle of the period despite an overall increment.

Similarly, during the period between 2008/09 and 2010/2011 Ethiopia's export continued to show an increment. According to NBE (2010/11) report, the total merchandise export shows a 37.1 percent increment from the previous year to reach USD 2.75 billion in 2010/11. In this period the country obtained increasing export revenue from coffee, gold, live animals, leather & leather products, meat & meat products, chat, pulses and flower. As stated in the report, the continuous improvement in receipts from export was driven by the rise in global commodity prices and expansion in volume of exports.

Table 4.2: Value of Major Export Items and Percentage Changes 2008/09 – 2010/11 (In millions of USD)

Export Commodities	2008/09	2009/10	2010/11	Percentage Change	
	A	**B**	**C**	C/B	C/A
Coffee	375.9	528.3	841.8	59.3	124
Oilseeds	365.1	358.5	326.6	-8.9	-8.3
Leather &Leather Product	75.3	56.4	103.8	84.1	37.9
Pulses	90.7	130.1	137.9	6.0	51.9
Meat & Meat Products	26.6	34.0	63.3	86.2	138.1
Fruit & Vegetables	12.1	31.47	31.5	0.1	159.6
Live Animals	52.7	90.7	147.9	63.0	180.7
Chat	138.7	209.5	238.3	13.7	71.8
Gold	97.8	281.4	461.7	64.1	371.9
Flower	130.7	170.2	175.3	3.0	34.1
Other	91.3	112.5	219.1	94.7	139.9
Total	**1447.9**	**2003.1**	**2747.1**	**37.1**	**89.7**

Source: National Bank of Ethiopia, 2010/11 Report

The NBE (2011) report also stated that the foreign earning from coffee export rose from USD 375.9 million in 2008/09 to USD 841.8 million in 2010/11. Similarly, the value of gold export reached to USD 461.7 million in 2010/11 from USD 97.8 million in 2008/09. On the other hand, the value of Oilseeds exports USD 356.1 million in 2008/09 has decreased by 8.5 percent to reach USD 326.6 million in 2010/2011.

In 2015/16 the country's export declined mainly due to external factors. According to the NBE (2016) report, the 2015/16 fiscal year witnessed poor performance in merchandise exports. The value of export was dropped by 5.0 percent compared to the previous fiscal year. According to the NBE (2016) annual report, the value of export in 2014/2015 was USD 3,019.1 million by showing an 8.5 percent decreased from 3,300.1 million USD in 2013/14. Similarly, the decline in value export also continued in 2015/16. In this year Ethiopia managed to obtain USD 2,869.7 million from export and it was a 5 percent decline from the previous fiscal year. According the mentioned report this was mainly due to lower international commodity prices of some export items such as coffee, oilseeds, gold, chat and leather and leather products. As per the report, in 2015/16 the revenue obtained from coffee, oilseeds, chat, live animals, leather & leather and electricity showed a decline as compared to the previous year by 7.4 percent, 6.4 percent, 8.8 percent, 3.7 percent, 0.5 percent, 12.4 percent and 26.5 percent, respectively. Hence, due to this the ratio of merchandise export to GDP declined from 4.9 percent from 2014/2015 to 4.1 percent in 2015/16 (NBE, 2016).

Table 4.3: Value of Major Export Items and Percentage Changes 2013/14 -2015/16 (In millions of USD)

Export Commodities	2013/14		2014/15		2015/16		Percentage Change	
	A	% Share	**B**	% Share	**C**	%Share	C/B	C/A
Coffee	714.4	21.6	780.5	25.8	722.7	25.2	9.3	-7.4
Oilseeds	651.9	19.8	510.1	16.9	477.2	16.6	-21.8	-6.4
Leather &Leather Product	129.8	3.9	131.6	4.4	115.3	4	1.4	-12.4
Pulses	250.7	7.6	219.9	7.3	232.4	8.1	-12.3	5.7
Meat & Meat Products	74.6	2.3	92.8	3.1	96.4	3.4	24.4	3.9
Fruit & Vegetables	45.9	1.4	47.6	1.6	53.7	1.9	3.7	12.9
Live Animals	186.68	5.7	148.51	4.9	147.8	5.2	-20.4	-0.5
Chat	297.35	9	272.42	9	262.45	9.2	-8.4	-3.7
Gold	456.2	13.8	318.7	10.6	290.7	10.1	-30.1	-8.8
Flower	199.7	6.1	203.1	6.7	225.3	7.9	1.7	10.9
Electricity	45.3	1.4	42.8	1.4	31..5	1.1	-5.5	-26.5
Others	247.4	7.5	251.4	8.3	212.3	7.4	1.6	-15.6
Total Export	**3300.1**	**100**	**3019.3**	**100**	**2867.7**	**100**	**-8.5**	**-5.0**
Total Export Excluding Electricity	**3254.8**		**2976.5**		**2836.3**		**-8.6**	**-4.7**

Source: National Bank of Ethiopia, Annual Report 2015/16

However, in contrast to what is observed in the country's major merchandise exports, other export items shown an improvement in terms of their share in GDP and revenue. Those items include pulses, meat & meat products, flower and fruit & vegetables. According to the report a relative improvement in price in the international market and growth in volume of supply contributed for the improvement in export of the above mentioned items (NBE, 2016). As per the report in 2014/15the share of pulses, meat & meat products, flower and fruit & vegetables export to the total merchandise export was 7.3 percent, 3.1 percent, 6.7 percent and 1.6 percent, respectively. Similarly, the increase in the share of those items to the total merchandise export continued to increase in next year. In 2015/16 the share was 8.1 percent, 3.4 percent, 1.9 percent and 7.9 percent for pulses, meat & meat products, flower and fruit & vegetables, respectively (NBE, 2016).

4.1.2.3. Destination of Ethiopia's Exports

In terms of the destination of exports, the bulk of Ethiopia's exports are to industrialized countries (Germany, the United States, Italy, France, the U.K., Japan, and Saudi Arabia), a pattern unchanged over the past ten years. The only exception may be the increasing importance of Asian countries (in particular, Japan and Saudi Arabia which have nearly equal shares). It can also be noted that a few countries such as Germany, Japan, Italy, and recently Saudi Arabia are increasingly important export destinations. The share of African countries, especially Djibouti, Kenya and Sudan is also increasing from which over the 90 percent accounts for Djibouti (Alemayehu, 2001, PP, 188).

Table 4.4: Share of Total Exports by Destination (1989–2003)

Export Destination	1988/89	1989-1996	1996	1999	2000/01	2001/02	2002/03
US	12.4	7.4	6.1	4.9	3.2	4.3	8.2
Germany	23.2	26.9	29.7	18.2	10.3	11.3	8.5
Italy	7.5	7.7	7.4	6.9	8.3	10.1	4.4
France	4.9	4.4	3.4	4.7	2.5	2.9	6.6
United Kingdom	1.9	3.9	3.1	2.24	3.0	3.6	1.9
Other Europe	0	8.3	7.2	8.8	1.3	1.4	3.4
Asia	15.1	29.6	29.7	35.2	17.5	113.6	9.0
Africa	0	10.7	12.4	18	16.6	7.1	12.1
Rest of the world	0	1.1	0.9	1	36.5	42.8	43.8

Source: Alemayehu (2001)

The overall export trends of Ethiopia with its trading partners indicated in the table 4.5 below for the years 2005/06 to 2015/16. As indicated in the figure, the overall export trends being the highest with Europe and next with Asia until the year 2013/14 and then the trend being the highest with Asia. The export trends with African countries stood third with slight increase over time.

Table 4.5: Share of Total Exports by Destination (2005/06-2015/16)

Destination	2005/06	2007/08	2008/09	2009/10	2010/11	2011/12	2013/14	2014/15	2015/16
Africa	17	14	17	23	18	19	23	20	21
Asia	39	35	36	31	27	30	35	38	37
America	6	8	6	5	5	3	5	7	7
Europe	38	42	42	41	50	47	38	34	34
Oceania	0	1	0	0	1	1	1	1	1

Source: National Bank of Ethiopia, Annual Reports from 2005/06 to 2015/16

4.1.3. Ethiopia's Economic Performance

4.1.3.1. Supply Side Perspective

Ethiopia, being one of the poorest countries in the world, has shown performances through registering double digit economic growth. Government has taken various reforms to the economy by opening up the economy to foreign direct investment and resulted in expansion of commercial agriculture and manufacturing industry. Following the 1970's and 1980's economic and debt crisis in the developing countries, the World Bank and International Monetary Fund (IMF) have recommended Structural Adjustment Program (SAP), which included reduction of trade barriers and opening of international trade to foreign competition. Accordingly, Ethiopia adopted these strategies in 1992. A study made on the impacts of liberalization on the Ethiopian trade performance by Seid (2008), found out that even though trade liberalization has positive impact on both export and import of the country, its impact is more to import than to exports, making the trade deficit of the country worse than before. However, even though some progresses have been made on trade deficit; under-developed financial system and unemployment are still Ethiopia's main economic constraints.

As shown in Table 4.6, the average real GDP growth for the Imperial period was 3.6 per cent per year on average. For the same period, agriculture, Industry and Service grew by 3.7,-1.6 and 2.8 percent per annum, respectively. Similarly during the Derg regime average annual real GDP growth was 1.56 percent on average. Agriculture and Industry grew by 1.8 percent per year on average and Service grew by 1.6 per year on average.

Over the last thirteen consecutive years (i.e. during 2003/04 – 2015/16), the economy has registered rapid and sustainable growth. Accordingly, in this period the annual average growth rate of GDP was 10.6%. The agriculture, industry and service sectors' annual average growth were 8.3%, 14.7% and 11.7% respectively. In the last six years (2010/11-2015/16)

Growth and Transformation Plan (GTP I & II) implementation period, the economy has also registered robust growth. In this period, the annual average growth rate of the economy was 9.8%. Agriculture, industry and service sectors had 5.9%, 20.0%, and 10.6% annual average growth rates respectively (NPC, 2015/16).

Table 4.6: Average Growth Rates of GDP by Major Sectors at Constant Basic Prices (%)

Sector	1960/61-1973/74	1974/75-1990/91	1991/92-2013/14	2003/04-2015/16	2010/11-2015/16
Agriculture	3.7	1.8	5.3	8.3	5.9
Industry	-1.6	1.8	10.1	14.7	20.0
Services	2.8	1.7	9.2	11.7	10.6
Gross Value Added at Constant Prices	3.6	1.6	7.2	10.6	9.8

Source: Own computation based on National Planning Commission: National Economic Accounts 2015/16 Annual Report and Ethiopian Economic Association.

The Ethiopian economy has shown progressive growth performance over the past decades, particularly during the Growth and Transformation Plan I (GTP I) period, the economic growth (GDP at constant basic price) for 2015/16 is estimated to be 8.0%. As per the estimates, annual growth rates of the major sectors, i.e. agriculture, industry and service were 2.3%, 20.6% and 8.7%; respectively (NPC, 2015/16).

Table 4.7: Contributions to GDP Growth by Major Sectors at Constant Basic Prices (%)

Sector	2013/14	2014/15	2015/16
Agriculture	2.3	2.5	0.9
Industry	2.2	2.7	3.1
Services	5.8	5.2	4.0
Gross Value Added at Constant Price	10.3	10.4	8.0

Source: National Planning Commission: National Economic Accounts 2015/16 Annual Report

As shown in the table 4.8 below during imperial regime the share of agriculture, industry and service in the average of annual GDP is 66.5 percent, 8.4 percent and 25.1 percent respectively. Similarly, in the period of Derg regime the share of agriculture, industry and

service in the average of annual GDP is 56.2 percent, 10.3 percent and 33.5 percent, respectively. During the EPRDF government the share of agriculture, industry and service in the average of annual GDP is 50.4 percent, 10.8 percent, and 39.4percent, respectively. In the last three years, slight structural change of the economy has been observed. Thus, the shares of the major sectors, agriculture, industry and services out of the total GDP were about 36.7, 16.7 and 47.3 percent, respectively (NPC, 2015/16).

Table 4.8: Percentage Distribution of GDP by Major Sectors

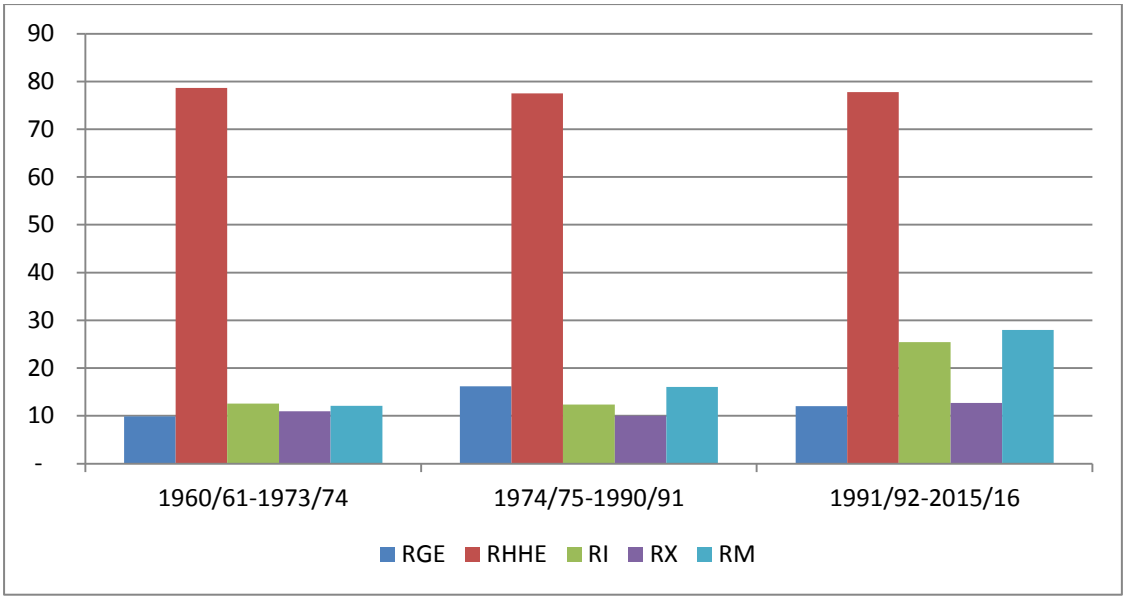
Sector	1960/61-1973/74	1974/75-1990/91	1990/91-2015/16	2013/14	2014/15	2015/16
Agriculture	66.5	56.2	50.4	39.9	38.4	36.4
Industry	8.4	10.3	10.8	13.7	14.9	16.6
Service	25.1	33.5	39.4	46.4	46.7	47.0
Gross Value Added at Constant Basic Price	100	100	100	100.0	100.0	100.0

Source: Own computation based on National Planning Commission: National Economic Accounts 2015/16 Annual Report and Ethiopian Economic Association.

4.1.3.2. Demand Side Perspective

As shown in the figure 4.1 below, for the periods 1960/61 – 2015/16 the dynamics of aggregate demand in Ethiopia is mainly driven by private consumption being followed by investment. The aggregate demands have shown steady growth until 1993/94 and then showing progressive increment.

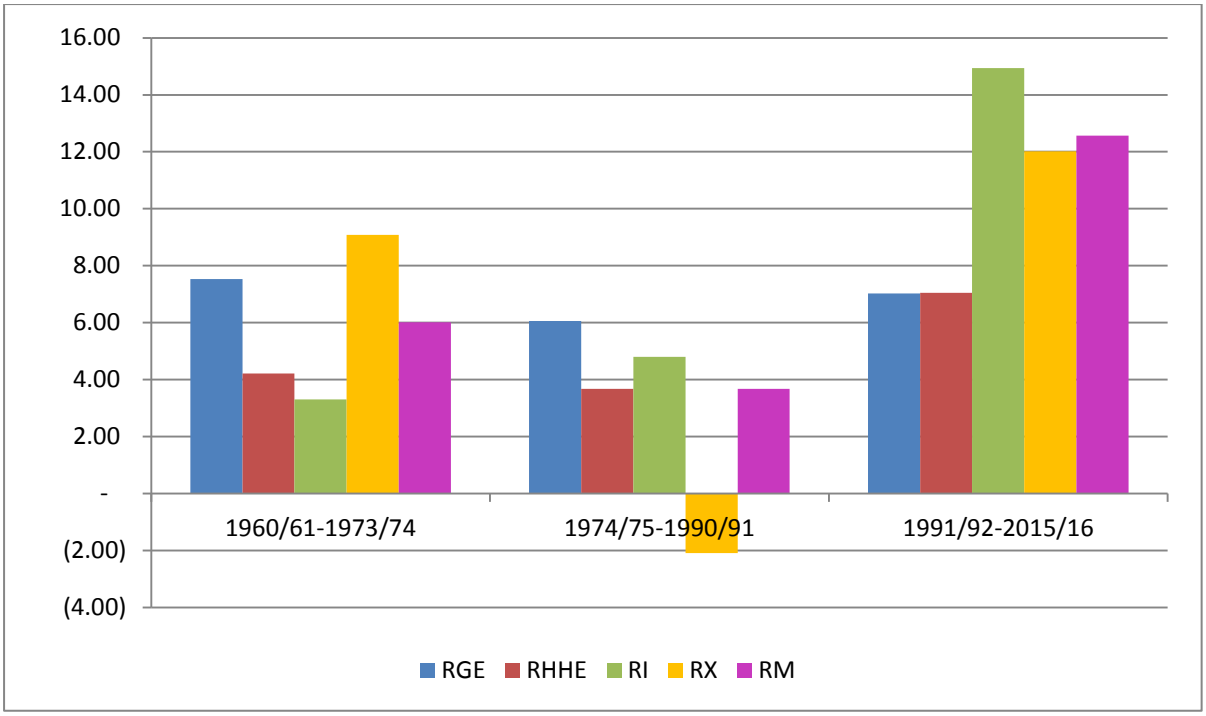
Private consumption has been contributing to GDP 79, 77 and 78 percent during the Imperial, Derg and post-Derg regimes, respectively while investment was making contribution of 13, 12 and 25 percent, respectively for the same periods.



Source: Own Computation from Ethiopian Economic Association and National Planning Commission

Figure 4.1: Components of Aggregate Demand, as % of GDP

As shown in the figure 4.2,the average share of Export during Imperial, Derg and EPRDF regime have been 11%,10% and 13% of GDP respectively and the average annual real growth rate of export during Imperial, Derg and EPRDF have been registered 9.08%, -2.09% and 12.1% respectively. In case of import the average share of import during Imperial, Derg and EPRDF regime have been 12% , 16% and 28% of GDP respectively and the average annual real growth rate of export during Imperial, Derg and EPRDF have been registered as 6.01%, 3.67% and 12.57%, respectively.



Source: Own Computation from Ethiopian Economic Association and National Planning Commission

Figure 4.2; Average Real Growth Rates of Components of Aggregate Demand by Regimes

4.2. Descriptive Analysis

Before going to provide the detailed but comprehensive econometric analysis, we give the brief interpretation of statistical analysis. Table 4.9 reports the descriptive statistics and interprets that the average real GDP growth is 5.52% with7.71standard deviation. The average real government expenditure growth is 6.85% with standard deviation of 14.59. The average real growth rate of household expenditure is 5.34% with standard deviation of 8.86. The average real growth rate of investment is 9.05% with standard deviation 18.86. The average real growth rate of export is 6.96% with standard deviation of 22.67 and at last the average real growth rate of import is 8.30% with standard deviation of 16.17.

Skewness is a measure of departure from symmetry. the variables real growth rate of gross domestic product ($RGDP_g$), real growth rate of government expenditure (RGE_g) and real growth rate of household expenditure ($RHHE_g$) included in our analysis are negatively skewed or skewed left, meaning that the left tail is longer than the right and variables real growth rate of investment (RI_g), real growth rate of export (RX_g) and real growth rate of

import (RM_g) the data are positively skewed or are rightward skewed meaning that the right tail of the distribution is longer than the left.

Kurtosis measures the peakedness or flatness of the data relative to the normal distribution. The coefficient of Kurtosis of the variables indicate that the real growth rate of gross domestic product ($RGDP_g$), real growth rate of government expenditure (RGE_g), real growth rate of household expenditure ($RHHE_g$),real growth rate of investment (RI_g), real growth rate of export (RX_g) and real growth rate import (RM_g) are called leptokurtic. Compared to a normal distribution, its tails are longer and flatter, and often its central peak is higher and sharper. Skewness and Kurtosis jointly determine whether a random variable follows a normal distribution.

Table 4.9 Descriptive Statistics

	$RGDP_g$	RGE_g	$RHHE_g$	RI_g	RX_g	RM_g
Mean	5.522472	6.848486	5.335343	9.053947	6.960468	8.269983
Median	5.800010	7.170799	5.382556	7.155698	3.060257	6.267713
Maximum	23.86925	45.69129	28.29910	81.14859	116.4258	85.61261
Minimum	-21.12120	-47.23846	-24.37857	-26.74097	-30.05913	-26.53130
Std. Dev.	7.712246	14.57825	8.861521	18.85966	22.67018	16.17094
Skewness	-0.923020	-0.392705	-0.433732	1.091130	2.228322	1.937812
Kurtosis	5.067403	5.738278	4.729098	5.691994	11.39598	11.10646
Jarque-Bera	17.60463	18.59696	8.576043	27.52082	207.0617	185.0179
Probability	0.000150	0.000092	0.013732	0.000001	0.000000	0.000000
Sum	303.7360	376.6667	293.4439	497.9671	382.8258	454.8491
Sum Sq. Dev.	3211.851	11476.37	4240.434	19207.08	27752.60	14120.97
Observations	55	55	55	55	55	55

Source: Results from Eviews 9.5

4.3. Econometric Analysis

4.3.1. Augmented Dickey-Fuller (ADF) Tests

Prior to the test of co-integration, the researcher conducted a test of order integration for each variable of interest to be sure that the variables are I(0) and/or I(1), not I(2). It will convince us whether or not the ARDL model can be applied for this particular study. As it was noted, the standard augmented Dickey-Fuller (ADF) unit root tests are used to check the order of integration of variable of interest. The tests are undertaken in two alternatives, constant but no trend and constant with trend methods. As seen from the following table, all variables are

stationary in level at 1percent level of significance in the test statistic either in constant and no trend or constant and trend. This is due to the fact that all variable are expressed in growth form and hence, no first difference or second difference is required. Moreover, ARDL model can be applied for the study.

Table 4.10: ADF at level and at first difference: 1961/62-2015/16

Variables	At Level	
	Constant No trend	Constant Trend
RGDPg	-11.65971***	-13.41440***
RGEg	-6.845261***	-6.777843***
RHHEg	-12.89735***	-14.20101***
RIg	-8.655571***	-6.329591***
RXg	-7.286917***	-7.228953***
RMg	-8.528655***	-8.606602***

Note: The rejection of the null hypothesis is based on MacKinnon (1996) critical values. Akaike information criterion (AIC) is used to determine the lag length while testing the stationarity of all variables. The *** denoted the rejection of the null hypothesis of non-stationary at 1%, significant level.

4.3.2. Long Run ARDL Bound Test for Co-Integration

After testing the stationarity of the variables, the next task is to estimate the long-run relationship among the variables. As can be seen in the following table, calculated F-statistics value is 10.40 which is higher than the upper bound critical value (4.15) at one percent level, declaring that rejection of no co-integration and indeed long run co-integration between the dependent and independent variables is evidenced.

Table 4.11: Long Run ARDL Bound Test

Test Statistic	Value	k
F-statistic	10.39656	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

After confirming the existence of long-run relationship among variable of interest, the next step in ARDL model is estimating the long-run coefficient of the model. It is about examining the effect of export and other regressors on economic growth of Ethiopia.

4.3.3. ARDL Model (RGDPg= F (RGEg, RHHEg, RIg, RXg, RMg))

4.3.3.1. Long –Run Model Estimation

As indicated in table4.3 the estimated coefficient of growth rate of Real Government expenditure, growth rate of real household expenditure, growth rate of real capital formation (I), growth rate real export (X), growth rate of real import and policy dummy have the hypothesized sign. Furthermore, all independent variables are significant at 1%, in the long-run.

Real export have significant and positive effect on economic growth and consistent with other findings (Chemeda (2010), A one percent growth in export leads to a 0.212 percent economic growth, ceteris paribusas, at one percent level of significant.The result is not unusual, as the country is exporting primary agricultural products in which its demand in the international market is very low. It is argued that low level of export adversly affect the economic growth of the country by genereting small amount of foreign currency paved the

way not to purchase productive intermediate and capital goods for a beter productive effieciency. The finding is inconsistent with the findings of Nguyen (2017), Kreishan (2012).

Furthermore, a one percentage growth of real household consumption leads to about a parallel one percent economic growth in the long run which indicates that an increase in aggregate consumption of the population derives approximately an equal chance for supplier /producers to produce more and more thereby leads for sustainable economic growth as producers have enough market for the products. This indicate that domestic household consumption demand on goods and services have highest motivational influence on economic growth of the country.

Government expenditure growth has a positive and considerable effect on economic growth in the long- run. The result depicted that a one percent change in the growth of government expenditure leads to, on average, a 0.124 percent change in economic growth, other things being constant. The result is not unusual, as the role of governemnt intervation through expenditure has brough magnificent effect to the economy where there is market imperfection, information asymetry, economic uncertainity and infant industry. The finding is consistence with many researches (Wang, et.al (2016), Lupu and Asandului (2017), Idris and Bakar (2017), Adu and Ackah (2015), Gemmell, et.al. (2014)), but other findings showed the negative effect of government expenditure for economic growth (Mu'azu and Mohammad (2015), O. Diyoke, et.al. (2017)).

Similrly, growth of real gross capital formation (investment) has a positive and significant effect for long run economic growth. A one percent growth of real investment brings, on average a 0.147 percent economic growth. The findings is consistence with the findings of Almasaied, et.al. (2008), Umer (2014).

On the other hand, growth of import is highly significant but of negative effect for long-run economic growth. A one percent growth in import results, on average,a decline of GDP growth by 0.326 percent, ceteris paribusas. It is not surprising as the variable mainly constituted imported good which are mainly used for final consumption purpose, while imported intermediate goods and captital goods which are used for capital formation (investment) for future return are Categorizedin capital formation (Investment category).

Table 4.12: Estimated Long Run Coefficients using the ARDL Model

ARDL Cointegrating And Long Run Form
Dependent Variable: LNGDP
Selected Model: ARDL(3,3,1, 4, 4, 4)

Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)

Regressor Variables	Coefficient	Std. Error	t-Statistic	Prob.
RGE_g	0.124087	0.035714	3.474500	0.0019
$RHHE_g$	0.965398	0.067043	14.399606	0.0000
RI_g	0.146777	0.027079	5.420289	0.0000
RX_g	0.212486	0.036429	5.832867	0.0000
RM_g	-0.326029	0.056689	-5.751144	0.0000
C	-0.457930	0.438764	-1.043681	0.3066

Note: D considers the effect government policy change and ***, ** and * indicates the significance of the coefficients at 1%, 5% and 10% level of significance respectively.

4.3.3.2. Diagnostic and Stability Tests for the Long Run Model

Finally, in order to check for the estimated ARDL models, the significance of the variables and other diagnostic tests such as serial correlation, functional form, normality, heteroskedasticity, and structural stability of the model have been considered. The results are reported in the table4.11. The empirical results show that the ARDL model fruitfully passes all the diagnostic tests. The Breusch-Godfrey LM tests indicated that no serial-correlation; the Jarque-Bera test confirms the normality of the error term (residual term is normally distributed). In addition to this, the model has passed the Ramsey reset test which indicates that the functional form of the model is well specified. The Breusch-Pagan Test also showed that there is no heteroskedasticity. (See appendices)

Table 4.13: Results of diagnostic tests

Diagnostic Tests		
Test Statistics	**CHSQ- statistic**	**F-statistic**
Breusch-Godfrey Serial CorrelationLM tests	LM-CHSQ(4)= 7.429006[0.1149]	F(4, 21)= 0.895143[0.0.4843]
Jarque-BeraNormality test	Jarque-Bera =0.517161[0.772147]	
Breusch-Pagan-GodfreyHeteroskedasticity test	CHSQ(25)= 23.78848[0.5316]	F(25, 25)= 0.874206[0.6303]
Functional form	Ramsey RESET test	F(4,21)=0.147597[0.9620]

As figures 4.3 and 4.4 depicts the plot of both CUSUM and CUSUMQ residuals are within the boundaries. The stability of the parameters has remained within its critical bounds of parameter which showed the absence of any instability of the coefficients. Hence, from these two graphs, we can confirm the stability of the long-run coefficient of the real GDP function.

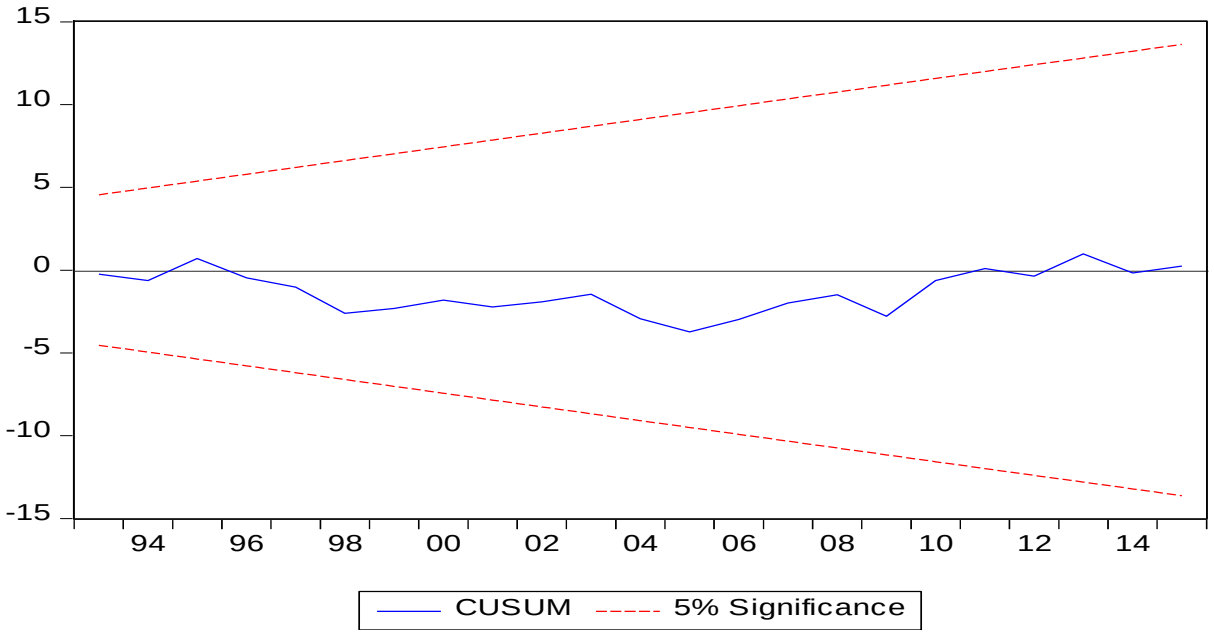


Figure 4.3 Plot of cumulative sum of recursive residuals

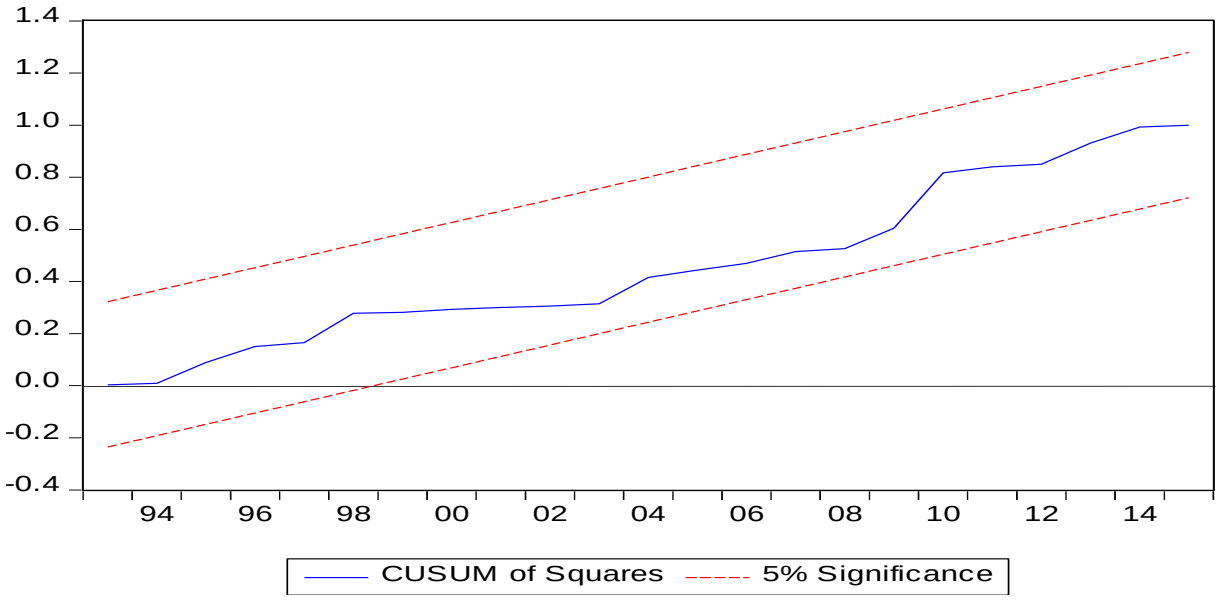


Figure 4.4 Plot of cumulative sum of squares of recursive residuals

4.3.3.3. Short Run Error Correction Elasticity Estimates of Model

After estimating the long-term coefficient, we proceed to obtain the error correction representation of the model. As discussed, the error correction term (ECT) indicates the speed of adjustment to restore equilibrium in the long-run. It signifies how quickly variables converge to equilibrium and it should have a statistically significant coefficient with a

negative sign. When the error correction terms are highly significant, it indicates the existence of a stable long-run relationship Bannerjee, et.al. (2003)

As it is shown in table 4.14 ECM is statistically significant at 1 percent significant level with the expected negative sign. This implies that the error correction process converges monotonically to the equilibrium path quickly. This also confirms the existence of the co-integration relationship among variables. The equilibrium correction coefficient of (ECM (-1)) is estimated -0.947 has the correct sign, and imply a fairly high speed of adjustment to attain equilibrium after a shock. Around 95% of previous year disequilibrium from the previous year's shock converged back to the long-run equilibrium in the current year.

As we see from the table 4.14 the sign of the short run dynamic impact are maintained to the long run in short run. The table has also indicated, in short-run, *ceteris paribus*, House Hold consumption expenditure, Government consumption expenditure, capital formation (investment) and export has a significant and positive contribution for short-run economic growth at one percent significant level.

In line with this, a one percent increase in the growth of export brings an average 0.109 percent increase in growth of GDP in short run, ceteris paribus. The result confirmed that the effect of growth of export to economic growth is higher in long run than short-run.

In passing, on average, about 0.75% economic growth could be registered if household consumption expenditure growth increased by one percent in short run, other things being constant. Similarly, a one percent goes up in growth of Government expenditure and investment, in short run, contributed about a 0.09% and 0.18% increment of growth of Real GDP, respectively. Furthermore, results of dummy variable to capture for government change showed a 12.16 percent went down of economic growth.

Table 4.14: Error Correction Representation for the Selected ARDL Model

Approach: ARDL (3, 3, 1, 4, 4 and 4) selected based on Akaike info Criterion (AIC)

Cointegrating Form				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
$D(RGE_g)$	0.087889	0.014837	5.923704	0.0000
$D(RHHE_g)$	0.746554	0.024604	30.342447	0.0000
$D(RI_g)$	0.176611	0.011665	15.140692	0.0000
$D(RX_g)$	0.108764	0.010992	9.894552	0.0000
$D(RM_g)$	-0.139938	0.019799	-7.067819	0.0000
D(DUMMY)	-12.161410	1.614764	-7.531384	0.0000
ECM(-1)	-0.946793	0.116373	-8.135871	0.0000

$$ECM = RGDP_g - 0.1241 * RGE_g - 0.9654 * RHHE_g - 0.1468 * RI_g - 0.2125 * RX_g + 0.3260 * RM_g + 10.9821 * DUMMY + 0.4579$$

R-squared	0.989195	Mean dependent var	5.533531
Adjusted R-squared	0.978390	S.D. dependent var	8.007086
S.E. of regression	1.177062	Akaike info criterion	3.470579
Sum squared resid	34.63689	Schwarz criterion	4.455431
Log likelihood	-62.49975	Hannan-Quinn criter.	3.846920
F-statistic	91.55078	Durbin-Watson stat	2.011799
Prob(F-statistic)	0.000000		

CHAPTER FIVE
CONCLUSION AND POLICY IMPLICATIONS

5.1. Conclusion

The major objective of the study is to empirically investigate the impact of real export growth on Ethiopia's real economic growth using descriptive analysis and Keynes aggregate demand model for the period 1960/61-2015/16 by using ARDL bounds test approach to co-integration. According to the findings from the descriptive analysis, the value of Ethiopia's total merchandise exports has increased by more than 40 times during the last five decades. However, the increase has not been uniform over the three regimes.

According to the econometric analysis, the main finding of the study, at a broad level, is that the rate of growth of real export has a positive and significant effect on the rate of economic growth both in short-run and long-run, but the effect is higher in the long run than in the short run. Moreover, growths in government expenditure, household expenditure and investment have a positive and significant effect in long-run as well as short-run. On the other hand, growth of real import has negative and significant effect on economic growth both in short run and long-run.

The finding also suggested that the long-run effect of real export growth to Ethiopian economic growth is weak as compared to other variable in the model. Like many developing countries, household consumption expenditure and government expenditure plays significant contribution for the country's economic growth. Furthermore, the finding confirmed that Keynes aggregate demand approach well exercises in Ethiopian economy in which government expenditure, household expenditure, investment and net export has a positive spillover effect on the Ethiopian economy.

5.2. Policy Implications

The empirical finding confirmed that the demand of exportable goods in the international market is very low and its potential as an engine for economic growth is relatively weak. The country's exportable goods are vulnerable to price swings because the export sector is dominated by unprocessed and undifferentiated agricultural products. Thus, much effort

should be undertaken by the stakeholders' to supply globally competitive products in the international market. To that effect the writer recommends the following policy suggestions in order to develop a more competitive trade environment in Ethiopia:

i. Diversification of production and export of goods – promoting vertical and horizontal diversification. Promoting vertical diversification through moving between different categories of goods. This mainly requires taking measure on the shift from primary commodities to manufacturing through encouraging value addition mechanism. Diversifying production horizontally by expanding the export basket through adjusting shares of commodities in the existing export mix and/or adding new commodities.
ii. Expansion of industrial parks – as industrial parks plays role in attracting foreign direct investment, emphasis should be given in the expansion of parks that promote the agricultural products value chain.

References

Abdulrazak, U. M. and Lawali, M. (2015). Government Expenditure and Economic Growth in Nigeria, 1970-2010: ARDL Bounds Test Approach. International Journal of Business Administration and Management Research 1(1).

Abebe., G. A.,(2014). Dynamic Effects of Foreign Trade on Economic Growth : The Case of Ethiopia, Submitted in Partial Fullfilment of the Requirements for the Degree of Master of Economics, Indira Gandhi National Open University

Adeel,S., & Maqbool, H. S. (2015). Exports-Growth nexus in Pakistan: Cointegration and Causality Analysis. Pakistan Economic and Social Review, 53(1), 17-46.

Adeleye, J. O., Adeteye, O. S., & Adewuyi ,M. O. (2015). Impact of International Trade on Economic Growth in Nigeria.

Admit, W., Wakiaga, J., & Haile, K. (2016). African Economic Outlook 2016:Ethiopia.

African Development Bank, (2015). African Development Report.

Alemayehu, G. (2009). Fundamentals of International Economics for Developing Countries: (Vol. Volume I: Trade Theory and Policy). Nairobi, Kenya.

Alemayehu, G. (2001). Macro Economic Performance in Post-Derg Ethiopia. Norteast African Studies

Alemayehu, S. T. (2015). Ethiopia's External Trade Performance in the Recent Past. Paper to be submitted at the 13th International Conference on the Ethiopian Economy.

Anwar, R. and Andi, A. A.(2014).The Effects of Consumption, Private Investment, and Government Expenditures on Economic Growth in South Sulawesi, Indonesia.Journal of Economics and Sustainable Development.

Appleyard, D. R., & Alfred J. Field, J. (2004). International Economics 8th edition (Eighth ed.). New York: The McGraw-Hill Companies.

Arestis, P., & Sawyer, M. (1994). The Elgar Companion to Radical Political Economy. Hants GU II 3HR: Edward Elgar Publishing Limited.

Bahmani, O, M.(2001). Real and Nominal Effective Exchange Rates of Middle Eastern Countries and Their Trade Performance. Applied Economics.

Bernhofen, D. M. (1999). Intra-industry trade and strategic interaction: Theory and evidence. Journal of International Economics 47 (1999).

Biru, P.P.(2014). Testing Export-Led Growth in Bangladesh: An ARDL Bounds Test Approach. International Journal of Trade, Economics and Finance, 5(1).

Chien-hui, L.& Bwo-nung,H.(2002). The Relationship between Exports and Economic Growth in East Asian Countries: A Multivariate Threshold autoregressive approach. *Journal of Economic Development*, 27(2), 45-46.

Christiana, O. B., & Paul, F. M. (2017). Macroeconomic Determinants of Household Consumption Expenditure in Ghana: A Multivariate Co-integration Approach. International Journal of Economics and Financial Issues.

Ciuriak, D., Lapham, B., & Wolfe, R. (2011, April). New-New Trade Policy. Queen's Economics Department Working Paper No. 1263. Kingston, Ontario, Canada.

Dan, L. and Mircea, A. (2017). The Nexus between Economic Growth and Public Spending in Eastern European Countries. Nzinerine Ekonomika-Engineering Economics, 28(2), 155–161

Debele, G. (2002). Exports and Economic Growth in Ethiopia: an Empirical Investigation. A thesis Submitted to the School of Graduate Studies of Addis Ababa University in partial fulfilment of the requirements for the Degree of Master of Science in Economics (Economic Policy Analysis). Addis Ababa.

Denu, Lemma & Tsegaye (2015). Trade and Growth Nexus in South Korea: Analysis Using Vector Error Correction Model and Granger Causality Test. Global Development Network Working Paper Series. Working Paper No. 88. November 2015.

Engle, R. & Granger, C. (1987). Cointegration and Error Correction Representation: Estimation and Testing. Econometrica, 55, 251-276.

Farrokh, L., & Petter.T, M. (2014). International trade and Global Macro-policy. Berlin.

Frank, A. and Ishmael, A. (2015). Visiting the Government Spending and Growth analysis in Ghana: A disaggregated Analysis. Africa Centre for Economic Transformation, Accra and Department of Economics, University of Portsmouth, UK. Munich Personal RePEc Archive.

Faye, E. C.(2001). The role of Export in Economic Growth With the reference to Ethiopia Economy.

Faiza, U.(2014). Impact of Trade Openness on Economic Growth of Pakistan: An ARDL Approach. Journal of Business & Economic Policy.

Fuad M. K.(2012). FDI and export-led growth in Jordan: evidence from co-integration and causality test. Fiji National University. Working papers.

Fugazza, M. (2004). Export Performance and Its Determinants: Supply and Demand Constraints. Policy Issues In International Trade and Commodities Study Series No. 26. New York and Geneva, Swizerland: United Nations Publication .

Gebreyessus, G. (2011, June). Explaining Ethiopia's foreign trade potential: A dynamic Gravity model approach. Postgraduate Thesis. Addis Ababa, Ethiopia.

Ghatak, S. & Siddiki, J. (2001). The Use of ARDL Approach in Estimating Virtual Exchange Rates in India. journal of applied statistics,11:573-583.

Girma, E. (1982). An Anlysis of the Relationship between Ethiopian's Foreign Trade and Gross Domestic Product. School of Graduate Studies, Addis Ababa University.

Greene, W. (2003). Econometric Analysis." Fifth Edition. Prentice Hall, USA, 640-647.

Greene, W. H. (2012). Economic Analysis: NewYowk University, Pearson Education.

Griffin, & Pustay. (2010). International Business:International Trade and Investment. Pearson Education, Inc.

Gujarati, D. N. (1995). Basic Econometrics, Macgraw-Hill, New York.

Gujarati, D. N. (2003). Basic Econometrics.4th ed., Mc Graw Hill co.,NewYork.

Gujarati, D. (2004). Basic Econometrics, Fourth Edition." McGraw-Hill Companies 810-820.

Gujarati, D. (2009). Basic Econometrics. Fifth Edition. The McGraw-Hill Series Econometrics.

Gulzar, A., Zhaohua ,L., and Muhammad , A. (2016). Evaluating the Importance of Exports and Its

Gwaindepi, C., Musara, M. & Dhoro, N. L. (2014). Relationship between International Trade and Economic Growth: A Cointegration Analysis for Zimbabwe. Mediterranean Journal of Social Sciences, Volume 5 No 20.

Harris, R. (1995).Using Co integration Analysis in Econometric Modeling, Prince-hall.

HarryLandreth& David C. Colander (n.d.). History of Economic Thought, 4th edition (Fourthed.):Boston Toronto-Houston Mifflin Company.

Huang, C.-h.L.-n. (2002). The relationship between Exports and Economic Growth in East Asian Countries: A Multivariate threshold autoregressive approach. Journal of Economic Development.

Ibrahim, & Wang. (2013). The Rise of Agri-Business Enterprises Desire towards Market Shares and the Need for Global Strategic Marketing Management. Journal of Global Economics.

ITC. (2014). A Policy Road Map For Export Success. Technical paper. Geneva, Switzerland: International Trade Centre (ITC).

Jacob, M., Nyambe and J. N. Kanyeumbo (2015). Government and Household Expenditure Components, Inflation and Their Impact on Economic Growth in Namibia.European

Journal of Business, Economics and Accountancy.European Journal of Business, Economics and Accountancy

Jan, P., (2016). Ethiopia's High Growth and Its Challenges – Causes and Prospects. Institute for International Political Economy BerlinWorking Paper, No. 70/2016

Johansen, S. (1988). Statistical Analysis of Co-integration Vectors. Journal of Economic Dynamics and Control 12: 231-54.

Johansen, S. & Juselius, K. (1990). Maximum Likelihood Estimation and Inference of Cointegration - with Applications to the Demand for Money. Oxford Bulletin of Economics and Statistics52:169-210.

Kagnew, W. (2007, March). Export Performance and Economic Growth in Ethiopia March 2007.

Kenneth ,O. D., Abubakar, Y. and Erkan, D. (2017). Government Expenditure and Economic Growth in Lower Middle Income Countries in Sub-Saharan Africa: An Empirical Investigation. Asian Journal of Economics, Business and Accounting.

Krugman, P. R., & Obstfeld, M. (2003): International Economics: Theory and Policy (Sixth ed.). 2003: Pearson Education International.

Krugman, P. R., Obstfeld, M., & Melitz, M. J. (2012). International Economics Theory & Policy. (9th, Ed.) Boston: Pearson Education, Inc.

Lingxiao, W., Adelina, D. P. and Handuo, X.(2016). The relationship between public expenditure and economic growth in Romania: Does it obey Wagner's or Keynes's Law? Theoretical and Applied Economics.Volume XXIII , No. 3(608), autumn, pp. 41-52.

Majeed, M. T. (2006, March). Determinants of Exports in Developing Countries. Article in Pakistan development review. Islamabad., Pakistan: Pakistan Institute of Development Economics,.

MoFED, Ministry of Finance and Economic Development (2010).Growth and Transformation Plan, 2010/11 – 2014/15. Volume 1: Main Text. The Federal Democratic Republic of Ethiopia, Addis Ababa.

Miftahu, I. and Rosni, B. (2017). Public Sector Spending and Economic Growth in Nigeria: In Search of a Stable Relationship. Asian Research Journal of Arts & Social Sciences. 3(2): 1-19.

Mulugeta, F. (2014).The Impact of External Debt on Economic Growth in Ethiopia. A Thesis Submitted to the Department of Economics Addis Ababa University.

Mounir, B. (2014). The relationship between Trade, FDI and Economic growth in Tunisia: An application of autoregressive distributed lag model, Faculty of Economics and Management of Sousse, University of Sousse, 38(2), 269-287.

Narayan, P. (2005). The saving and Investment Nexus for China: Evidence from Co-integration Tests .Applied Economics, 37: 1979-1990.

NBE. (2005/06). Annual report 2005/06. Addis Ababa: National Bank Of Ethiopia .

NBE. (2010/11). Annual report 2010/11. Addis Ababa: National Bank Of Ethiopia .

NBE. (2015/16). Annual Report 2015/16. Addis Ababa: National Bank of Ethiopia (NBE).

National Planning Commission. (2016, May). FDRE Growth and Transformation Plan II (GTP II). Addis Ababa, Ethiopia: National Planning Commission.

Neddy, S.,Irene, K., Kibet, B. and John, K. (2013): Effect of International Trade on Economic Growth in Kenya. European, Journal of Business and Management. Vol.5, No.10, 2013

Nega, M. (2013, November). What Determines the Export Performance of Ethiopia: A Time Series Analysis . Post Graduate Thesis. Addis Ababa, Ethiopia.

Nelson, C. & Plosser, C. (1982). Trends and Random Walks in Macroeconomic Time Series: Some Evidence and Implications. Journal of Monetary Economics Letters 94:389-95, Vol. 10, PP. 130-162

Nhung, T. K. N. (2017). The Long Run and Short Run Impacts of Foreign Direct Investment and Export on Economic Growth of Vietnam.Asian Economic and Financial Review.

OECD/AfDB. (2002). African Economic Outlook 2002 report

OECD/AfDB. (2003). African Economic Outlook 2003 report. Paris: OECD Publications Service.

Peng, S. and Almas, H. (2010). International Trade and its Effects on Economic Growth in China. Discussion Paper No. 5151, August 2010.

Pesaran, M. H. & Pesaran, B. (1997). Working with Microfit 4.0: Interactive Econometric Analysis, Oxford University Press.

Pesaran, M. H., Shin, Y. & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. Journal of Applied Econometrics 16: 289-326.

Pesaran, M. H. & Smith., A. (1998):. Structural Analysis of Cointegration VARS. journal of economic surveys 12(5): 471-505.

Qazi, M. & Adnan, H. (2012). Exports, imports and economic growth in China: an ARDL analysis, Institute of Business Management (IOBM), Karachi, Pakistan.

Salvatore, D. (2008). Introduction to International Economics (3rd ed.).

Seid,H. (2008).The Impact of Trade Liberalization on Ethiopian Export, Import and GDP. Master thesis for the Master of Philosophy in Environmental and Development Economics, Department of Economics, University of Oslo.

Senait, G. (2014). The Contribution of Export Earnings to Economic Growth of Ethiopia: A Trend Analysis. M.A. Thesis in Rural Development, Institute of Agricultural Development Studies. Addis Ababa, Ethiopia.

Simon, B. (2014). An Empirical Analysis of the Relationship between Export Performance and Economic Growth in Ethiopia. A Project Submitted to the College of Bussiness and Economics, Addis Ababa University.

Soressa,. T. J.(2013). Exports, domestic demand and economic growth in Ethiopia: Granger causality analysis, Department of Economics, Mizan-Tepi University, Ethiopia, Journal of Economics and International Finance, 5(9), 357-372.

Suleiman W. A., Ahmad, Z.B. and Salim, R.(2008). The Impact of Domestic and Foreign Direct Investments on Economic Growth: Evidence from ASEAN Countries. University Putra Malaysia Press.

Teshome, A. (2016). Government Interventions, Economic Growth and Development in Ethiopia

Thelle, M. H., Jeppesem, T., Gjodesen-Lund, C., & Biesebrock, J. V. (2015): Export Performance and Poverty Reduction: Assessment of economic benefits generated by. Brussels: EU publication Office.

Todaro, M. (1994): Economic Development. Fifth Edition, Longman Publishing, New York.

Todaro, M. P., & Smith, S. C. (2012). Economic Development. Boston: Pearson Education, Inc.

UNCTAD . (2005). Developing Countries in International trade : Trade and Development Index 2005. New York: United Nations Publication.

UNCTAD. (2008). Export competitiveness and development in LDCs: policies,issues and priorities for LDCs for actionduring and beyond UNCTAD XII. New York and Geneva: UN Publications.

UNCTAD. (2012). Handbook on Duty-Free (DFQF) and Rules of Origin. Hhandbook. New York and Geneva: United Nations Publication.

Verter, N. (2015). The application of International trade theories to Agriculture. Mediterranean Journal of Social Sciences , 210-212.

Viner, J. (n.d.). Studies in the theory of international trade.

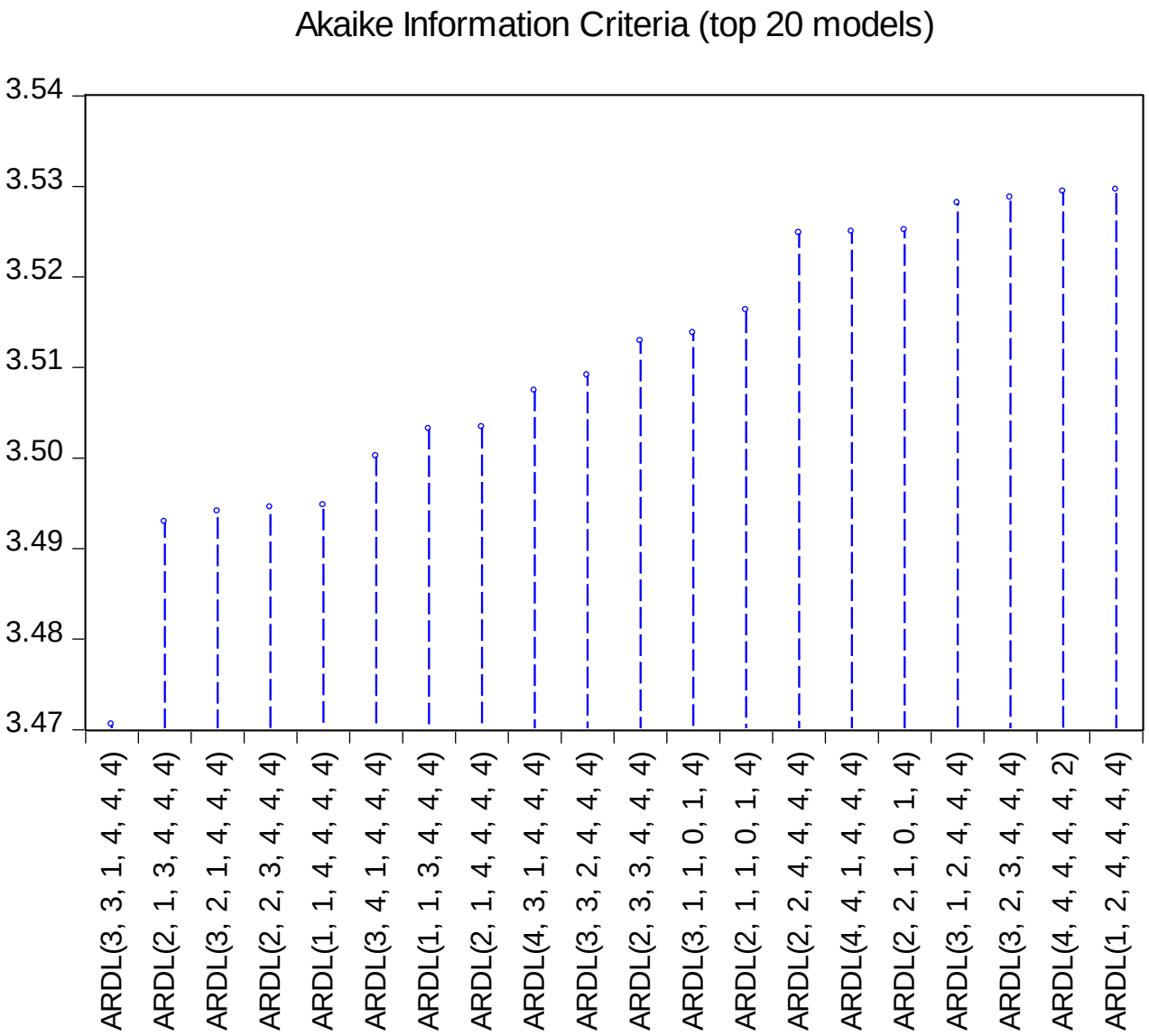
World Bank, (2017). Global Economic Prospects. Washington. D.C.

World Bank and World Trade Organization. (2015). The Role of trade in ending Poverty. Geneva: Co-publication of the World Bank and the World Trade Organization.

WTO. (2005). World Trade Organization (WTO). Retrieved March 1, 2017, from World Trade Organization (WTO) Website: https://www.wto.org

Appendices

Appendix1: Model Selection based on Akaike Information Criterion



Appendix2: Regression ARDL OutPUT

Dependent Variable: $RGDP_g$
Method: ARDL
Date: 06/26/18 Time: 15:04
Sample (adjusted): 1962 2015
Included observations: 51 after adjustments
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic): $RGE_gRHHE_gRI_gRX_gRM_g$
Fixed regressors: DUMMY C
Number of models evalulated: 12500
Selected Model: ARDL(3, 3, 1, 4, 4, 4)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
$RGDP_g$(-1)	-0.318162	0.144417	-2.203070	0.0370
$RGDP_g$(-2)	0.219928	0.043404	5.066972	0.0000
$RGDP_g$-3)	0.090936	0.041459	2.193392	0.0378
RGE_g	0.085893	0.021933	3.916179	0.0006
RGE_g(-1)	0.095594	0.030201	3.165199	0.0040
RGE_g(-2)	-0.027314	0.023646	-1.155103	0.2590
RGE_g(-3)	-0.029179	0.022935	-1.272249	0.2150
$RHHE_g$	0.748174	0.031595	23.68036	0.0000
RHHE(-1)	0.224269	0.111176	2.017238	0.0545
RI_g	0.172767	0.014265	12.11159	0.0000
RI_g(-1)	0.020104	0.025319	0.794023	0.4347
RI_g(-2)	0.015095	0.014779	1.021357	0.3169
RI_g(-3)	-0.022775	0.013702	-1.662147	0.1090
RI_g(-4)	-0.037342	0.017780	-2.100246	0.0460
RX_g	0.107987	0.014904	7.245279	0.0000
RX_g(-1)	0.034873	0.019579	1.781185	0.0870
RX_g(-2)	0.019224	0.015516	1.239024	0.2268
RX_g(-3)	0.009769	0.014542	0.671773	0.5079
RX_g(-4)	0.042183	0.018342	2.299767	0.0301
RM_g	-0.141332	0.027047	-5.225484	0.0000
RM_g(-1)	-0.093491	0.035901	-2.604152	0.0153
RM_g2)	-0.060606	0.026778	-2.263324	0.0326
RM_g(-3)	0.024223	0.023722	1.021130	0.3170
RM_g(-4)	-0.057202	0.024907	-2.296614	0.0303
DUMMY	-11.06224	2.451656	-4.512149	0.0001
C	-0.461272	0.443150	-1.040892	0.3079

R-squared	0.989195	Mean dependent var	5.533531
Adjusted R-squared	0.978390	S.D. dependent var	8.007086
S.E. of regression	1.177062	Akaike info criterion	3.470579
Sum squared resid	34.63689	Schwarz criterion	4.455431
Log likelihood	-62.49975	Hannan-Quinn criter.	3.846920
F-statistic	91.55078	Durbin-Watson stat	2.011799
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.

Appendix 3: ARDL Bounds Test

Date: 06/26/18 Time: 15:06
Sample: 1961 2015
Included observations: 55
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
F-statistic	10.39656	5

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Test Equation:

Dependent Variable: $D(RGDP_g)$
Method: Least Squares
Date: 06/26/18 Time: 15:06
Sample: 1961 2015
Included observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$D(RGDP_g(-1))$	-0.310864	0.063713	-4.879162	0.0001
$D(RGDP_g(-2))$	-0.090936	0.041459	-2.193392	0.0378
$D(RGE_g)$	0.085893	0.021933	3.916179	0.0006
$D(RGE_g)(-1))$	0.056494	0.026929	2.097832	0.0462
$D(RGE_g(-2))$	0.029179	0.022935	1.272249	0.2150
$D(RHHE_g)$	0.748174	0.031595	23.68036	0.0000
$DR(I_g)$	0.172767	0.014265	12.11159	0.0000
$D(RI_g(-1))$	0.045023	0.023139	1.945729	0.0630
$D(RI_g(-2))$	0.060117	0.022950	2.619526	0.0148
$D(RI_g(-3))$	0.037342	0.017780	2.100246	0.0460
$D(RX_g)$	0.107987	0.014904	7.245279	0.0000
$D(RX_g(-1))$	-0.071176	0.030154	-2.360378	0.0264
$D(RX_g(-2))$	-0.051952	0.022324	-2.327150	0.0284
$D(RX_g(-3))$	-0.042183	0.018342	-2.299767	0.0301
$D(RM_g)$	-0.141332	0.027047	-5.225484	0.0000
$D(RM_g(-1))$	0.093585	0.042841	2.184461	0.0385
$D(RM_g(-2))$	0.032979	0.033838	0.974606	0.3391
$D(RM_g(-3))$	0.057202	0.024907	2.296614	0.0303
DUMMY	-11.06224	2.451656	-4.512149	0.0001
C	-0.461272	0.443150	-1.040892	0.3079
GEG(-1)	0.124993	0.040701	3.071003	0.0051
HHEG(-1)	0.972443	0.119299	8.151292	0.0000
IG(-1)	0.147848	0.034647	4.267271	0.0002
XG(-1)	0.214036	0.040231	5.320245	0.0000
MG(-1)	-0.328408	0.062315	-5.270096	0.0000
GDPG(-1)	-1.007298	0.131895	-7.637124	0.0000

R-squared	0.996268	Mean dependent var	0.003045
Adjusted R-squared	0.992537	S.D. dependent var	13.62496
S.E. of regression	1.177062	Akaike info criterion	3.470579
Sum squared resid	34.63689	Schwarz criterion	4.455431
Log likelihood	-62.49975	Hannan-Quinn criter.	3.846920
F-statistic	266.9794	Durbin-Watson stat	2.011799
Prob(F-statistic)	0.000000		

Appendix 4: ARDL Cointegrating And Long Run

Dependent Variable: $RGDP_g$
Selected Model: ARDL(3, 3, 1, 4, 4, 4)
Date: 06/26/18 Time: 15:07
Sample: 1961 2015
Included observations: 55

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$D(RGDP_g(-1))$	-0.298034	0.047465	-6.279081	0.0000
$D(RGDP_g(-2))$	-0.075598	0.036566	-2.067457	0.0492
$D(RGE_g)$	0.087889	0.014837	5.923704	0.0000
$D(RGE_g(-1))$	0.054045	0.015056	3.589521	0.0014
$D(RGE_g(-2))$	0.026019	0.015179	1.714184	0.0989
$D(RHHE_g)$	0.746554	0.024604	30.342447	0.0000
$D(RI_g)$	0.176611	0.011665	15.140692	0.0000
$D(RI_g(-1))$	0.041569	0.012960	3.207437	0.0036
$D(RI_g(-2))$	0.056874	0.014621	3.889838	0.0007
$D(RI_g(-3))$	0.036440	0.012677	2.874462	0.0081
$D(RX_g)$	0.108764	0.010992	9.894552	0.0000
$D(RX_g(-1))$	-0.068941	0.016163	-4.265433	0.0002
$D(RX_g(-2))$	-0.052182	0.014585	-3.577665	0.0015
$D(RX_g-3))$	-0.041924	0.012777	-3.281085	0.0030
$D(RM_g)$	-0.139938	0.019799	-7.067819	0.0000
$D(RM_g(-1))$	0.087617	0.027756	3.156690	0.0041
$D(RM_g(-2))$	0.032045	0.022320	1.435699	0.1635
$D(RM_g(-3))$	0.059628	0.018097	3.294868	0.0029
D(DUMMY)	-12.161410	1.614764	-7.531384	0.0000
CointEq(-1)	-0.946793	0.116373	-8.135871	0.0000

Cointeq = GDPG - (0.1241*GEG + 0.9654*HHEG + 0.1468*IG + 0.2125*XG
-0.3260*MG -10.9821*DUMMY -0.4579)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGE_g	0.124087	0.035714	3.474500	0.0019
$RHHE_g$	0.965398	0.067043	14.399606	0.0000
RI_g	0.146777	0.027079	5.420289	0.0000
RX_g	0.212486	0.036429	5.832867	0.0000
RM_g	-0.326029	0.056689	-5.751144	0.0000
DUMMY	-10.982089	2.825066	-3.887375	0.0007
C	-0.457930	0.438764	-1.043681	0.3066

Diagnosis Testing

Appendix5: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.895143	Prob. F(4,21)	0.4843
Obs*R-squared	7.429006	Prob. Chi-Square(4)	0.1149

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 06/26/18 Time: 15:15
Sample: 1961 2015
Included observations: 55
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
$RGDP_g(-1)$	0.087303	0.198128	0.440641	0.6640
$RGDP_g(-2)$	-0.022334	0.047170	-0.473489	0.6407
$RGDP_g(-3)$	-0.005720	0.042365	-0.135015	0.8939
RGE_g	0.016045	0.027272	0.588322	0.5626
$RGE_g(-1)$	-0.028494	0.037012	-0.769854	0.4500
$RGE_g(-2)$	0.006970	0.028583	0.243845	0.8097
$RGE_g(-3)$	-0.008287	0.025537	-0.324496	0.7488
$RHHE_g$	-0.012065	0.034574	-0.348951	0.7306
$RHHE_g(-1)$	-0.055468	0.162695	-0.340936	0.7365
RI_g	-0.001022	0.017879	-0.057159	0.9550
$RI_g(-1)$	-0.005490	0.035246	-0.155758	0.8777
$RI_g(-2)$	-0.009228	0.017526	-0.526525	0.6040
$RI_g(-3)$	-0.000499	0.014482	-0.034467	0.9728
$RI_g(-4)$	0.004355	0.018434	0.236235	0.8155
RX_g	-0.002463	0.016737	-0.147175	0.8844
$RX_g(-1)$	-0.010343	0.026566	-0.389349	0.7009
$RX_g(-2)$	-0.001073	0.016432	-0.065306	0.9485
RX_g-3)	-0.004493	0.015321	-0.293227	0.7722
$RX_g(-4)$	-0.006471	0.020254	-0.319510	0.7525
RM_g	-0.007317	0.033040	-0.221453	0.8269
$RM_g(-1)$	0.013984	0.047544	0.294132	0.7715
$RM_g(-2)$	0.014423	0.028806	0.500691	0.6218
$RM_g(-3)$	0.008812	0.025658	0.343435	0.7347
$RM_g(-4)$	0.004891	0.026604	0.183838	0.8559
DUMMY	0.086597	2.841879	0.030472	0.9760
C	0.131036	0.513612	0.255126	0.8011
RESID(-1)	-0.031453	0.347819	-0.090430	0.9288
RESID(-2)	-0.376464	0.266065	-1.414931	0.1717
RESID(-3)	0.041162	0.341574	0.120506	0.9052
RESID(-4)	-0.465324	0.333863	-1.393759	0.1780

R-squared	0.145667	Mean dependent var	-1.31E-16
Adjusted R-squared	-1.034127	S.D. dependent var	0.832309
S.E. of regression	1.187062	Akaike info criterion	3.470007
Sum squared resid	29.59145	Schwarz criterion	4.606375
Log likelihood	-58.48519	Hannan-Quinn criter.	3.904247
F-statistic	0.123468	Durbin-Watson stat	2.002029
Prob(F-statistic)	1.000000		

Appendix6: Heteroskedasticity Test: Breusch-Pagan-Godfrey

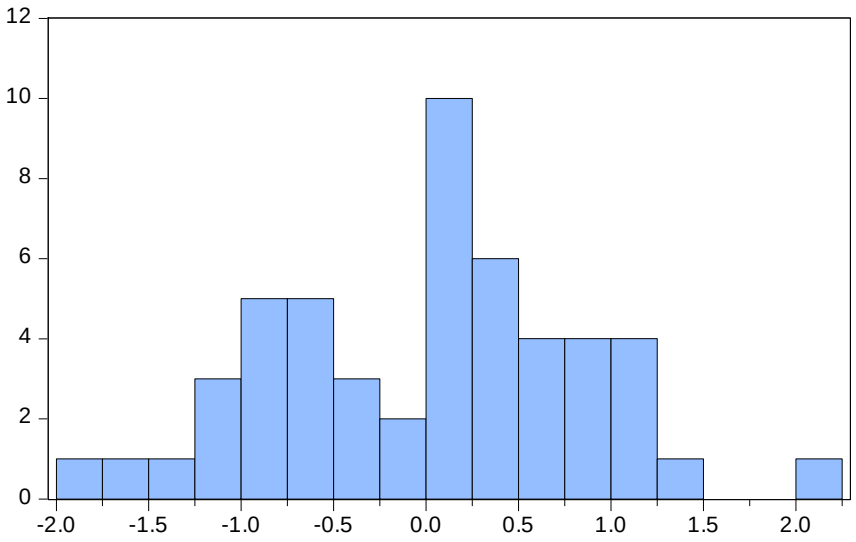
F-statistic	0.874206	Prob. F(25,25)	0.6303
Obs*R-squared	23.78848	Prob. Chi-Square(25)	0.5316
Scaled explained SS	4.329322	Prob. Chi-Square(25)	1.0000

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/26/18 Time: 15:16
Sample: 1961 2015
Included observations: 55

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.359899	0.328321	1.096182	0.2834
$RGDP_g$(-1)	0.101526	0.106996	0.948875	0.3518
$RGDP_g$G(-2)	0.041800	0.032157	1.299859	0.2055
$RGDP_g$G(-3)	-0.002294	0.030716	-0.074697	0.9411
RGE_g	0.037024	0.016250	2.278484	0.0315
RGE_g	-0.025708	0.022376	-1.148949	0.2615
RGE_g(-2)	-0.001544	0.017519	-0.088127	0.9305
RGE_g(-3)	0.002037	0.016992	0.119860	0.9056
$RHHE_g$	0.011912	0.023408	0.508897	0.6153
$RHHE_g$(-1)	-0.024641	0.082368	-0.299152	0.7673
RI_g	0.000623	0.010568	0.058945	0.9535
RI_g(-1)	-0.012764	0.018758	-0.680455	0.5025
RI_g(-2)	-0.011728	0.010949	-1.071077	0.2944
RI_g(-3)	-0.000706	0.010152	-0.069517	0.9451
RI_g(-4)	-0.002960	0.013173	-0.224676	0.8241
RX_g	0.018064	0.011042	1.635866	0.1144
RX_g(-1)	0.002069	0.014505	0.142632	0.8877
RX_g(-2)	-0.015491	0.011495	-1.347629	0.1899
RX_g(-3)	-0.003727	0.010774	-0.345899	0.7323
RX_g(-4)	-0.007415	0.013589	-0.545626	0.5902
RM_g	-0.025906	0.020038	-1.292843	0.2079
RM_g(-1)	0.002399	0.026598	0.090177	0.9289
RM_g(-2)	0.006024	0.019839	0.303663	0.7639
RM_g(-3)	-0.004160	0.017575	-0.236707	0.8148
RM_g(-4)	0.008728	0.018453	0.472994	0.6403
DUMMY	-2.334758	1.816381	-1.285390	0.2104

R-squared	0.466441	Mean dependent var	0.679155
Adjusted R-squared	-0.067119	S.D. dependent var	0.844191
S.E. of regression	0.872061	Akaike info criterion	2.870744
Sum squared resid	19.01227	Schwarz criterion	3.855596
Log likelihood	-47.20396	Hannan-Quinn criter.	3.247085
F-statistic	0.874206	Durbin-Watson stat	1.464148
Prob(F-statistic)	0.630294		

Appendix7: Normality Test



Series: Residuals	
Sample 1961 2015	
Observations 55	
Mean	-1.31e-16
Median	0.116575
Maximum	2.004688
Minimum	-1.862545
Std. Dev.	0.832309
Skewness	-0.044472
Kurtosis	2.514759
Jarque-Bera	0.517161
Probability	0.772147

Appendix 8: Ramsey RESET Test

Equation: UNTITLED
Specification: $RGDP_g$ $RGDP_g$(-1) $RGDP_g$(-2) $RGDP_g$(-3) RGE_g RGE_g-1) RGE_g(-2) RGE_g(-3) $RHHE_g$ $RHHE_g$(-1) RI_g RI_g(-1) RI_g(-2) RI_g(-3) RI_g(-4) RX_g RX_g(-1) RX_g(-2) RX_g(-3) RX_g(-4) RM_g RM_g(-1) RM_g(-2) RM_g(-3) RM_g(-4) DUMMY C

Omitted Variables: Powers of fitted values from 2 to 5

	Value	df	Probability
F-statistic	0.147597	(4, 21)	0.9620

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.947145	4	0.236786
Restricted SSR	34.63689	25	1.385476
Unrestricted SSR	33.68974	21	1.604274

Unrestricted Test Equation:
Dependent Variable: RGDP
Method: ARDL
Date: 06/26/18 Time: 15:18
Sample: 1961 2015
Included observations: 55
Maximum dependent lags: 4 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (4 lags, automatic):
Fixed regressors: C

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
RGDP(-1)	-0.316093	0.163473	-1.933605	0.0668
RGDP(-2)	0.213996	0.056898	3.761021	0.0011
RGDP(-3)	0.088882	0.049350	1.801036	0.0861
RGE_g	0.090759	0.027026	3.358218	0.0030
RGE_g(-1)	0.095043	0.035878	2.649077	0.0150
RGE_gG(-2)	-0.025254	0.028666	-0.880975	0.3883
RGE_gG(-3)	-0.027854	0.025918	-1.074696	0.2947
$RHHE_g$	0.756250	0.078706	9.608576	0.0000
$RHHE_g$(-1)	0.215807	0.132717	1.626068	0.1188
RI_g	0.177801	0.024712	7.194912	0.0000
RI_g(-1)	0.018912	0.031265	0.604904	0.5517
RI_g(-2)	0.016881	0.018050	0.935240	0.3603
RI_g(-3)	-0.018555	0.018305	-1.013663	0.3223
RI_g(-4)	-0.037926	0.019746	-1.920717	0.0684
RX_g	0.110464	0.020573	5.369269	0.0000
RX_g(-1)	0.034184	0.021787	1.568981	0.1316
RX_g(-2)	0.019166	0.018527	1.034517	0.3127
RX_g(-3)	0.005543	0.018443	0.300562	0.7667
RX_g(-4)	0.041769	0.019876	2.101430	0.0479
RM_g	-0.146787	0.033048	-4.441657	0.0002
RM_g(-1)	-0.095066	0.042950	-2.213398	0.0381
RM_g(-2)	-0.060742	0.030651	-1.981773	0.0607
RM_g(-3)	0.029461	0.028155	1.046402	0.3073
RM_g(-4)	-0.054445	0.028804	-1.890163	0.0726
DUMMY	-11.12939	2.769294	-4.018854	0.0006
C	-0.702387	0.594506	-1.181463	0.2506
FITTED^2	0.006641	0.011085	0.599154	0.5555
FITTED^3	-0.000422	0.001000	-0.422205	0.6772
FITTED^4	-1.43E-05	2.74E-05	-0.521229	0.6077
FITTED^5	8.71E-07	1.67E-06	0.520902	0.6079

R-squared	0.989491	Mean dependent var	5.533531
Adjusted R-squared	0.974978	S.D. dependent var	8.007086
S.E. of regression	1.266599	Akaike info criterion	3.599715
Sum squared resid	33.68974	Schwarz criterion	4.736084
Log likelihood	-61.79275	Hannan-Quinn criter.	4.033955
F-statistic	68.17956	Durbin-Watson stat	2.025430
Prob(F-statistic)	0.000000		

*Note: p-values and any subsequent tests do not account for model selection.