

**THE CAUSALITY ANALYSIS BETWEEN EXPORT AND
ECONOMIC GROWTH IN ETHIOPIA**

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Declaration

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

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Acronyms

ADF	Augmented Dicky Fuller
AIC	Akaike Information Criterion
ARDL	Auto Regressive Distributed Lag
DF	Dicky Fuller
ECM	Error Correction Model
ECT	Error Correction Term
EEA	Ethiopian Economics Association
ELG	Export Led Growth
EPRDF	Ethiopian People Revolutionary Democratic Front
GDP	Gross Domestic Product
GLE	Growth Led Export
GNP	Gross National Product
HQIC	Hannan Quinn Information Criterion
ICF	Information Criterion Function
IMF	International Monetary Fund
IRF	Impulse Response Function
LDCs	Less Developing Countries
LREXP	Log of Real Export
LRGDP	Log of Real Domestic Product
ML	Maximum Likelihood
MOFED	Ministry of Finance and Economic Development
NBE	National Bank of Ethiopia
OECD	Organization for Economic Co-operation and Development
OLS	Ordinary Least Square
RGDP	Real Domestic Gross Product
REXP	Real Export
SAPs	Structural Adjustment program
SBIC	Schwarz Bayesian Information Criterion
SSA	Sub Saharan Africa
VAR	Vector Auto Regressive
VECM	Vector Error Correction Model
WB	World Bank

Abstract

This study investigated the causal relationship between export and economic growth in Ethiopia using quarterly data on real GDP and real export for the period 1997/98-2010/11 from national bank of Ethiopia. The study reviewed the trends of export and economic growth of Ethiopia during the current government. To test the relationship between export and economic growth, the researcher used bi-variate model without exogenous variable. The major proxy variables employed in this study are real GDP for economic growth and real export for export growth of goods and services. The long run relationship was assessed using Johansen co-integration technique and the error correction model was used to analyze the short run relationship and the speed of adjustment towards long run equilibrium.

The Johansen co-integration procedure was applied and the results of the co-integration test proved the existence of a single co-integrated equation. The co-integration test confirmed the existence of long run relationship between export and economic growth in Ethiopia. The ECM regression result shows that there is no significant short run as well as long run causal relationship from export to economic growth. It also proved that there is a significant long run causal dynamism from economic growth to export growth, but the case in the short run is not significant at 5%.

So, the ECM causality test result confirmed that there is only long run uni-directional causal relation from GDP to exports. To achieve economic growth of the country, the policy makers or the government should give high attention for the production of exportable as well as non-exportable products.

Key Words: *causal relationship, Johansen co-integration, ECM, export and economic growth.*

CHAPTER ONE

1. INTRODUCTION

1.1. Background of the Study

Economic growth is the overall increment in the amount of goods and services produced by a given economy over a specific period of time. On the same way, export refers the sale of goods and services produced in the home country to a foreign market to get foreign exchanges. The agenda of how an economy can attain economic growth is widely debatable and is one of the fundamental economic questions. Export is frequently considered as an essential source of economic growth. The relationship between exports and economic growth has been investigated widely in developed and developing economies.

The relationship between export and economic growth is indeed quite debatable for different reasons. The argument of the issue says that, increasing the level of export alleviate foreign exchange constraint and encourages investment which in turn leads to increase output and employment, this brings the growth of the economy (GDP). The study of Jordaan and Eita, 2007; Ullah, 2009; Shahbaz and Ahmad, 2011 supports the above argument of export led growth hypothesis. Countries promote export with the expectation that to maintain economic growth. The appropriate policy recommended is that export promotion or the country encourages the production of exportable goods to improve the economic growth.

On the other hand, economic theory provides equally plausible justification for the opposite causal relationship, namely, that is economic growth is best viewed as a possible precondition for the growth of exports. When the country experiences good economic growth, the private as well as public investors get enough money to invest in the economy. As investment increases output will increase, which boosts export of the country's product to foreign countries. So, economic growth is a pre condition of export growth and the direction of the causality is from economic growth to

export growth. The study of Reppos and Christopoulos, 2005; Mohammed (2005), Safdari, 2011 and Alsuwaidi and Al shamsi, 1997 supports this argument of economic growth led export hypothesis. They recommend policy makers do not need to promote export expansion policies to achieve high economic growth. Rather the country should devote their resources on the production of goods and services that may not be for export which encourages economic growth and this will accelerate export growth.

In other findings there are case of bi-directional causality between export and economic growth and the causality comes from both direction; economic growth and export have feedback to each other. The studies of Shan and Sun, 1999; Ray, 2011 suggest that policy makers should follow a policy which encourages export expansion as well as promote production of non exportable products in order to achieve high economic growth in the country.

And there are also findings that show export and economic growth are independent each other. On this side there are studies like Ahmad and Kwan, 1991; Jin and Yu, 1996 who advocated there is no causal relationship between export and economic growth. Based on the findings of the writers on the natures of the relationship between export and economic growth one can draw a conclusion that, there is no agreement regarding on the causal relationship of export and economic growth, which is open for further research.

Even if there are different types of causal relationship between export and economic growth, to maintain sustainable economic growth, countries adopt different types of international trade policy; such as export promotion and import substitution trade policies. In 1950s and 1960s there was the decline of agricultural products price in the world market which leads to growing of current account deficit in developing countries. To cop up from this situation they adopt import substitution trade strategy with the assumption that, industrialization could be encouraged with protecting from foreign competition. Actually the result didn't become as expected and many industries remain infant.

The failure of import substitution trade strategy and the successes of East Asian Countries (i.e. South Korea, Taiwan, Hong Kong and Singapore) initiate many LDCs to follow export promotion

trade strategy. The strategy links the domestic economy to the world economy and it is called outward growth strategy. Export promotion strategies reflect the motivation of national governments to encourage exports. Subsidies, tax exceptions, and special credit lines are the main instruments used to encourage exports. The main goal of the export promotion strategy is to prepare the “potential” industries for competition with the foreign competitors.

Both trade strategies have their own merits and limitation on the country’s economic performance, but many LDCs currently followed export promotion policy to earn their foreign exchange from the sale of mainly primary products. Ethiopia adopted export promotion trade policy and liberalization policy since 1991/92 onwards to motivate the export sector to be significant contributor to the country’s economy. This study empirically investigated the country’s export led growth hypothesis for the period 1997/98 to 2010/11 using quarterly data of the national bank of Ethiopia. The main variables used in this paper are real GDP proxy for economic growth and real export proxy for export of goods and services.

1.2. Statements of the Problem

Among the main problems that most developing countries face low level of economic growth is found in the forefront. Actually, economic growth is determined by various factors like capital accumulation (both physical and human), inflation, trade, political conditions, income distribution and geographical location. Among these, trade is one of the determinants which affect the performance of economic growth. So, a given country needs to follow appropriate trade strategies to achieve its economic growth.

Ethiopia’s economy is grouped under fewer developing countries, and the major exporting items are primarily dominated by agricultural and agricultural related products which are vulnerable for international price shock, and natural disaster and weather condition of the country. For the last two decades, among the export items, the share of coffee is 36% and that of oil seeds 13.9% and more than 80% of the country’s economy depends on agriculture. Agricultural products are highly depends on natural factors and its prices are low as we compare with manufactured products; and Ethiopia imports mostly high valued manufactured products (like fertilizer).

The country's export earning covers 28% of the import bill and the share of export to import shows a declining trend recently in the period under consideration (1991/92-2010/11). This implies that there is a wide gap between foreign exchange demand and the available foreign currency from export. Actually, export is not the only source of foreign exchange; there are also sources like public transfers and foreign direct investment. However, these sources have their own constraints that hinder their effectiveness. Public transfers (external borrowing and assistance) are commonly co-integrated with political, social and economic interest of the lending and donating organizations which are out of the country's control. The later also depends on internal and external economic and political situation of the country. So, this needs greater attention to increase the earnings from export of goods and services.

In Ethiopia import substitution strategy was implemented during the Imperial and Derg regimes (1963 to 1985) to maintain sustainable economic growth in relation to this the World Bank (1987) grouped the country under inward oriented. The strategy didn't work well as in other developing countries. However, after the fall of Derge regime, the current government follows trade liberalization in which export promotion is the significant component of the program. The strategy is outward-oriented it links the domestic to the world economy and liberalized the trade of the country.

After the current government has taken different economic reform measures, the country's linkage with the rest of the world in international trade has been improved when it compared with the previous governments. Openness factor (measured by export plus import to GDP ratio) is one of the indicators for international trade linkage which showed improvement from 26.1% during Derg regime to 44.25 during EPRDF. The earnings of export of goods and services finances 43.2% of the import bill of the country for the last 14 years, and it contributes 13.35% to the GDP.

Even if there is improvement on the performance of the export, which mostly depends on few agricultural products (like coffee, hides and skin, pulses and oil seeds, and chat), the gap between export and import still shows increasing trend. Government change, war and drought affected the country's economy as well as export performance in different periods.

The objective of the government's export promotion policy is designed to bring about export led growth. Thus, this study analyzed empirically whether further efforts in promoting exports are warranted. The previous studies; one, they were employed annual data but Ethiopia's economy is dominated by agriculture and its production varies from season to season. Annual data takes the average of seasons however, quarterly data captures this limitation. Second, they used time series data not only in regimes but also in different economic policies of the country. So, to minimize the limitation of the previous annual econometrics time series analysis, the researcher employed quarterly data for the period 1997/98 to 2010/11.

In general, the paper addressed the following research questions on the direction of relationship between GDP and export growth in Ethiopia.

- i. How Ethiopia's export and economic growth trend behaves?
- ii. Whether there is unidirectional, bidirectional, and/or no causality between export and economic growth?
- iii. What policy options need to be adopted to promote export in Ethiopia required to maximize gains from export growth?

1.3. Objectives of the Study

General Objective;

The general objective of this paper is to analyze the causal relationship between export and economic growth in Ethiopia.

Specific Objectives;

- To assess the trends of export and economic growth of Ethiopia,
- To identify the direction of causal relationship of export and economic growth of Ethiopia,
- To suggest policy options on the basis of findings that would help the country experience economic growth.

1.4. Method of Data Analysis

This study carried out empirical analysis on the causality between export and economic growth in Ethiopia using time series data. It assessed a descriptive analysis on the relationship of export and economic growth using statistical tools such as percentage, ratios, growth rates and graphs using the period from 1991/92-2010/11. For econometrics analysis the study employed quarterly data of export and GDP for the period from 1997/98I-2010/11IV. This study followed the VAR model without exogenous variable. The paper analyzed the causal relationship between export and economic growth of Ethiopia, using the Granger causality test in Vector autoregressive (VAR) and Error Correction Model (ECM) approach. The Error Correction Model (ECM) helps to analyze the causal relation between export and economic growth in the short run and long run relationship between the variables. Before performing the Error Correction model, the stationarity test, lag length determination, and the co-integration test should be performed using Eviews 7 software.

1.5. Significance of the Study

Understanding the direction of the causal relationship between export and economic growth has important implications for economic policy strategies to maintain sustainable economic growth. If the causality flows from export growth to economic growth then the implementation of export promotion policies is a proper strategy for a country to grow. But if causality goes on the reverse direction then a certain degree of development may be a prerequisite for a country to increase its exports and, therefore, economic growth policies are critical to expand exports. A bi-directional causality would imply that both strategies are essential as long as one reinforcing in the other one.

The paper may have different contribution for various stockholders. The paper reviews literatures and analyzes the trend of export and economic growth performance of Ethiopia. Having such knowledge or information about the export performance of Ethiopia may help in the decision of the country's trade policy strategy to improve the terms of trade. In developing countries the export item is mostly primary products whose production varies with season that annual data takes only the average but in quarterly data this problem will be solved. To minimize the limitation of annual econometrics time series analysis, the researcher employed quarterly data for the period 1997/98 to

2010/11. Thus, the outcome of the study would fill the gap in the existing knowledge by analyzing the direction of relationship between export and economic growth of the country.

This study motivates other researchers to focus on empirical analysis concerning export on various aspects and economic growth in Ethiopia. Finally, it contributes as a secondary source of information for further analysis concerning the Export -Economic growth nexus in Ethiopia.

1.6. Scope and Limitation of the Study

The study can be an individual country's evidence as it analysis the causal relationship between export and economic growth in the Ethiopian context only. And, here, the study is employed a time series analysis of quarterly data of the period from 1997/98 to 2010/11.

The paper here specifically analysis the causal link between export and economic growth, as export earning is the main source of Ethiopia's foreign trade (import) finance we must give high attention, for example in 2010/11 the total export earning was \$2.5 billion. Correspondingly, Ethiopia's import during the period under discussion stood at 8.2 billion USD. This has a great role to import essential raw materials from foreign countries help the country's economic growth (NBE, 2010/11).

This study uses real export value and real gross domestic product (GDP) in Ethiopian Birr and analysis the causal relationship between them. Here, the pure causal relationship between export and economic growth is examined without including any controlling variable (Temiz, 2010 and Ray, 2011). Hence, the scope for further empirical research may be to include more variables in studies of causality between export and economic growth in Ethiopia.

CHAPTER TWO

2. ETHIOPIAN EXPORT AND ECONOMIC GROWTH OVERVIEW (1991/92-2010/11)

2.1. Introduction

In the 21st century no country can exist in economic isolation from the rest of the world. Trade between nations is crucial for countries to gain goods and services not available within their own country due to lack of resources or indigenous production capacity. Countries use trade as an important act of diplomacy between them and cooperating nations looking to support by one another. Exporting of goods and services has a significant role in bringing one's country economic growth.

The previous governments of Ethiopia were commonly following import substitution trade strategy and export sector was secondary for them in their economic development policy. In 1992 the transitional government took structural adjustment program and liberalization policy to address the internal and external imbalances of the economy of the country. Specially, the trade policy reform was taken to promote the country's export performance so as to contribute significantly for economic growth.

2.2. Ethiopia's Trade Strategy (1991/92-2010/11)

The previous governments of Ethiopia (i.e. Imperial and Derg) were commonly following import substitution strategy and export sector was secondary for policy makers in their economic development plans but it doesn't mean that they didn't make any effort to promote and diversify the country's exports. Even though the measures taken by both the Imperial and the *Derge* regimes to diversify the export items and promote exports, the country's export products stay undiversified and

are still concentrated on very few primary agricultural products such as coffee, hides & skins, oil seeds & pulses and chat. The reason behind is that both regimes followed overvalued exchange rate, high rate of tariffs and other trade restrictive commercial policies that created strong anti-export bias, and highly in-ward oriented trade policies favoring import substitution than export promotion. The anti export bias due to currency devaluation, tax, high duties (tariffs) and others has overweight the incentives provided to promote export such as export subsidy and others which have neither created in the export diversification nor increasing the existing export volume (Debel, 2002).

Ethiopian People Revolutionary Democratic Front (EPRDF) took different economic policy measures to achieve the objective of poverty alleviation through economic growth. Since 1992, IMF & WB gives high support and guidance to the Ethiopian government to be successful on the implementation of liberalization and enhanced structural adjustment programs (SAPs) to control internal and external balance of the economy (Kagnev, 2007). To refresh the external sector transitional government took various actions and the new regime gradually opens the economy to foreign competition.

Consequently, the following packages of policy measures were undertaken by the government of Ethiopia to equalize the working of the foreign trade sector:

- ❖ The government of Ethiopia devalues the country's currency in terms of dollar by more than 140% to encourage export and be competitive in foreign market. In October 1992 Ethiopian Birr was devalued from 2.07 Birr per \$ to 5.00 Birr per \$ and a biweekly auction of foreign exchange market was introduced. And recently the government devalues the value of Birr by 22% to encourage exporters and foreign direct investment.
- ❖ Regarding to import trade liberalization, the government has taken the tariff rates gradually reduced on a stage basis from a maximum of 230% to 50%. To abolish the anti-export bias, the government raised a 2% transaction tax on non-coffee export and abandoned the direct financial subsidy on export (MEDaC, 1999) which encourages export trade by enhancing profitability.
- ❖ The licensing procedure of import and export were simplified and transparent so as to encourage new entrants to the foreign trade. The range of goods and services incorporated in the auction has been gradually expanded and lastly becomes fully liberalized.

- ❖ The government introduced a duty draw-back scheme where exporters are refunded the tax and duty paid on the inputs and raw materials they use on export production in 1993 to encourage exportable production investment. These provide exporters a free trade status on their import of intermediate raw materials and encourage manufactured products.
- ❖ Even if the government exporting enterprises were providing a managerial autonomy over the private enterprises, its monopoly power was deprived. This creates a favorable environment for private exporters and puts them at equal balance with government enterprises.
- ❖ The government established an autonomous body (Export Promotion Agency) for the country's foreign trade issues by proclamation No.132/1998 to promote the export.

Ethiopia has been trying different trade strategies in the past, the recurrent goal being to diversify its exports to reduce dependence on mostly on agricultural products. Nevertheless, Ethiopia has a low share of trade in GDP, its exports continue to have limited diversification, and its trade deficit has widened significantly (Ciuriak and Preville, 2010).

As Grabowski (1994) justified import substitution is necessary for export promotion policy to be succeeded and the base of import substitution success is through the development of agricultural productivity. If the agricultural sector grows rapidly, it creates the potential of import substitution strategy to be succeeded which increases the country's overall output and leads to encourage the export sector. Based on this analysis trade policy of the current government of Ethiopia is inline of on import substitution as on export expansion to reduce the trade deficit. The strategy focused on labor intensive, use agricultural products as inputs, help achieve technology transfer and are either export oriented with significant export potential or import-substituting.

2.3. Trends of Export Performance

The total value of goods and services exported has been increasing at an average annual rate of 18.9 percent for the last two decades 1991/92-2010/11. During the period under consideration, the revenue from exports of coffee takes the largest share which is on average 36% and the share of coffee declined to 30.58 in 2010/11 from 60.33 in the beginning of the current government in

1991/92. Next to coffee oil seeds took the largest share from the country's export revenue on average 14% in the period 1991/92 to 2010/11. The revenue from the export of different items and their share out of the total export revenue is shown in table 2.1 below.

Table 2.1 Total export earnings (Birr in 000') 1991/92-2010/11

	Type of Export	1991/92-2010/11	% Share
1	Coffee	59,554,762.45	35.9805te0186
2	oil seeds	23,069,143.50	13.93741368
3	hides and skins	10,380,391.62	6.271399375
4	Pulses	8,732,629.59	5.275890328
5	Meat	2,603,536.14	1.572947873
6	Fruits	2,102,712.16	1.270370927
7	Sugar	664,265.02	0.401321201
8	Gold	16,535,838.11	9.990263237
9	oil cake	19.00	1.1479E-05
10	Animals	5,242,473.89	3.167283921
11	Chat	15,669,599.46	9.466917998
12	Petrol	369,989.36	0.223532129
13	bee wax	203,563.53	0.122984589
14	Others	20,388,958.92	12.31815801
15	re-export	1,660.81	0.001003395

Source: authors calculation based on the data of NBE

As sited in the appendix, in 1991/92 coffee was (60%) followed by hides and skin with 21% and gold takes the second position (17%) in 2010/11. Even if the volume of coffee export increased its share in the export market deteriorated due to other export items volume proportionally increased more than coffee.

Table 2.2: value of total Export (000's Birr) and the growth of export (1991/92-2010/11)

Years	Export in Br	Growth of Export
1991	279,026.00	-9.5
1992	802,183.82	65.2
1993	1,247,463.00	35.7
1994	2,732,046.12	54.4
1995	2,539,055.91	-7.6
1996	3,485,625.7	27.2
1997	4,142,513.46	15.9
1998	3,511,550.51	-18
1999	3,957,802.43	11.3
2000	3,907,693.31	-1.3
2001	3,864,320.05	-1.1
2002	4,142,355.93	6.7
2003	5,176,644.15	20
2004	7,331,257.58	29.4
2005	8,685,375.79	15.6
2006	10,457,615.14	17
2007	13,643,331.67	23.4
2008	15,209,345.28	10.3
2009	26,115,305.87	41.8
2010	44,525,565.04	41.4
	Average	18.89

Source: authors calculation based on the data of NBE

The value of export and the growth of export were illustrated in table 2.2 above, and the export performance of the country shows improvement over the period under consideration and in 1991/92 due to government change the growth rate of export was negative 9.5 (-9.5). The total export value of different goods and services were under progress from 279,026,000 in 1991/92 to 44,525,565,040 in 2010/11 even there was ups and downs due to various factors like government

change in 1991/92 and Ethio-Eritrea war 1998/99 which erodes the export revenue of the country. The average annual growth rate of export were 18.9% with the highest 65.2% in the period 1992/93 to the lowest export growth rate -18% in 1998/99. Ethiopia experiences sustainable economic growth for the period 2004 to 2011 with more than 10% growth rate and on same period the export of the country's goods and services growth were on average 24.9%.

2.4. Trends of Economic Growth

Ethiopia has experienced encouraging economic growth since 1992/93 onwards. The average real growth rate of GDP were 6.6% and starting from the year 2003/04 the real GDP growth rate were perform well with 10.2%.

Table 2.3: RGDP in millions Birr and growth rate of RGDP

Year	RGDP	Growth of GDP
1991	45,042.20	
1992	50,097.80	10.09146
1993	50,478.20	0.753593
1994	52,804.00	4.404591
1995	59,194.90	10.79637
1996	61,888.40	4.352189
1997	59,748.20	-3.58203
1998	62,832.60	4.908917
1999	66,648.30	5.725127
2000	72,181.10	7.665164
2001	73,274.40	1.492063
2002	71,690.90	-2.20879
2003	81,421.10	11.95046
2004	91,044.10	10.5696
2005	100,908.40	9.775499
2006	112,468.50	10.27852
2007	124,602.50	9.738167
2008	135,557.50	8.081441
2009	152,404.60	11.05419
2010	169,641.50	10.16078
Average		6.6

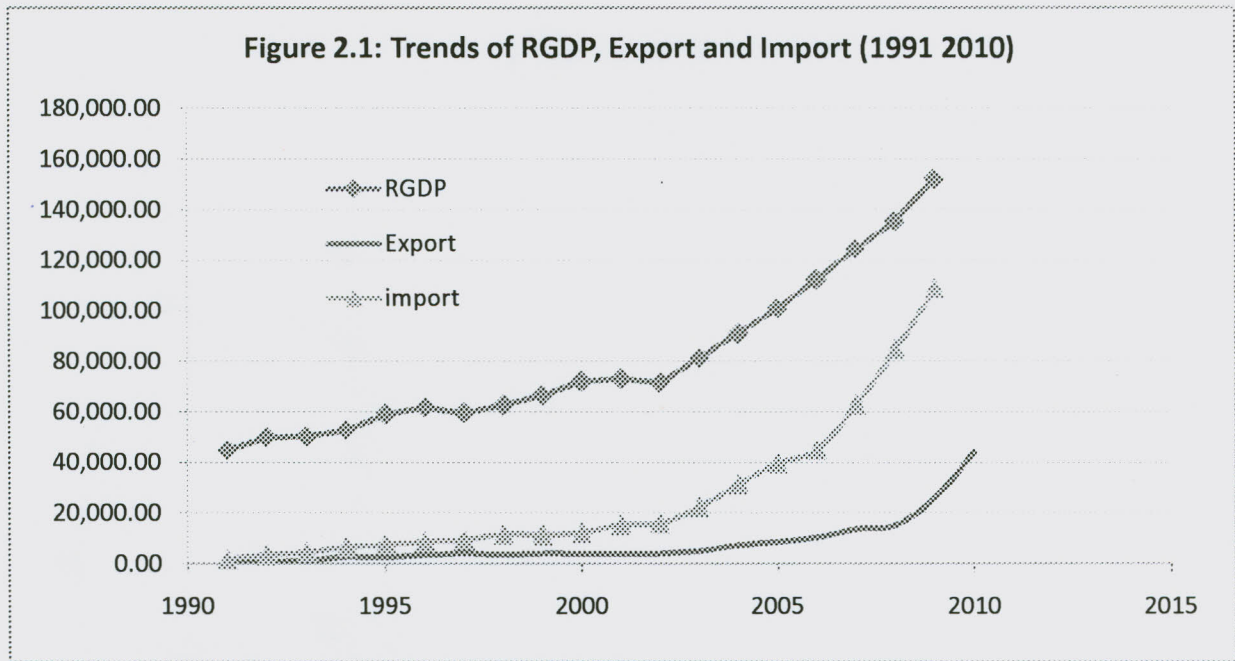
Source: Authors calculation based on NBE

As the above table (2.3), shows the trend of economic growth shows some up and downs due to domestic and international phenomena. According to the data available below the country faced major shock on economic growth due to the occurrence of El Nino in 1997/98 and severe drought in 2002/03 when the economy suffered a major decline in real GDP growth. Since 2003/04 the real GDP growth has consistently been above or near two-digit levels. The table below shows the trends of real GDP and the annual growth rate of GDP.

2.5. The Contribution of Export Sector

Export can play a significant role in the Ethiopian economy like in most developing countries and sub-Saharan countries. Ethiopia imports important goods and services which encourages the country's economic development, so the significant amount of foreign currency were financed by export. Export contributes a considerable portion to the country's economy. In the last 20 years export contributes on average 7.6 % to the GDP of the country and for the previous eight consecutive years the contribution was 12.3% then increased to 26.3% in 2010/11. On the same year under consideration (1991/92-2010/11) export covers 28% of the import bill even the share of export to import shows a declining trend recently.

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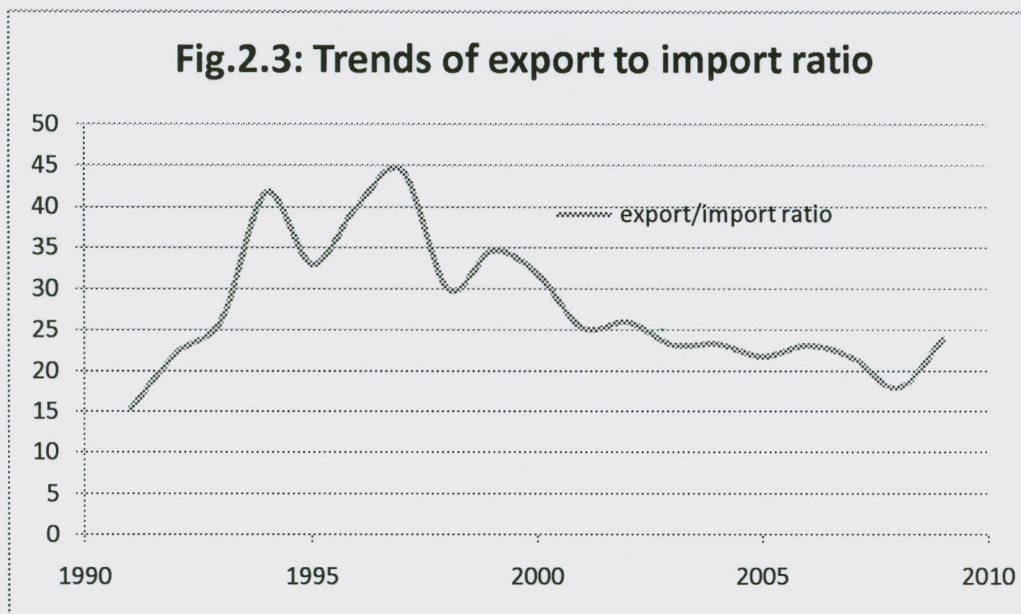
Source: authors computation based on NBE data

Fig 2.4 shows that there is an increment in the trend of RGDP, export and import even if there was difference rate of progression. In the recent years the progression of import is greater than the progression of export and RGDP, which is the country import more than its export to the rest of the world.



Source: authors computation based on NBE data

In export GDP ratio we have observed improvement from year to year especially after 2003/04 there is high progression and become sharp in recent years. Ethiopia's export growth is greater than the country's economic growth and the gap increase from time to time.



Source: authors computation based on NBE data

In the period of transitional government of Ethiopia, export was greater than import and after a while import over dominated on merchandised export. Even if the share of export less than import it doesn't mean export declines from year to year rather the increment of import is greater than the growth of export.

The current government of Ethiopia takes different measures to balance the foreign trade of the country. Even if there is improvement on the performance of the country's export, which is mostly depends on few agricultural products. Government change, war and drought affected the country's economy as well as export performance in different period. The country's economy showed improvement on GDP, export and import level but there is variation on the magnitude of progression. In the transitional period the growth rate of import were less than the growth of GDP and export but after awhile its growth rate over dominated the growth of GDP and export.

CHAPTER THREE

3. REVIEW OF RELATED LITERATURE

3.1 General Overview of Export and Economic Growth

In this world economic development is one of the key objectives of the society and for policy makers. Economic growth is the most important component of economic development and export is one of the very vital contributors for economic growth. To achieve economic growth of the country, economists explain the importance of international trade and they focus on the relationship between foreign trade and economic growth. Adam Smith was the Mercantilist economist who studies about the relationship between foreign trade and economic growth in the world (source). He believed that the development of division is the significant factor to improve the long time growth of productivity, and the scope of market constrained the degree of division. The opening out of market will naturally expand the division and recover the productivity, which then get better of economic growth. When the economy gets better off, the output will increase and distributed between the two nations by trade. That is opening of market leads to increase the degree of division which encourages output or trade encourages economic growth (Li, et.al, 2010).

Another prominent economists David Ricardo (1772-1823) looks the weaknesses of absolute advantage's (Adam Smith's) theory and developed a principle to explain that trade will be take place even one nation has absolute advantage on the production of all products. The David Ricardo's comparative advantage trade theory justifies that even if a nation has an absolute cost disadvantage on the production of all goods, the trade will be take place between countries. That is (there is two countries one has absolute advantage and the second one has absolute disadvantage on the production process) the country specialize on the production of goods where its absolute cost disadvantage is least and a country specialize on the production of goods where its absolute cost advantage is greatest (Carbough, 2005, pp.30).

In the neoclassical approach the benefits of the trade are static; such as improvements in the allocative efficiency of resources use and trade liberalization and openness influences income level, but it can't lead to increase in long run growth rate. According to the traditional theory and analysis of Heckscher-Ohlin-Samuelson without influencing on long run growth, trade would influence on economy through impact on level and composition of the product. Based on neoclassical approach, trade specialization and optimal allocation of resources can lead to the static benefits. In general, the classical and neo-classical models of trade keep silence about the effect of trade and openness of business on growth (Oscar, A. 2001).

According to endogenous growth theory of Romer(1986) trade liberalization has a dynamic gain which is developed from the mid-1980. The endogenous growth theories argue that trade policies might have some impact both on level and long run economic growth rate. These impacts include scale effect, allocation, spillover and redundancy and endogenous growth model develop theories connecting foreign trade and economic growth. The growth of export is one of the fundamental reasons for economic growth in developing countries. According to this theory policy makers need to promote export expansion policies with the aim of achieving high economic growth (Mehrara, 2011).

According to institutional approach, the role and effect of institutional elements on economic growth De Soto (2000) emphasized the high importance of property rights and fair implementation of contracts as basic components of economic growth and discussed that institutions have great importance for improving the economic performance in market- based economies. They believed that influence of trade on economic growth becomes effective under the conditions of good institutions. The presence of good institution will encourage having better investment and the accumulation of human capital which brings enhanced output. These groups of economists are believed that, an increase in economic growth leads to export growth (*ibid*).

On the other hand foreign trade is an engine of economic growth faces opponent from different economists. They believed that the trade growth of developing countries depends on the growth of their economic growth but the performance of their export growth depends on the economic growth of developed countries or demand side. That is international trade is not an engine of economic

growth rather it is a maid of economic growth. This idea is supported by economists like William Lewis, Irving Kravis (1970) and latter accepted by lots of western economists. Latin American economists like Prebisch and Singer (1950) have their own stands that foreign trade doesn't improve the economy of developing countries rather weaken it. They believed that the current world economy, developed capitalist countries have a great decisive economic role and regulating the trade of developing countries and the bargaining power of developing countries is very weak. This makes foreign trade is not improve the economy of LDC rather it may worsen it (Li, et.al, 2010).

In general, as discussed above there is no consensus on the relationship between export and economic growth. Some theories support exports can provoke economic growth and others have doubt on it. To verify these arguments there are empirical studies presented below.

3.2 Empirical Literature Review

3.2.1 Empirical Studies in the Elsewhere

There are different empirical research outputs regarding on the causal relationship between export and economic growth. Some studies like Vohra (2001) for five Asian countries; Njikam, (2003) for Sudan, Cameroon, Ivory Coast, Ghana, Burkina Faso, Madagascar, Malawi, Zambia, Gabon and Democratic Republic of the Congo; Debel (2002) for Ethiopia; Jordaan and Eita, (2007) for Namibia; Samad (2011) for Algeria; Shahbaz and Ahmad (2011) for Pakistan, which found that the causality runs from export to economic growth. According to these studies economists recommend that policy makers need to promote export expansion policies with the aim of achieving high economic growth. On the other hand, there are empirical research outputs which provide evidence of causality running from economic growth to export. The studies that give an evidence of the causality runs from economic growth to export are Oxley (1993) for Portugal, Ukpolo (1998) for South Africa and Safdari (2011) for Asian countries; Reppos and Christopoulos (2005) for 22 Asian and African countries. These studies indicate that export does not cause economic growth instead economic growth causes export and suggest that policy makers do not need to promote export expansion policies with the aim of high economic growth. Rather the country should devote its

resources on the production of goods and services that may not for export and this will accelerate the growth of exports.

The third type of research findings are a bi-directional causal relationship between export and economic growth. Some of these are Shan and Sun (1999) for USA; Kwan and Cotsomitis (1991) for China; Mehrara (2011) for developing countries; Ray (2011) for India and their output showed that the relationship between export and economic growth is bidirectional. Thus, the causality runs from both directions, that is export accelerates economic growth and economic growth also accelerates export growth. They recommend that policy makers should promote export expansion policies in order to achieve high economic growth and also they should promote the production of non-export products in order to increase exports. The last group of empirical studies found that there is no evidence on the causal relationship between export and economic growth. These empirical findings are evidenced by the works of Ahmad and Kwan (1991) for 47 African countries; Hsiao (1987) for the then newly industrialized countries; Jin and Yu (1996) for USA. So, they suggest that export and economic growth are independent of each other or there is no any causality relationship between export and economic growth.

There are empirical studies on the relationship of export and economic growth using cross sectional as well as time series data in different parts of the world. The Granger causality between the logarithms of real exports and real GDP for 25 Organization for Economic Co-operation and Development (OECD) countries was analyzed by Konya (2000) for the period 1960 to 1998. Causality tested with Wald tests and modified Wald procedure was used in augmented level VAR systems. The results show that there is no causality between export and GDP in Netherland, export causes GDP in Iceland and Belgium, growth causes export in Japan and Canada, and there is bi-directional causality in UK and Sweden.

Vohra (2001) examined the relationship of export and economic growth of 5 Asian countries India, Pakistan, Philippines Malaysia and Thailand for the period of 1973 to 1993. The purpose of his studies was that to examine the relationship between export growth and economic performance the above five countries. He employed Engle and Granger's two step procedure to check long run relationship between export and economic growth. The co-integration regression was performed

and showed there is no long run relationship. His empirical result shows that there is the need of a threshold level of economic development to have significant contribution of export on economic growth. Explicitly, when a country achieves some level of economic development (especially for middle income countries), export has a significant and positive impact on economic growth.

In south Asian countries case Kemal et.al (2002) studies the causality between export and economic growth. They used time series data from 1960 to 1998 with some variation in country case. The purpose of this study is to examine empirically the export-led growth hypothesis for the five largest economies of the South Asia region, namely India, Pakistan, Sri Lanka, Bangladesh and Nepal. To test the Granger causality between export and economic growth the researchers employed the co-integration and error correction framework. In short run their findings support the hypothesis of short- run causality from exports to GDP for Sri Lanka and Bangladesh, and in case of India and Nepal the causality goes from GDP to export. In case of Pakistan there seems to be no evidence of short run causality between export and economic growth. There is strong support for the presence of long run causality between export and economic growth, in Pakistan and India the causality is from export to economic growth and in Bangladesh, Nepal and Sri Lanka there is bi-directional long run causality between export and economic growth.

To analyze the relationship of export and economic growth Feder (1982) used the data of semi-industrialized less developed countries for the period 1964-1973. He takes into account the possibility of the marginal factor productivities are not equal for export and non-export sectors of the economy. His regression results proof the hypothesis that marginal factor productivity of export sector is higher than the marginal factor productivity of the non-export sector of the economy. The average rate of GDP growth decomposed and he also decomposed the contribution of exports into the gain in growth due to beneficial externalities affecting the non export sector and the gain because of other factors leads for higher factor productivity in the export sector. Finally, he concluded that the effect of higher factor productivity in the export sector is less than the inter-sectoral externality effect of export.

Reppos and Christopoulos, (2005) investigated the relationship between exports and output growth for a sample of 22 less developed Asian and African countries over the period 1969-1999. Their



study goes beyond previous studies by using modern time series techniques organized around panel unit roots and panel co-integration tests to draw sharper conclusions from the short time series that are typically available in economics. Besides, the causal relationship between output growth and exports is estimated by fully modified OLS techniques appropriate for heterogeneous panel. Their empirical findings advocated that output growth causes exports and not the reverse.

Safdari, et.al (2011) analyzed the causal relationship between export and economic growth for a panel of thirteen Asian developing countries over the 1988 to 2008 years. For this purpose, they employed a Panel-VECM causality analysis based on Wald test applied to investigate bi-variate model of real export and real GDP. Panel unit root test indicates that variables are non-stationary and panel co-integration tests signify the presence of co-integration in model. Their final Empirical analyzes shows a unidirectional causality from economic growth to export.

Using 73 developing countries Mehrara (2011) studied the granger causal relationship between export and economic growth for the period 1970 to 2007. To investigate the relationship of export, GDP and openness, he employed the co-integration and Granger's causality tests. The result showed the presence of long run equilibrium relationship between export and GDP and also there is bi-directional long run relationship between export and economic growth. There is no short run causality relationship between export and economic growth of oil-rich countries in any model. But for non-oil exporting developing countries there is bi-directional short run causality between export and economic growth in a bi-variate model. Finally, the result shows that for both short run and long run there is bi-directional causality between export and economic growth for the sample developing countries.

In time series study case a country specific tests on the relationship between export and economic growth of Pakistan was examined by Ullah (2009) for the period of 1970 to 2008. He used a time series econometric method of unit root test, co-integration, Granger causality and Vector error correction model. The granger causality test implied there is uni-directional causality between export, economic growth and imports and the result confirmed that export growth leads to economic growth.

To assess the empirical relationship of export and economic growth in India was analyzed by Ray (2011) using annual data for the period of 1972/73 to 2010/11. To test the causality of export and economic growth, he employed a time series econometrics techniques of granger causality and co-integration method. The co-integration a method confirms that export and economic growth are co-integrated which shows the presence of long run relationship between export and GDP of India. The Granger causality test showed the existence of bi-directional relationship between export and economic growth. That is the causality runs from economic growth to export and the vice-versa. According to the error correction estimates there is also bidirectional causality relationship between export and GDP in short run.

The export led growth hypothesis was investigated using quarterly data of Pakistan by Shahbaz and Ahmad (2011) for the period 1990 to 2008. The purpose of their study is to reexamine the exports-led growth hypothesis after the implementation of trade reforms in Pakistan. How an economy can attain economic growth is widely debated and is one of the crucial economic questions initiated them to perform this study. They applied Ng-Perron unit root test, ARDL bounds testing approach for co-integration and error correction method for short run dynamics. Their finding verified the validity of export led growth approach and they proofed that export encourages the economic growth of Pakistan.

3.2.2 Empirical Studies in African case

The long run relationship of real export and economic growth of Egypt was investigated by Alsuwaidi and Al shamsi (1997) for the period of 1960 to 1992. They used a time series econometrics techniques of co-integration and error correction model employed to analyze the causality of real export and domestic production. They got strong evidence for the existence of relationship between real export and economic growth and the causality is uni-directional between export and economic growth. That is the growth of domestic production contributed for the growth of export but, export doesn't cause economic growth.

Boame, A. (1998) examined the causal relationship of export and GNP growth of Ghana for the period 1960 to 1992. He used different econometrics techniques to assess the relationship between

export and economic growth. According to the finding the causality between export and GNP growth has a unidirectional relationship. That is export growth Granger causes economic growth, which implies in Ghana the benefit from growth of trade is distributed to different sector of the economy.

Ghali (2000) analyzed the export led growth theory using the data of Tunisia for the period of 1963 to 1993. The purpose paper was to investigate the causal relationship that exists between export and economic growth of Tunisia. He studied the relationship of export and economic growth with a vector error correction model using Johansen method of co-integration and the Granger causality test. The analysis shows that there is long run relationship between export and economic growth and in short run there is bi-directional causality through the error correction term. Based on the analysis, Tunisia experiences export led growth approach and he recommends to the policy maker of Tunisian government that to achieve economic growth, the government encourage international trade.

The causality analysis of export and GDP of Namibia was analyzed by Jordaan and Eita (2007) for the period of 1970 to 2005. The rationale of the paper was to evaluate the causal relationship between export and economic growth of Namibia. They used a time series econometrics techniques of Granger causality and Co integration. The co-integration technique is done using Johansen full information maximum likelihood and vector error correction mechanism (VECM) is also implemented to correct autocorrelation. The result revealed that exports causes' economic growth and they recommend policies on export promotion should be used effectively to develop export performance in order to encourage economic growth.

To re-examine the relationship between Kenyan export and economic growth Mohan and Nandwa (2007) employed time series analysis for the period of 1970-2004. They used autoregressive distributed lag (ADLM) bounds technique rather than using the conventional co-integration approach. This technique is proficient of testing for the existence of a long-run relationship between variables regardless of whether the underlying time series are individually $I(1)$ or $I(0)$ and this enhances the stability and robustness of their results. Their result indicates the long run relationship between export and economic growth and the causality is uni-directional. That is export

cause economic growth in Kenya and they recommend that to enhance economic growth, the policy makers should give high attention for policies which encourage export of the country.

To investigate the causality relationship between export, import and economic growth of Algeria, Samad (2011) used time series econometrics techniques of co integration, error correction model and vector error correction Granger causality test or Wald Exogeneity tests. The Johansen co-integration test showed the existence of relationship and ECT confirms there is long term causal relationship among the variables. He found that export Granger causes economic growth and imports and he recommends that, the government should encourage industries which promote export of the country.

3.2.3 Empirical Studies in Ethiopia's Case

In case of Ethiopia, there are a small number of studies have been made to analyze the causal relationship between export and economic growth. Kedir (1998) carried out the impact of export on economic growth of eastern and southern Africa countries including Ethiopia using conventional and Feder type models. The result of his study justified that there is a positive and significant impact of export on economic growth in both models. In addition he employed the Granger non-causality test to observe the direction of causality and got the positive relationship goes from export to economic growth. The limitation of the paper was that he didn't take into account for co-integrating properties of the variable reflected on in the Johansen procedure and his sample size (1967-1994) is small to give reliable time series result. His result could be exposed for bias due to the Granger causality test didn't take into account the possibility of export and economic growth is co-integrated.

On country specific regression analysis case of Ethiopia Girma (1982) carried out bi-variate model by incorporating GDP as the dependent variable and exports as the only explanatory variable. The results of the study indicated that GDP and exports are highly correlated with correlation coefficient of 0.962 and the coefficient of determination (R²) was 0.81. on the other hand, the study didn't consider the effect of other important variables that could significantly influence economic growth.

Faye E. (2001) analyzed the relationship between export and economic growth of Ethiopia for the period of 1950 to 1986. The study used econometrics techniques of analysis by using the RATS software and the basic variables are the ratio of real investment to real gross domestic product, real gross domestic product per capita and real export. According to the result real export and the ratio of real investment to gross domestic product are co-integrated with real GDP per capita. The study proved strong positive relationship exists between real exports and real GDP per capita in long run rather than in the short run.

Debel (2002) examined the effect of exports on economic growth of Ethiopia for the period 1960-2000/01 and the purpose of the paper was to test empirically the relationship of export and economic growth and to examine the supply side constraints of export growth in Ethiopia. He employed co-integration and error correction procedures to test the causal relationship between export and economic growth of Ethiopia. To examine the indirect effect of export on economic growth and to avoid a possible simultaneity problem that may come due to the correlation between export and economic growth, the researcher used the simultaneous equation model and Granger causality test.

Mohammed (2005) analyzed the Export-led growth hypothesis (ELG) using annual data of Ethiopia for the period of 1960-2004. He employed Feder's (19983) model to investigate empirically the relationship of export and economic growth. Even if export variable has a positive sign in the short run, but which is not supported statistically, Export led growth hypothesis is valid only in the long run case. The error correction model (ECM) causality test showed that the presence of unidirectional causality running from GDP to Exports.

Kagnew (2007) examined the relationship of export performance and economic growth of Ethiopia using multivariate time series technique. The purpose of his paper was to examine the relationship of export and output growth in Ethiopia using co-integration and error- correction techniques in the period of 1960-2003/04. The paper applied a multivariate time series approach within a production function procedure and the variables were GDP, export, exchange rate, gross capital formation, imports and population. Regardless of the specification of the export variable, export growth was

positively associated with output growth in Ethiopia which supports the export led growth hypothesis. The causality runs from export to economic growth in short run as well as in long run.

Hailegiorgis B.(2012) carried out the causal relationship between export and economic growth of Ethiopia based on annual data for the period 1974 to 2009. The study employed the Granger (1969) causality test to analyze empirically the export led growth strategy. The paper used real export and real GDP variables as major variables. According to the results of the study, there is an evidence of uni-directional causality between export and economic growth for Ethiopia. Export growth causes economic growth but vice versa. The main limitation of the paper was it didn't take into account for co-integrating properties of the variable reflected on in the Johansen procedure.

In general, all of the above empirical analysis reviewed so far indicated that the export-economic growth relationship issue requires further investigation. Even though most of the studies indicated that the export-economic growth nexus is predominantly positive and significant, there are also findings which show doubt about the existence of such a relationship like Mohammed (2005). They employed different types of methodology to analyze the relationship of the variables and most of them used annual data for time series as well as for cross sectional data cases. This paper attempts to add to the existing literature by taking into consideration overall the methodologies used so far. The causal relationship between export and economic growth assessed using error correction model procedure with relatively higher observation of quarterly data for the period 1997/98 to 2010/11.

3.3. Trade Strategies for Development

There were debates on the implementation of two competing strategies in the developing countries economic development policy, i.e. an inward looking (import substitution) and an outward looking (export led growth) strategy.

3.3.1 Import Substitution¹ Policy

Import Substitution (IS) strategy was dominant in 1950s and 1960s in the vast majority of developing countries. Import substitution is a development policy in which economic growth is to be encouraged by repressing imports and by encouraging the domestic production of substitutes for those imports. As some anecdotal evidences indicate, Ethiopia was also adhered IS strategy in the in the late 1950 with formulation of First Five Years Development Plan (1957-1962) during Imperial regime.

During this time developing countries relied on trade barriers on their external trade. Their logic behind is that there is the deterioration in the price of primary export products of developing countries, which widening the gap between rich and poor countries economic status. And the developing countries industries are infant, needs temporary assistance and protection until they become grown up and can compete with the industrialized countries counterpart competition (Carbaugh, 2005).

Import substitution strategy plans the substitution of previously imported simple consumer goods and substituting wider range of more sophisticated manufactured items by domestic production using high tariffs and quotas on these imports. On the other hand this strategy contributes to the country by decreasing the foreign currency expenditures and hence the decrease in the trade deficit (Debel, G. 2002).

Prebisch (1952) and Nurkse (1961) was the first export pessimism economists who criticize the unbalanced trade between developed and developing countries, led to the adoption of the IS trade strategy by many developing countries. Prebisch explained the terms of trade for primary product exports are deteriorating and hence the main exports of LDCs are declining despite of the policies of developing countries. Nurkse's export pessimism view due to those markets of developed countries could not accommodate imports on a satisfactory scale as developing countries accelerated their development (ibid).

¹ Also known as inward oriented strategy or inward orientation.

According to Carbaugh (2005), encouraging economic development via import substitution has the following advantages:

- *“The risks of establishing a home industry to replace imports are low because the home market for the manufactured good already exists.*
- *It is easier for a developing nation to protect its manufacturers against foreign competitors than to force industrial nations to reduce their trade restrictions on products exported by the developing nations.*
- *To avoid the import tariff walls of the developing country, foreigners have an incentive to locate manufacturing plants in the country, thus providing jobs for local workers”*(p.241).

Import substitution strategy faced failure in various developing countries such as India that relied upon it for decades and extended it to capital-intensive industries. This strategy is predominantly disastrous if applied to industries whose products are inputs for sectors that should export. As a result, many negative effective rates of protection are created in the export sector. If a country protects inefficient manufacturers, it will destroy its export potential. Despite there is an abundance of inexpensive labor in developing countries, they can't compete their primary products with the price of developed countries machinery (Mohammed, A. 2005).

According to Carbaugh (2005) import substitution strategy has the following disadvantages on developing countries economy because trade restrictions shelter domestic industries from international competition; they have no incentive to increase their efficiency.

- *“Given the small size of the domestic market in many developing countries, manufacturers cannot take advantage of economies of scale and thus have high unit costs*
- *Because the resources employed in the protected industry would otherwise have been employed elsewhere, protection of import competing industries automatically discriminates against all other industries, including potential exporting ones.*
- *Once investment is sunk in activities that were profitable only because of tariffs and quotas, any attempt to remove those restrictions is generally strongly resisted.*
- *Import substitution also breeds corruption. The more protected the economy, the greater the gains to be had from illicit activity such as smuggling”* (p.241).

Thus, the overall result was that those developing nations that tried industrialization through import substitution grew at much slower rate than the few developing countries that followed an export-oriented policy (Debele, G. 2002).

- *“They encourage industries in which developing countries are likely to have a comparative advantage, such as labor-intensive manufactured goods;*
- *By providing a larger market in which to sell, they allow domestic manufacturers greater scope for exploiting economies of scale;*
- *By maintaining low restrictions on imported goods, they impose a competitive discipline on domestic firms that forces them to increase efficiency” (p. 242).*

Import substitution and export promotion are simply alternative ways for stimulating growth in the size of markets for manufactured goods. In both strategies the main concern is the availability of satisfactory market to enable firms realizes an optimal scale of production. The import substitution policy through tariff and nontariff barriers creates a domestic demand for domestic industries though the export market permits industries to fully utilize the optimal scale of production (Grabowski, 1994).

Grabowski (1994) goes on to argue that;

“It will be contended that import substitution is generally necessary for outward-oriented growth to succeed. More important, the success of import substitution is linked to the development of productivity in the agricultural sector. If the latter fails to grow rapidly, import substitution will fail and successful export-based growth will not occur. In this scenario the state will generally behave in a predatory manner with respect to the economy. Alternatively, if productivity in the agricultural sector is rapidly growing, the strategy of import-substitution industrialization will likely succeed, the state will generally behave so as to promote productivity growth, and outward-oriented growth will likely succeed” (536).

This was vindicated by the success of countries like Taiwan and South Korea who successfully accomplished the transition to outward-oriented development via import substitution. Based on the experiences of various developing countries empirical studies, export promotion strategy was superior to import substitution trade strategy but both strategies are complementary rather than substitutable one for another. The appropriate trade strategy is that development of import substitution policy is an important for the implementation of export promotion strategy. Thus,

Thus, the overall result was that those developing nations that tried industrialization through import substitution grew at much slower rate than the few developing countries that followed an export-oriented policy (Debele, G. 2002).

3.3.2 Export Promotion Policy

In the 1970s many developing countries were abandoning their ineffective import substitution strategies and shifts emphasis to export promotion growth strategy. The strategy links the domestic economy to the world economy and it is called outward growth strategy. Export promotion strategies reflect the motivation of national governments to encourage exports. Subsidies, tax exceptions, and special credit lines are the main instruments used to encourage exports. The main goal of the export promotion strategy is to prepare the “potential” industries for competition with the foreign competitors. Thus, the industries at their childhood must be protected from developed countries rivals for a while (Balassa, 1989).

According to the principle of comparative advantage is that trade yields efficiency in terms of resource allocation. When governments remove biases against exports, the gains from efficient resource allocation are realized. An additional gain from adopting the export promotion strategy relates to the economies of scale issue and the advocators of this strategy argue that domestic markets are too small to allow firms to achieve optimal scale (Grabowski, 1994).

According to Bhagwati (1988), another benefits of the export promotion strategy relates to its dynamic effects, that is the strategy may lead to more competition and less-sheltered markets and hence more innovations which bring a positive externality to the rest of the economy. According to Grabowski (1994), the export promotion strategy removes the unnecessary intervention of government policies in their attempt to guarantee the availability of the domestic market for domestic producers.

According to Carbaugh (2005), export-oriented policies have a number of advantages:

testing whether export growth leads to economic growth or economic growth led export growth is the objective of this paper.

3.4. The Contribution of this Study to the Existing Literature

There are various empirical studies done in different parts of the world on the causal relationship between export and economic growth. Some papers have done in cross country case where as the other on a single country scenario using different methodology and approach. Understanding the direction of relationship between export and economic growth would help the policy makers to design appropriate economic policy to the country. Most of the studies signified that the export-economic growth nexus is principally positive and significant and also there are cases some doubt about the existence of such a relationship. Founded on the methodological framework used, these studies can be categorized into those that use single equation model (OLS) estimation, causality test or simultaneous equation models. Even if some papers employed traditional way of causality analysis, there are studies which used current causality analysis procedure. Most of the papers were used annual data which was organized from different sources (lacks accuracy) erodes its appropriate estimate. In developing countries the export item is mostly primary products whose production varies with season that annual data takes only the average but in quarterly data this problem will be solved.

In the case of Ethiopia there is no enough and up to date research outputs on the linkages between export and economic growth. Most of the previous studies were not purely on the causal relationship of export and economic growth of Ethiopia and all of them used annual data. Due to difficulties in obtaining quality data, most of Ethiopian case studies used more than one source to obtain the data series. This research attempts to analyze the pure causal relationship between export and economic growth using bi-variate model. To minimize the limitation of annual econometrics time series analysis, the researcher employed quarterly data for the period 1997/98 to 2010/11 from NBE. Thus, the outcome of the study would fill the gap in the existing knowledge by analyzing the direction of relationship between export and economic growth of the country.

CHAPTER FOUR

4. DATA SOURCE AND METHODOLOGY

4.1 Data Source and Variable Description

The study was based on the secondary data sources obtained from the National Bank of Ethiopia (NBE), and Ethiopian economic policy research institute (EEPRI) statistical data base (2010). The two main variables of this study are export and economic growth of Ethiopia.

The proxy for economic growth is the real gross domestic product (RGDP) by using the constant value of GDP measured in Ethiopian Birr. The total value of export is deflated by export unit value index to get real export value. The log of real export and log of real GDP was used for the empirical analysis of this paper.

In this paper Quarterly data on Gross domestic product (GDP) and exports of goods and services are employed. The length of the quarterly time series data used in the analysis ranges from 1997/98QI to 2010/11QIVs.

4.2. Method of Data Analysis

Due to the dynamic effects of time series data, various economists agreed that time series data needs to be analyzed using time series econometric method. To analyze these data the researcher employed econometrics software Eviews 7 for econometrics analysis. The main objective of the study is to test the causal relationship between export and economic growth of Ethiopia, using the Granger causality test in Vector autoregressive (VAR) and Error Correction Model (ECM) approach. The Error Correction Model (ECM) assists to analyze the causal relation between export and economic growth in the short run as well as in the long run. Before performing the Error

Correction model, the following procedures or tests were done. These were the stationarity test, lag length determination, and the co-integration test.

Stationarity test or unit root test is an important technique to check the stationarity of any variable in the model or to ensure that any variable has a constant mean and variance. This makes forecast of future values sensible. That is if the variables are non-stationary, which is the case for most macroeconomic variables, the normal way to investigate the relationship among variables may be invalid for example the OLS technique gives spurious² result (Lopete S, 2006). The lag length of the variables is determined using the vector auto-regression model. If the unit root test detects the presence of non-stationarity, we can use the co-integration test to investigate the relationship among the variables. We use this test if there is a long run relationship among the non-stationary variables and following the Johansen approach we can determine the number of co-integrated vectors for any given number of non-stationary variables of the same order (Ray, 2011).

The causality test helps to detect if a causal relationship exists between the two variables. Causality test is done to ensure which variable causes (precedes) another variable that is given two variables X and Y, X is said to cause Y if lagged values of X predict Y well or the first variable (X) contains some useful information about the latter (Y) which enables us to forecast its future values efficiently. If lagged values of X predict Y and at the same time lagged values of Y predict X, then there is a bi-directional causality between X and Y (Lopete S, 2006).

According to Mohammed, H. (2011) there are two types of bi-variate model on the analysis of export and economic growth. VAR models without exogenous variables or with only two endogenous variables (export and GDP). And VAR model with both two endogenous variables (export and GDP) and two exogenous variables (capital and labor).

VAR models without exogenous variables are preferred due to their simplicity and are commonly used in applied studies related with the ELG hypothesis (Rahman and Mustafa, 1997). This study followed the VAR model without exogenous variables due to the above advantage and to overcome the lack of quarterly data on other exogenous variables.

² A spurious regression has high R^2 , t-statistics that is significant, but with no significant economic results.

nature (Harris, 1995). Hence the emphasis here will be on using the Dicky-Fuller (DF) approach to testing the null hypothesis that a series contains a unit root (i.e. non-stationary) against the alternative of stationary. The DF test is assumed that the data generating process of the variable being tested is a random walk [auto regressive process of order one (i.e. AR (1))]. Though, the use of DF test will be invalidating if the variable follows a higher order auto regressive process and the error term will be auto correlated. The alternative test which solves this problem is the Augmented Dicky-Fuller (ADF) test that considers a higher order and augmenting the random walk equation with some more lags. In DF and ADF tests the null hypothesis is that the variable is non-stationary against the alternative stationary. The ADF test has its own techniques to test the stationary or non-stationary of a given time series data. These methods of detection for unit roots are using the following three types of regression equations (*ibid*):

$$\Delta Y = \alpha_1 Y_{t-1} + \varepsilon_t \dots\dots\dots (4.2.1a)$$

$$\Delta Y = \alpha_0 + \alpha_1 Y_{t-1} + \varepsilon_t \dots\dots\dots (4.2.1b)$$

$$\Delta Y = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 t + \varepsilon_t \dots\dots\dots (4.2.1c)$$

Where, equation 4.2.1a is a random walk, Equation 4.2.1b is a random walk with intercept, Equation 4.2.1c is random walks with intercept and time trend.

$$\varepsilon_t \sim ii(0, \sigma^2) \text{ for } t = 1, 2, \dots$$

In the above equations we reject the null hypothesis of non-stationary based on the critical value of α_1 , ($\alpha_1 = \gamma - 1$). Though, in the above three equations the first difference of Y_t is regressed against a constant term, a time trend ($t = 1, 2, \dots, T$), and the first lag of Y_t .

The ADF tests result is evaluated depending on the value of t-statistics for the coefficient of the lagged dependent variable compared with special calculated critical values. That is we reject the null hypothesis of non-stationary (unit root) or the unit root doesn't exist and our variable is stationary, if the calculated value is greater than the critical value (Greene 2003; Gujarati 2004).

After identifying the presence of non-stationary (trend) time series data, we follow different techniques to make it stationary or to remove the trend; if the non-stationary (trend) in the variable

is trend deterministic, it is predictable and we can easily remove it by regressing the variable on time or can be controlled by incorporating a deterministic time trend as one of the regressors in the model. And if the trend is not deterministic (stochastic) so it can't be perfectly predictable as deterministic trend, then to avoid the trend and to make it stationary the variables needs to be differenced. If the variable is differenced one time to make it stationary, the variable is said to be integrated of order one denoted as $I(1)$. A variable is said to be integrated of order zero if a variable is stationary at level without need of differencing. Generally, if the series need to be differenced d times before it becomes stationary, it is said to be integrated of order d denoted $I(d)$ (Shiraz, 2005).

4.2.2 Lag Length Selection

Determining the lag length of the model has a significant influence and needs cautious decision on the numbers of lags. So, we must determine the maximum lag length before performing the causality test analysis. That is inclusion of too many lagged terms will erode degrees of freedom, not to mention introducing the possibility of multi co-linearity and on the other hand using too few lags will lead to specification errors (Gujarati, 2004). As Kilic (2008) elucidated, in both VAR and VEC models, lag length determined by using standard VAR model in levels.

According to Lopete (2006) and Safdari (2011) using alternative criteria, we can determine the lag length of the model best fits the data that minimizes the information criterion function (ICF) or the model that minimizes the overall sum of squared residuals. Though, in this study, the three commonly used model selection criteria Akaike Information Criteria (AIC), the Hannan and Quinn information criterion (HQIC) and Schwarz Information Criteria (SBIC) that contribute to the trade off of a reduction in the sum of squared residuals to form a more parsimonious model³ used. The appropriate lag length must be determined by allowing a different lag length for each equation at each time and choosing the model with the lowest AIC, HQIC and SBIC values (Wolters, 2007).

³ Gujarati, Basic Econometrics, 4th ed. McGraw-Hill, 2004, p 515.

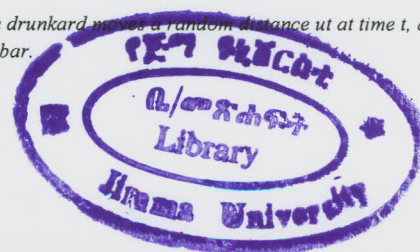
4.2.3 Co-integration Test

Most macroeconomic time series variables are not stationary at levels such as GDP and exports, are non-stationary in their levels, trend over time, and seem to follow random walk⁴. Two or more time series variables that may have a common stochastic trend can move together in the long run are said to be co-integrated. So before performing co-integration test we must check the stationarity and if it is non-stationary may require differencing the variables to make them stationary. If the variables are co-integrated, which may indicates the presence of long run relationship or equilibrium between the two variables. On the other hand the absence of co-integration suggests that variables that have no long run relationship, in principle they can move arbitrarily far away from each other (Rao, 1994).

The co-integration test, between Y_t and X_t shows the long run linear relationship between the two non-stationary variables. The test needs both variables to be integrated of the same order, say p , and a linear combination of these variables (Y_t and X_t) must be integrated of order lower than p , let $p-q$, and $q>0$. On the other hand, if these non-stationary time series variables Y_t and X_t are integrated in different order that is Y_t integrated at an order which is different from the integrated order of X_t , the two variables are not co-integrated and there will be likely to drift apart in the long run, and will obtain a spurious relationship between the variables. The non-stationary variable Y and X are said to be co-integrated if they are integrated with the same order and if there is constant β . That is $u_t \sim I(0)$ where $u_t = Y_t - \beta X_t$, and the residual series are stationary (Merza, 2007).

To test the co-integration and the relationship among the variables, there are two alternative methods. These methods are the Engle Granger (1987) and the Johansen's maximum likelihood techniques. Engle Granger method of testing co-integration is frequently used for testing the validity of a co-integrating relationship between variables. To determine whether the variables are co-integrated or not, the residuals from the long run relationship are tested for stationary using the Engle Granger methodology. Their order of integration will be determined using the DF test or ADF test if the residuals don't appear to be white noise.

⁴ The term random walk is often compared with a drunkard's walk. Leaving a bar, the drunkard makes a random distance u_t at time t , and, continuing to walk indefinitely, will eventually drift farther and farther away from the bar.



Engle Granger test of co-integration procedure has a number of limitations such as:

1. Inability to pick out more than one co-integrating vector (or more than one relationship).
2. The test for co-integration has lower power against the alternative tests,
3. Its finite estimates of long run relationship are potentially biased,
4. Using standard t-statistics about the significance of the parameters of the long run model inferences can't be drawn (Harris, 1995).

The above shortcomings are taken into account by Johansen procedure with the consideration of multiple co-integrating vectors. The Johansen maximum likelihood procedure is a multivariate generalization of the DF test (Enders, 1995).

In this paper the Johansen ML multivariate co-integration test is employed to analyze the long run relationship between variables which is adopted from Kagnew (2007). To conduct the Johansen ML test take the case of two variables I(1) x and y , and determined using the following Auto-Regressive Distributed Lag (ADL) equations .

$$Y_t = b_{11}Y_{t-1} + b_{12}X_{t-1} + b_{13}Y_{t-2} + b_{14}X_{t-2} + \varepsilon_{1t} \dots \dots \dots (3.2.3a)$$

$$X_t = b_{21}Y_{t-1} + b_{22}X_{t-1} + b_{23}Y_{t-2} + b_{24}X_{t-2} + \varepsilon_{2t} \dots \dots \dots (3.2.3b)$$

The above two equations (3.2.3a & 3.2.3b) can be rewritten as follow;

$$\Delta Y_t = (b_{11} - 1)\Delta Y_{t-1} + b_{12}\Delta X_{t-1} - (1 - b_{11} - b_{13})Y_{t-2} + (b_{12} + b_{14})X_{t-2} + \varepsilon_{1t} \dots (3.2.3c)$$

$$\Delta X_t = (b_{22} - 1)\Delta X_{t-1} + b_{21}\Delta Y_{t-1} - (1 - b_{22} - b_{24})X_{t-2} + (b_{21} + b_{23})Y_{t-2} + \varepsilon_{2t} \dots (3.2.3d)$$

Equation 3.2.3c & 3.2.3d can be expressed in matrix form as

$$\text{Where; } \Delta Z_t = \begin{bmatrix} \Delta Y_t \\ \Delta X_t \end{bmatrix} \dots \dots \dots (3.2.3e)$$

$$\beta_1 = \begin{bmatrix} b_{11} - 1 & b_{12} \\ b_{21} & b_{22} - 1 \end{bmatrix} \dots \dots \dots (3.2.3f)$$

$$\beta_2 = \begin{bmatrix} -(1 - b_{11} - b_{13}) & b_{12} + b_{14} \\ b_{21} + b_{23} & -(1 - b_{22} - b_{24}) \end{bmatrix} \dots \dots \dots (3.2.3g)$$

$$\varepsilon_t = \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \dots \dots \dots (3.2.3h)$$

4.2.1. Stationarity Test

Traditional regression models assume that both the dependent and the independent variables are stationary that means the errors have mean zero and constant variance. If the mean and variance of a variable is constant over time and the covariance of the variables depends on the gap of the time not on the actual time at which the covariance is considered is called weakly stationary. However, most of the time series data are non-stationary, meaning that the mean and variance are not constant over time. In non-stationary series, a variable has a different mean at different points in time and its variance increases when the sample size increases. That is those types of time series analysis might leads to spurious regressions. In this situation the statistical results shows that the presence of statistical significant relationship between variables in the regression model even if the result is an evidence of contemporaneous correlations rather than meaningful causal relations (Harris 1995).

Thus, before take part in an econometric work, it is better to check whether a series is stationary or not is an important task of the researchers. One of the ways to detect the presence of stationary in the variables or not, is unit root test. Consider a variable Y that has a time series represented by a first-order autoregressive AR (1):

$$Y_t = \gamma Y_{t-1} + \varepsilon_t \dots\dots\dots (3.2.1a)$$

Where Y_t is the Y at time t, ε_t is the disturbance term that is generated from a white noise process and assumed to be independently and identically distributed with zero mean and constant variance and ε 's are uncorrelated across time. If the absolute value of γ is less than one ($|\gamma| < 1$) \Rightarrow the time path is stationary, and the time path of Y_t will fluctuate around a constant mean value and therefore will not have an upward or downward trend. Conversely, if the absolute value of γ is greater than one ($|\gamma| > 1$) \Rightarrow the time path is non-stationary and the series will be explosive. Nevertheless, if the absolute value of γ is equal to one ($|\gamma| = 1$), the time path of Y_t is non-stationary, and the unit root exists (Merza, 2007).

Even if there are several ways to test for the presence of unit root, the most common one in econometric work is the Dicky-Fuller (DF) test either because of its simplicity or its more general

The Johansen ML procedure determines the number co-integrating vectors and provides the estimates of these vectors. To determine the number of co-integrating vectors, Johansen and Juselius (1988, 1990) propose the use of two likelihood ratio test statistics, the trace test and the maximum Eigen values test. The rank of the co-integration space determined by the number of significant positive Eigen values and this leads to the two likelihood ratio test techniques as follows (Wolter, 2007).

1. The trace test has

H_0 : there are at most r positive Eigen values ($\leq r$)

H_1 : there are more than r positive Eigen values ($> r$)

The test statistic is given as; $T_{r(r)} = -T \sum_{i=r+1}^k \ln(1 - \hat{\lambda}_i) \dots \dots \dots (3.2.3i)$

2. The maximum Eigen value test;

H_0 : there are exactly r positive Eigen values ($= r$)

H_1 : there are exactly $r+1$ positive Eigen values ($= r+1$)

The maximum Eigen values test is $\lambda_{max}(r, r + 1) = -T \ln(1 - \hat{\lambda}_{r+1}) \dots \dots \dots (3.2.3j)$

4.3 Error Correction Model

Causality is a type of statistical relationship between an event (the cause) and a second event (the effect), where the second event is considered as the outcome of the first event (the cause). We use Granger causality test to check the presence of causality between the variables in our case export and economic growth. The test was developed by Granger (1969) and he explains that a variable X is said to Granger cause another variable Y if a past value of X helps to predict Y. The standard Granger causality test (Granger, 1988) seeks to determine whether a past (lag) value of a variable assists to foresee changes on present value of another variable. That means lagged values of X are statistically significant in explaining the present value of Y. According to Engle and Granger (1987) the two variables (X and Y) are co-integrated, if the two variables are integrated as order one, I(1), and both residuals are I(0). The Granger theorem explains that if this is the case, the two variables could be generated by a dynamic relationship from Y to X or vice versa. When the series are co-integrated, the simple Granger causality test becomes inappropriate and the testing of Granger causality to be in the error correction model (Granger, 1988).

If the time series data of Y & X are integrated at order one I (1) and co-integrated that is if we confirm the existence of the long run relationship among the variables, the traditional Granger causality test shall not be applied. If the variables are I (1), Engle and Granger (1987) stress that causality must exist in, at least, one direction and the Granger causality test is then augmented with an error correction term (ECT). So by investigating the causality relationship using ECM gives suitable statistical inferences can be obtained. ECM combines both the short run relationship between the first differences of the time series variables and the long run relationship for the variables at the level. The error correction model is suitable if we have time series data and are concerned about the relationship of the variables both in short run and long run. That is ECM are useful for estimating both short term and long term effects of one time series variable on another time series variable. The augmented Granger causality test is then with an error correction term (ECT) and the error correcting models could be take the following form (Tsen, 2006; Ray, 2011 and Safdari, 2011).

$$\Delta Y_{it} = \eta_1 + \sum \alpha_{11} \Delta Y_{i,t-1} + \sum \beta_{11} \Delta X_{i,t-1} + \lambda_1 ECT_{1,it} + \varepsilon_{1t} \dots \dots \dots 4.1.5a$$

$$\Delta X_{it} = \eta_2 + \sum \alpha_{12} \Delta X_{i,t-1} + \sum \beta_{12} \Delta Y_{i,t-1} + \lambda_2 ECT_{2,it} + \varepsilon_{2t} \dots \dots \dots 4.1.5b$$

Where, Δ denotes first order difference, t denotes the time period, ECT_{it} denotes the errors of long term balance which is obtained from the long run co-integrating causality between X and Y.

If λ is significantly different from zero, error correcting mechanism would happens and the long run causality test is reliable. And if $\lambda=0$, the long term causality test is not reliable. If β_{11} is statistically significant ($\beta_{11} \neq 0$), the short term causality is proved, otherwise the short term causality doesn't exist (Safdari, 2011).

4.3.1 Impulse Response Function

An Impulse Response Function (IRF) shows how an unexpected shock in one variable at the beginning affects another variable through time or it traces the response of the endogenous variable to one standard deviation shock to one of the disturbance terms in the system. A shock to one variable not only directly affects that variable, but is also transmitted to all of the other endogenous variables through the dynamic (lag) structure of the VAR. That is, an impulse response function shows the effect of a one-time shock to one of the innovations on present and upcoming values of the endogenous variables. If the innovations are uncorrelated of that period, interpretation of the impulse response is simple. The i^{th} innovation is simply a shock to the i^{th} endogenous variable (Aktham, 2004).

The general form for the IRF would be written as;

$$y_t = \alpha + \varepsilon_t + \pi_1 \varepsilon_{t-2} + \dots + \pi_i \varepsilon_{t-i} \dots \dots \dots (a)$$

Where, y_t is a vector of the independent variables under consideration α is a vector of the constants; ε_i is a vector of innovations for all variables that has been included in the VAR model; π_i is a vector of parameters that measure the reaction of the dependent variable to innovations in all variables included in the VAR model (Merza, 2007).

CHAPTER FIVE

5 RESULTS AND DISCUSSIONS

This paper employed bi-variate Granger causality test with the Vector Autoregressive (VAR) and Vector Error Correction Model (VECM) framework of the analysis on the causal relationship between export and economic growth in Ethiopia. In this analysis the direction of causality between export and economic growth is determined and the response of variables for the dynamic change is also assessed.

5.1 Unit Root Test

In time series variables before performing any meaningful regression analysis, it is important to test the presence of unit roots in each variable considered and consequently the order of integration also identified. To obtain meaningful relationship from the regression analysis the variables employed preferred to be stationary and co-integrated (Harris, 1995, 34).

The time series variables undertaken to analyze the relationship between the variables in this study could be integrated with order one. The test results of the standard Augmented Dickey-Fuller (ADF) statistics for all the time series variables used in the estimation is presented in table 5.1 below.

Table 5.1 ADF Unit Root test results, at Levels

Variables		Augmented Dickey-Fuller		
		Without drift and trend	With drift	With drift and trend
LGDP		3.8151	1.0262	-1.5239
P value		0.1112	0.1787	0.0855
LEXP		0.6674	-1.0262	-3.5384*
P value		0.9153	0.1797	0.0052
Critical values	1%	-2.6055	-3.5547	-4.1348
	5%	-1.9467	-2.9157	-3.4935

Table 5.2: ADF Unit Root test results, with first differences

Variables		Augmented Dickey-Fuller		
		Without drift and trend	With drift	Without drift and trend
DLGDP		-2.6360**	-4.2604**	-4.4489**
P value		0.0	0.0	0.0
DLEXP		-11.3185**	-11.7055**	-12.3265**
P value		0.0	0.0	0.0
Critical values	1%	-2.6064	-3.5572	-4.1383
	5%	-1.9468	-2.9167	-3.4952

** Denote rejection of the null at 1% significance * Denote rejection of the null at 5% significance level

From the above Table 5.1 unit root test result it concluded that both export and GDP are not stationary at level. The variables become stationary with their first difference

(Table 5.2) and hence, the variables are considered as integrated of order one or I(1). Additionally, we can observe that all variables have deterministic trend becoming stationary at their first difference.

5.2 Lag Length Selection

Determining the lag length of the model has a significant influence and needs cautious decision on the numbers of lags. So, we must determine the maximum lag length before estimating the causality test analysis is performed. We can determine the lag length of the model that best fits the data that minimizes the information criterion function (ICF) or the model that minimizes the overall sum of squared residuals. In this study, all the three commonly used model selection criteria that are Akaike Information Criteria (AIC), the Hannan and Quinn information criterion (HQIC) and Schwarz Information Criteria (SBIC) that contribute to the trade off of a reduction in the sum of squared residuals to form a more parsimonious model were employed. The lag selection can be done by estimating the model with regular VAR model. If the three criteria agree the selection is clear however if there is conflicting of results according to Ivanov, V. and Kilian, L. (2001) suggestion, in the context of VAR models, that AIC tends to be more accurate with monthly data, HQIC works better for quarterly data on samples over 120 and SBIC works fine with any sample size for quarterly data (on VEC models).

As shown in the Table 5.3 below, from lag length selection analysis, lag length of 4 is optimal for series at first differences based on the above criteria.

Table 5.3: lag order selection criteria

VAR Lag Order Selection Criteria							
Endogenous Variables: LRGDP,LREXP							
Sample: 1999Q3-2010Q4							
Included Observations: 46							
Lag	LL	LR	Df	P	AIC	HQIC	SBIC
0	-2.548466	NA	0.004215	0.206748	0.287848	0.236824	.287066
1	111.8156	213.1331	2.79e-05	-4.809801	-4.566502	-4.719574	-4.64697
2	115.2702	6.123961	2.87e-05	-4.785007	-4.379510	-4.634629	-4.47953
3	125.0348	16.42242	2.22e-05	-5.047038	-4.479341	-4.836509	-4.58028
4	141.1955	25.71010	1.28e-05*	-5.599794*	-4.86989*	-5.32911*	-4.9143*
5	141.9365	1.111487	1.50e-05	-5.451658	-4.559563	-5.120826	-4.64313
6	143.9393	2.822170	1.67e-05	-5.360877	-4.306583	-4.969894	-4.39846
7	153.1389	12.12675*	1.35e-05	-5.597223	-4.380730	-5.146088	-4.48453
8	153.9333	0.974936	1.60e-05	-5.451513	-4.072821	-4.940228	-4.1809
9	158.1794	4.825119	1.64e-05	-5.462700	-3.921809	-4.891263	-4.10239
10	159.1579	1.022975	1.97e-05	-5.325359	-3.622269	-4.693771	-3.80523

(*) indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5%)

5.3 Co-integration Test

A co-integration test can be applied to determine the existence of a long-run relationship between time series variables. Before performing the test of long run relationship between two time series variables using co-integration, it is necessary first to test the order of the variables (Harris, 35). Using ADF unit root tests (Tables 5.1 and 5.2), it is found that each of the all series are integrated of order one or I(1), so the Co-integration test should be done for the existence of a long-run relationship between the variables.

While the variables are guaranteed to be non-stationary at levels and integrated of order one, I(1) (in table 5.2) and the next step is determining the number of co-integrated vectors existed. Co-integration between export and economic growth indicator is investigated by Johansen Co-integration Technique using the Trace test and Maximum Eigen Value test. Based on the outputs of

the Johansen's Co-integration test which is shown in Table 5.4 below, the Trace test indicates the existence of one co-integrating equations at 5% level of significance and the maximum eigenvalue test also proves the result. So, it is possible to conclude that the real export value (DLREXP) is co-integrated with the economic growth proxy (DLRGDP).

Table 5.4: The Results of Co-integration Test

Sample: 1997/98Q1 to 2010/11Q4				
Sample (Adjusted): 2000/01Q2 to 2010/11Q4				
Included Observations: 51 after adjustments				
Series: DLRGDP and DLEXP				
Lags Interval (in first differences): 1 to 4				
Unrestricted Co-integration Rank Test (Trace)				
Hypothesized No. of CE(s)	Eigen value	Trace statistic	0.05 critical value	Prob.**
None*	0.256051	15.31498	12.32090	0.0153
At most one	0.004501	0.230073	4.129906	0.6894

Trace test indicates one co-integrating equation(s) at the 0.05 level.

* denotes rejection of the hypothesis at the 0.05 level.

**Mackinnon-Haug-Michelis (1999) p-values.

Unrestricted Co-integration Rank Test (Maximum Eigen value)				
Hypothesized No. of CE(s)	Eigen value	Max-Eigen Static	0.05 critical value	Prob.**
None*	0.356614	23.81456	14.26460	0.0012
At most one	0.039414	2.171421	3.841466	0.1406

Max-eigenvalue test indicates one co-integrating equation(s) at the 0.05 level.

* denotes rejection of the hypothesis at the 0.05 level

**Mackinnon-Haug-Michelis (1999) p-values

5.4 Error Correction Model (ECM)

The researcher confirmed the existence of the long run relationship among the variables based on the above co-integration test, and the Error Correction Model (ECM) helps to estimate the short run relationship and the speed of adjustment towards long run equilibrium.

Table 5.5: Summary results of Causality tests using Error-correction modeling

Modeling DLRGDP				
Variable	Coefficient	Std.Error	t-value	t-prob
Constant	0.014529	0.00429	3.39018	0.001*
ECMgdp-1	-0.059680	0.03984	-1.49792	0.1373
DLRGDP-1	0.262852	0.13215	1.98904	0.0494*
DLEXP-1	0.012875	0.01979	0.65045	0.5169
Modeling DLREXP				
Constant	0.064811	0.02992	2.16637	0.0327*
ECMexp-1	-0.734309	0.14593	-5.03183	0.0000*
DLREXP-1	0.250458	0.13817	1.81262	0.0671
DLRGDP-1	-1.707754	0.92247	-1.85128	0.0729

* denotes the significance of a variable at 5% level.

	LREXP	LRGDP
R-squared	0.663722	0.360728
Adj. R-squared	0.589905	0.220400
Sum sq. resids	0.721384	0.020827
S.E. equation	0.132645	0.022538
F-statistic	8.991454	2.570610
Log likelihood	36.22357	126.6191
Akaike AIC	-1.028375	-4.573299
Schwarz SC	-0.649586	-4.194509

Based on the results of ECM from the above table 5.6, revealed the coefficient of the lagged error term (ECMgdp-1) for RGDP regression on export is not significant at 5%. This shows that in the long run export doesn't granger cause GDP in the Ethiopian context. While, the coefficient of lagged ECM regression results of export on GDP variable is significant at 1% level. This supports the hypothesis of economic growth granger causes export growth in the long run or the Ethiopian

economy is characterized by Growth Led Export (GLE) rather than export led growth. This implies that it was the growth of the economy, which led to enhancement of the performance of exports in the current government of Ethiopia. There is no short run causal relationship between export and economic growth in the Ethiopian case in last 14 years.

5.4.1 Diagnostic Tests

Before concluding the causality result analysis it is better to check the diagnostic test. The existence of autocorrelation, heteroscedasticity, and normality test in the model should be tested. In the diagnostic testing, the null hypothesis is that there is no misspecification in the model. Table 5.7 below shows diagnostic test results and we can confirm that these models pass all diagnostic tests.

Table 5.6: Diagnostic Tests for the Models

	DLRGDP, DLREXP		
	Df	Test Statistic	P-value
Autocorrelation: LM Test	4	5.309359	0.2570
Normality Test (Kurtosis)	1	0.380505	0.8268
Heteroscedasticity Statistic: (No Cross Terms)	48	42.69449	0.6894

(*) denotes rejection of the null hypothesis of no misspecification at 1% significance level.

5.4.2 Impulse Response Function

An Impulse Response Function (IRF) shows how an unexpected shock in one variable at the beginning affects another variable through time or it traces the response of the endogenous variable to one standard deviation shock to one of the disturbance terms in the system (Aktham, 2004). The responses are examined for 10 periods and the figures of impulse response of VECM are shown in the appendix.

The Impulse Response graphs of the natural logarithm of the real GDP (LRGDP) and the natural logarithm of real export (LREXP) revealed that there is a response of LREXP to LRGDP which indicates causality from economic growth to export growth.

CHAPTER SIX

6. CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1. Conclusions

The main objective of this study has been to analyze the causal relationship between export and economic growth in Ethiopia. The researcher employed both descriptive and econometrics analysis method. In the descriptive analysis the trend of export and economic growth was examined, and statistical tools of analysis were used to have better understanding on the issue. The annual data covered under descriptive analysis were from 1991/92 to 2010/11. The time series econometrics analysis was used to look over the causal relationship between export and economic growth for the period from 1997/98I-2010/11IV. The causal relationship between export and economic growth were evaluated using the granger causality test in vector autoregressive model and error correction model approach.

The current government of Ethiopia takes different measures to wards export promotion and liberalization policy since 1991/92 onwards to motivate the export sector. The export performance of the country shows improvement over the period under consideration and in 1991/92 due to government change the growth rate of export was negative 9.5 (-9.5). The total merchandised export value were under progress even there was ups and downs due to various factors like government change in 1991/92 and Ethio-Eritrea war 1998/99 which erodes the export revenue of the country. The average annual growth rate of export were 18.9% with the highest 65.2% in the period 1992/93 to the lowest export growth rate -18% in 1998/99.

Ethiopia has experienced encouraging economic growth since 1992/93 onwards. The average real growth rate of GDP was 6.6% and starting from the year 2003/04 the real GDP growth rate had been performed well with 10.2%; on same period the export of the country's goods and services growth was on average 24.9%. The trend of economic growth shows some up and downs due to

domestic and international phenomena. The country faced major shock on economic growth due to the occurrence of El Nino in 1997/98 and severe drought in 2002/03.

The country's output and export are highly dependent upon mainly on few agricultural products, for instance coffee in the period under considered (1991/92-2010/11) took 36% out of the total merchandize export value followed by oil seeds (14%). This shows that the export items of the country heavily depends on few export items especially on agricultural outputs.

This paper attempted to examine the direction of causality between export and economic growth in the context of Ethiopia using econometrics techniques of bi-variate models with only two endogenous variables (Real GDP and Real Exports) by employing quarterly data.

The stationarity unit root test of the variables (ADF tests) showed that both variables used in the analysis are integrated of order one $I(1)$. The Johansen co-integration procedure was applied and the results of the co-integration test proved the existence of a single co-integrated equation. The co-integration test confirmed the existence of long run relationship between export and economic growth in Ethiopia.

The error correction model was used to analyze the short run relationship and the speed of adjustment towards long run equilibrium. The ECM regression result illustrated that there is no significant short run as well as long run causal relationship from export to economic growth. There is a significant causal relationship from economic growth to export growth in the long run but the short run is not significant at 5%. So the ECM causality test result proved the existence of only long run uni-direction causal relation from GDP to export.

6.2 Policy Recommendations

The empirical results of this study confirmed that the long run causal relationship between export and economic growth were from growth to export which fails to support export led growth hypothesis. The current government of Ethiopia took different measures to encourage export sector of the country or to make export led growth but according to the empirical findings, the objective of the government is may not be achieved. So, based on the result, the following policy options or recommendations are forwarded:

- The ECM result verified the existence of long run causal relationship that runs from economic growth to Export growth. So, economic growth is the prerequisite for export growth in Ethiopia or some level of economic growth is important to promote export of the country. Hence, the government should give high emphasis on the production of exportable as well as non-exportable products so as to promote export of the country.
- As the result of this study proved, export-Led Growth hypothesis is not valid rather growth Led hypothesis is happened. Which implies the country's export promotion strategy till needs support and encouragement to maintain the country's objective of economic development through economic growth.
- Based on the descriptive analysis, the composition of export items is dominated by few primary agricultural commodities (like coffee). Thus, the government should encourage and give support to export value added agricultural products and diversify the basket of export items.

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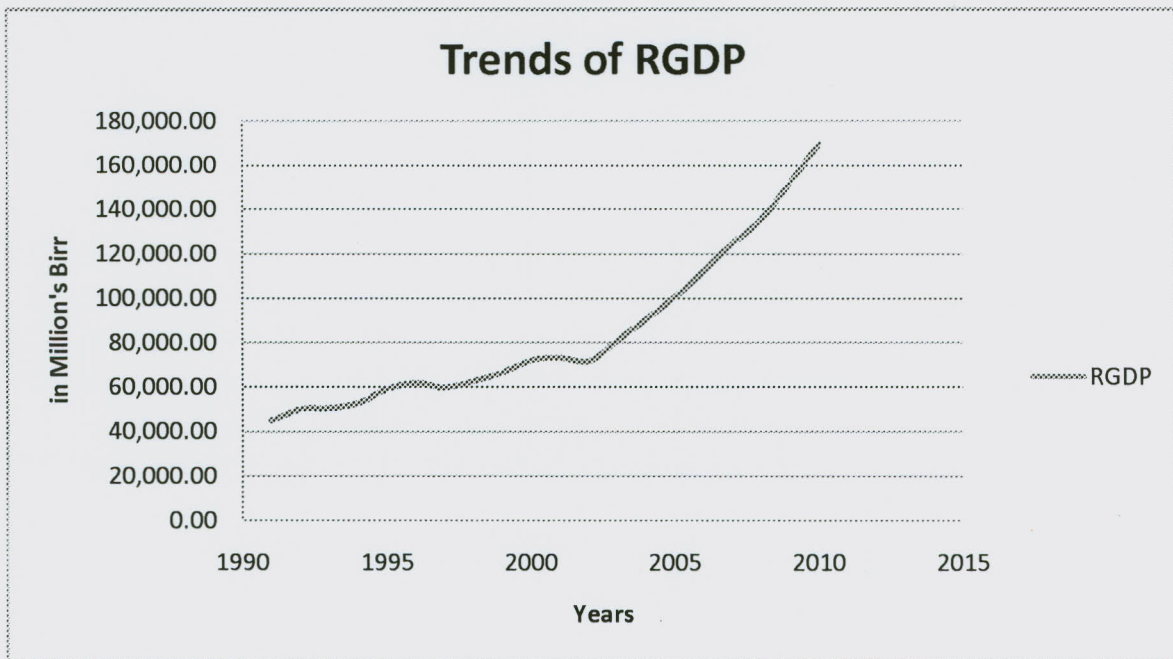
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Appendices

Appendix A.



Appendix B.



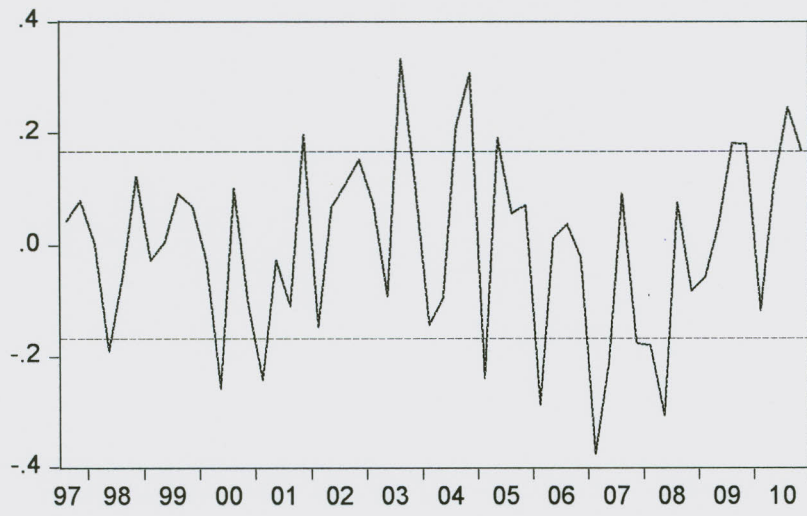
Appendix C. The share of Export to RGDP and Import

Year	Export /GDP	Export/import
1991	0.619477	15.40817
1992	1.601236	22.16762
1993	2.471291	26.317
1994	5.173938	41.73437
1995	4.289315	32.93948
1996	5.632115	40.09834
1997	6.933285	44.35971
1998	5.588741	30.00812
1999	5.938339	34.60016
2000	5.413734	31.73385
2001	5.273765	25.27162
2002	5.778078	25.99232
2003	6.357865	23.21606
2004	8.052425	23.32257
2005	8.607188	21.78256
2006	9.298266	23.17305
2007	10.94948	21.60568
2008	11.21985	17.96157
2009	17.13551	23.96862
2010	26.24686	31.76597

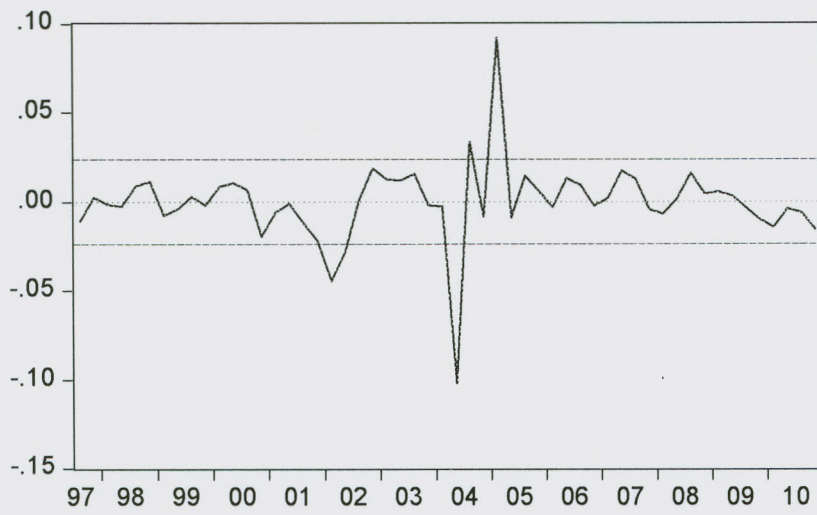
Source: Authors calculation based on the data of NBE

Appendix D.

LREXP Residuals

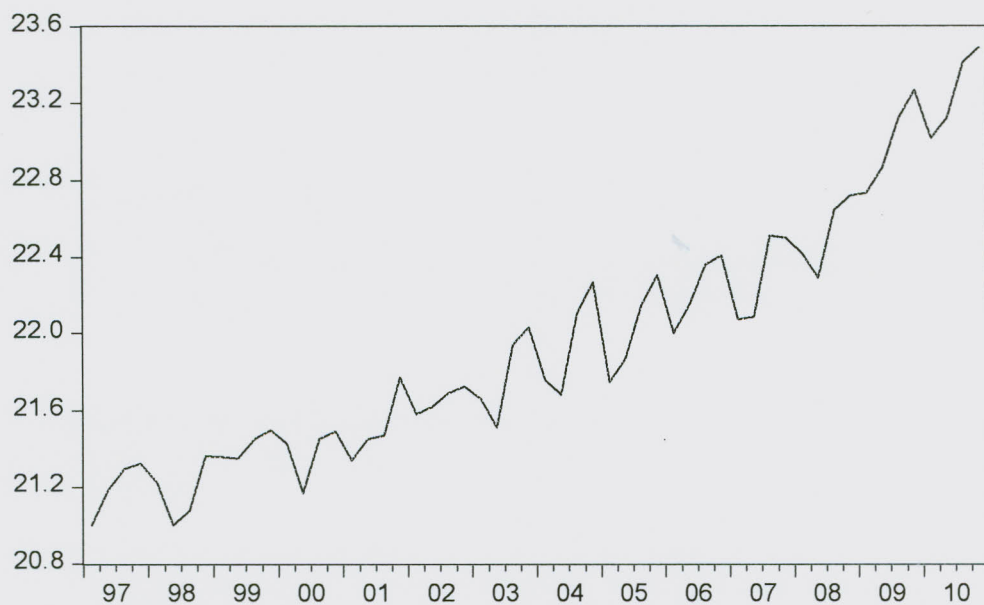
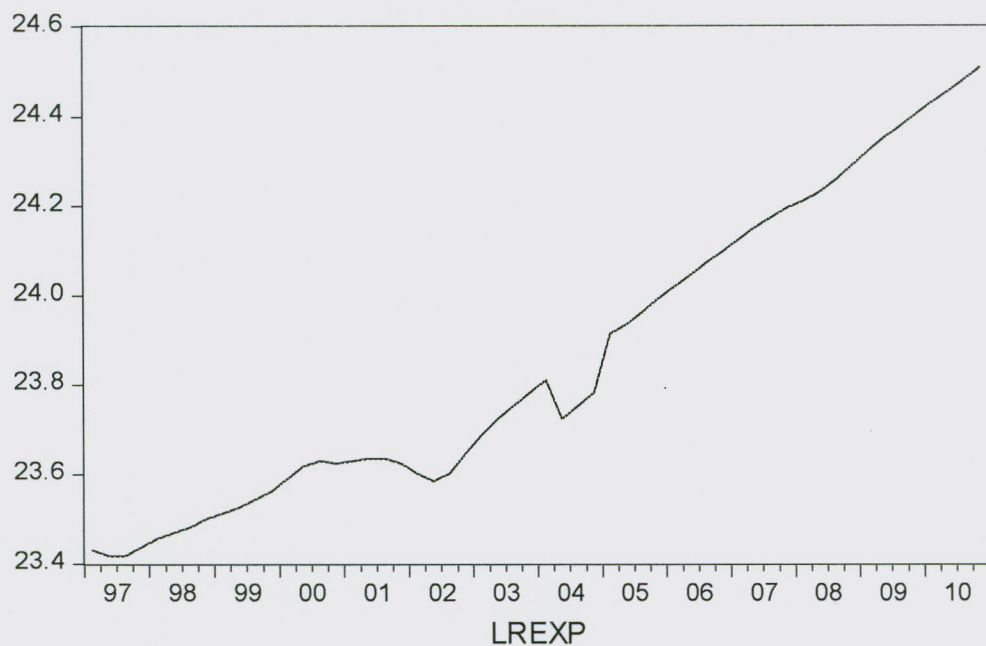


LRGDP Residuals



Appendix E.

LRGDP



Appendix F.

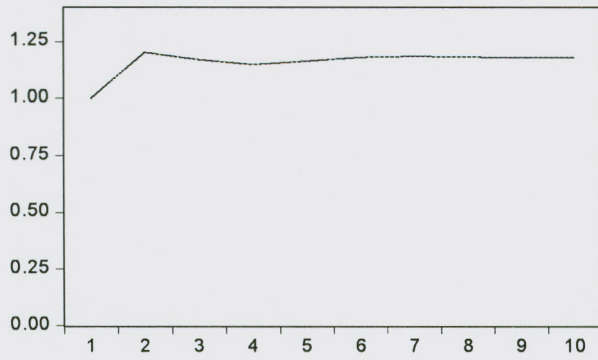
	Period	Derg (1974/75-1989/90)	EPRDF (1998-2010/11)	
1	Openness	26.1%	44.25%	
2	Export/ Import	48.26%	43.2%	
3	Export/GDP	10.49%	13.35%	

Source; authors calculation based on NBE data

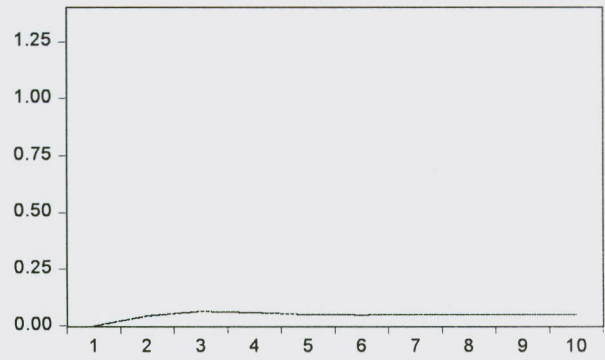
Appendix G. Impulse Response of LRGDP and LREXP

Response to Nonfactorized One Unit Innovations

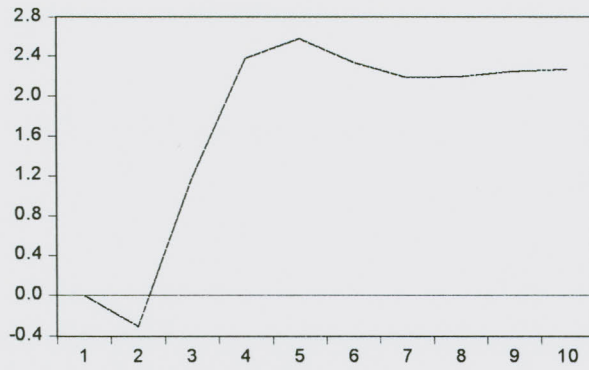
Response of LRGDP to LRGDP



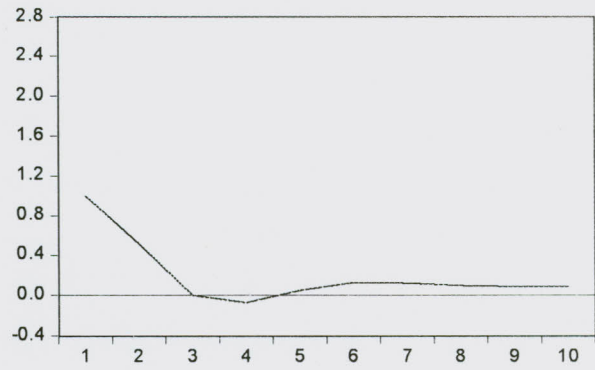
Response of LRGDP to LREXP



Response of LREXP to LRGDP



Response of LREXP to LREXP



Source: author's computation

Appendix H. The share of merchandised export items value from total merchandised export (%)

Period	Coffee	Oil Seeds & Pulses	Hides & Skins	Live animals & Meat Prodts.	Fruits & Veget.	Sugar	Gold	Chat	Petrol & Pet. Prdts	Bees Wax	Others
1991/92	60	0.2756	21	0.1738	2	1	-	2	6.75	0.2354	6.48
1992/93	67	0.65	16.77	0.22	0.34	0.63	-	8.19	3.78	0.24	2.06
1993/94	57.56	5.76	16.32	0.92	0.55	2.06	-	8.65	5.81	0.44	1.93
1994/95	65.85	5.62	13.67	0.50	0.67	0.08	-	6.31	3.48	0.24	3.59
1995/96	67.90	4.69	12.20	0.51	0.83	-	-	6.87	2.44	0.31	4.24
1996/97	66.20	4.65	10.68	1.01	1.31	0.14	-	5.72	2.38	0.26	10.49
1997/98	69.75	10.08	8.39	0.96	0.76	-	-	6.57	0.25	0.25	2.97
1998/99	60.16	10.63	6.92	1.06	1.16	0.04	-	12.67	-	0.28	7.08
1999/00	53.91	8.47	7.24	1.18	1.12	0.61	6.57	15.63	-	0.14	5.13
2000/01	38.90	8.76	16.22	0.41	1.17	1.75	6.01	13.06	-	0.19	13.53
2001/02	36.07	14.50	12.28	0.43	2.07	2.20	7.78	10.83	-	0.16	13.68
2002/03	34.24	13.68	10.82	0.60	1.98	3.71	8.72	12.02	0	0.10	14.14
2003/04	37.22	17.53	7.26	1.61	2.12	1.71	8.11	14.66	-	0.16	9.63
2004/05	39.57	5.82	7.98	3.23	1.90	0.07	7.00	11.82	-	0.13	9.34
2005/06	35.42	24.83	7.50	4.61	1.32	-	6.47	8.90	-	0.14	10.81
2006/07	35.78	21.75	7.55	4.39	1.36	-	8.26	7.81	-	0.15	12.96
2007/08	35.90	24.71	6.73	4.18	0.87	0.13	5.39	7.34	-	0.13	14.64
2008/09	25.85	31.34	5.02	5.35	0.82	1.17	6.80	9.52	-	0.11	14.02
2009/10	26.472	24.3098	2.8052	6.1965	1.5799	0.0004	14.2055	10.3783	0	0.0789	13.9731
2010/11	30.5844	16.8794	3.7959	7.6629	1.1513	0	16.9352	8.6158	0	0.06541	14.3095

Source: Authors calculation based on the data of NBE (2010/11)



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