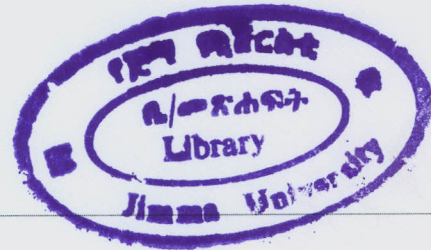


DETERMINANTS OF EXPORT PERFORMANCE IN ETHIOPIA: A VAR MODEL ANALYSIS

By
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JIMMA UNIVERSITY
COLLEG OF BUSINESS AND ECONOMICS
DEPARTMENT OF ECONOMICS

JIMMA
July 2012

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*A Thesis Submitted to the School of Graduate Studies Jimma
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Masters of Science in Economics (Economic Policy Analysis)*

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July 2012**

Declaration

I, the undersigned, declare that this Msc. thesis is my original work, has not been presented for a degree in this or any other University and that all sources of materials used for the thesis have been fully acknowledged.

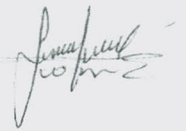
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ACRONYMS

ECM	Error Correction Model
EEA	Ethiopian Economics Association
EPRDF	Ethiopian People Revolutionary Democratic Front
GDP	Gross Domestic Product
IMF	International Monetary Fund
LDCs	Less Developed Countries
NBE	National Bank of Ethiopia
UNCTAD	United Nations Conference for Trade and Development
VECM	Vector Error Correction Model
WB	World Bank
WTO	World Trade Organization

ABSTRACT

Despite encouraging improvements in recent decades, Ethiopia's export performance has typically been portrayed as poor compared with other sub-Saharan African countries. The major objective of this paper is to investigate factors that determine the export performance of the country by using an econometric model for the period 1970/71-2010/11. This study tried to review the export performance; trends and share of different export items and examine the long run and short run determinants of export performance of Ethiopia. The long run and short run estimates are investigated using Johansson co-integration and Vector Error Correction approaches. The data is collected from NBE (2011), EEA statistical data base CD-ROM (2010), and WB and WDI (2011). The findings of the study revealed that in the long run export performance has found to be positively influenced by real effective exchange rate, openness, RGDP of home country, infrastructural development and private credit as a ratio of GDP (financial development). The RGDP of trading partner has found to be statistically insignificant. Hence, the long run elasticities of export performance with respect to real effective exchange rate, openness, RGDP of home country, infrastructural development and private credit as a ratio of GDP (financial development) are 0.7, 0.54, 1.7, 0.3 and 0.44 respectively. In the short run only last year openness has directly involved in enhancing export performance of current year. Maintaining high and sustainable economic growth, improvements in infrastructural facilities and credit access, and maintaining conducive and stable exchange rate policies as well as working to reduce trade restriction mechanism should due emphasis so as to improve Ethiopia's export performance.

Key words: *Ethiopia, Export Performance, Financial development, infrastructural development, Johansson co-integration, Openness, Real effective exchange rate, RGDP of home country, RGDP of trading partner, Vector Error Correction.*

CHAPTER ONE

1. INTRODUCTION

1.1 Background

“According to the orthodox classical economist as well to the modern liberal view trade is equivalent to an engine of economic growth. Exports promotion strategy is often in accordance with the principle of comparative advantage. When a country specializes in a product, which it can produce competitively, the goods become available to the community of the world at cheaper prices. This in turn expands the market for its product and employment opportunities to citizens thereby increase income. Consequently, both the internal and external economies will be attained to facilitate the process of economic development.” (Majeed and Ahmad, 2006, pp. 1265)

Economic development is one of the main objectives of every society in the world and economic growth is fundamental to economic development. There are many variables that contribute to economic growth. Export is considered as one of the very important accelerators of growth. The economics literature supports the contention that development requires economic growth to alleviate poverty, and greater access to world markets is perceived as a necessary condition for more rapid growth. For example, using cross-sectional regression, Agosin (2007) finds that export diversification has a stronger

effect on per capita income growth. There are also some concerns about the trade, especially between the primary and industrial goods exporting countries where the terms of trade are deteriorated against the poorer countries.

Developing countries share increased in international trade from just less than one quarter to about one third (Bacchetta 2007). For example Asia and particularly China account for most of the change, this changes has been facilitated by diversification of exports. According to the same source, while the share of developing Asia's in total world exports improved from 11.7% in 1985 to 21.5% in 2005, Africa's share shrunk from 4.3% to 2.9% over the same period.

Different reasons have been forwarded for the poor performance of African trade. Among the main reasons, IMF and World Bank, (2001) as cited in Yishak (2009) highlighted deep rooted structural problems, weak policy frameworks and institutions, protection at home and abroad for their products, in addition to this Alemayehu (2006) and Biggs (2007 as referred in the same source stressed that the structure of African exports is mainly characterized by dependence on primary products..

As in the case of many developing countries, Ethiopia's export has been limited to few primary products, which are mainly agricultural commodities. That is the sector has been dominated by a few primary products that account for a country's export earnings. According to the World Bank (2009), the share of Ethiopia's manufactures export in the total export is only 9.0 percent (implying primary agricultural commodity to be 91

percent) while that of China is 94 Percent. The agricultural sector, in turn, operates at the mercy of nature and the effects of nature on the sector are directly transmitted on to the performance of the export sector. Hence agriculture is the most important determinants of Ethiopia's overall export performance.

When we come to composition of exports, 1990 onwards the Ethiopian export sector could be characterized by three dominant commodities namely; coffee, hides and skins, oilseeds and pulses which is the mirror reflection of the country's overall economic performance which depends on production of agricultural commodities. The works of Abay and Zewdu, (1999) revealed more than half of the country's export earnings are generated from coffee in between the years 1966 and 1996. However in recent years according to NBE (2010) data, its contribution to total export earnings has declined to 35.8% in 2007/08 and further declined to 26.4 percent in 2009/10.

When we look at the last 41 years data, the export structure of Ethiopia has been characterized by greater concentration on few traditional exports such as coffee, hides and skins and oilseeds and pulses. From the total exports of the country coffee was the dominant export commodity accounting for about 52.27 percent of the country's total exports, on average¹.

¹ Self calculated from EEA (2010) and NBE 2011) data

*“Ethiopia’s exports reached a never-before-seen level of \$2 billion in 2009/10. This export level is an impressive 38 percent increase from the \$1.5 billion in exports registered in the previous year, and nearly three times the average annual export level of the prior decade (2000-2009). Encouragingly, the increase in exports has been broad-based in terms of both commodities and country of destination. Data from destination countries on their reported level of imports from Ethiopia showed strong growth in 2008/09, suggesting there is little reason to doubt the reliability of national export data compiled by the Ethiopian Customs Authority.”*² The impressive export performance was attributed to the increases in export earnings from coffee, gold, chat, flower, live animals, fruit and vegetables, meat and meat products and oilseeds (EEA, 2011).

Thus, it would be very important to look into the performance of Ethiopian export sector. This enables to look in to contribution of some major export items on total export. Hence, this paper aims to examine the determinants of export by considering both demand and supply side factors.



² Access capital: Report on Ethiopian export performance 2010 page 1

1.2. Statement of the Problem

Though Ethiopia's total exports have been growing at an average rate of 15.23 percent during the year 1970/71-2010/11, Ethiopia's export sector is still small; evidenced by the lower export/GDP ratio and the declining share of exports in import financing.(NBE, 2011). For example according to capital (2010), Exports of goods in Ethiopia are only about 7 percent of GDP, compared to an average of near 30 percent of GDP in Sub-Saharan Africa. The same source also revealed that *“export levels still fall short of what is registered by comparing it with other African countries which is much smaller populations (Uganda and Tanzania both export more than \$3 billion per year), and exports per person remain very low: only \$24 in Ethiopia compared to \$200 in Sub-Saharan Africa and \$580 in developing Asia. Growth rates are also very modest if one makes a comparison with Asian countries over a decades-long time frame. For example, Ethiopia's total exports were higher than that of Vietnam in the 1980s but are now just a tiny fraction: \$2 billion in Ethiopia versus \$65 billion in Vietnam”* (Capital, 2010, PP 2)

Similarly, the share of export in import financing (Export/Import ratio) has contracted from the 1970/71 - 1979/80 average level of 88.46 percent to 40.67 percent in 1980/81 - 1989/90 and 28.94 percent in 1990/91 – 1999/2000 and further it declined to 24.68 percent for the period 2000/01-2010 /11 on average.³ With regard to share of world export, Ethiopia's share in total world exports is still very low, amounting to 0.01% in 2010 (WTO, 2011).

³ Self calculated based on NBE data 2011

In addition to the government's effort to increase the country's foreign exchange earnings by boosting the country's export performance and hence economic growth, pursuing concrete policy measures and incentive schemes, it still calls for specific case studies concerned with systematic identification of factors constraining export growth. Thus identifying and examining those factors that significantly affect Ethiopia's export performance so as to take corrective actions helps us to know what explains variation in Ethiopian export performance that should facilitate the design of policies to improve the performance and ultimately overall economic growth.

Hence, issues addressed in this study includes quantifying the performance of export and understanding the determinants of export performance; which motivated the present study by incorporating demand and supply side factors so as to identify possible policy intervention areas for export growth.

1.3. Objective of the Study

The main objective of this study is to empirically investigate factors that determine the country's export performance by specifying an econometric model for the period 1970/71 to 2010/11. More specifically the study attempts to:

- ✓ Review the overall performance of Ethiopia's export sector
- ✓ Examine the trends and contribution of different items to the overall performance of export
- ✓ Examine the long run determinants and short run dynamics of export performance of the country

1.4. Hypothesis of the Study

- ❖ Export sector of Ethiopia is dominated by few primary products and the performance of the sector is improved.
- ❖ Ethiopia's export performance is positively related with real income of trading partner, real effective exchange rate, openness, real GDP of home country, infrastructural and financial development in the long run.
- ❖ Real effective exchange rate affects export performance of Ethiopia negatively in the short run.

1.5. Significance of the Study

Export instability affects the performance of the general economy. Ethiopia which is primary commodity exporting country is susceptible to such problems. Hence, identifying the determinants of export performance will help to provide information to policy makers to enable them to come up with the appropriate policies regarding the growth of the sector and the economy as a whole.

Even though the importance of export as an economic activity and a driver of growth have long been established in various research endeavors, model based analysis of the determinants of exports are inadequate in Ethiopia. In addition, some empirical studies have specification problems ignoring the simultaneity between prices and quantities in

the specification of export demand and supply functions. For instance, a World Bank (1987) study has ignored the demand side in specifying an export supply function for Ethiopia. It has also employed fewer observations without taking into account the time series characteristics of the data.

Similarly, Alemayehu (2001) as cited by Berhanu (2003) has ignored demand side constraints in estimating aggregate supply equation for export of coffee. Tura (2002) on the other hand, have ignored supply side factors in his export model. The current study by Yishak (2009), estimates Ethiopia's export performance by using the gravity model approach in which it has no sound theoretical foundations. Berhanu (2003) has also tried to estimate Ethiopia's export performance using Engle-granger methodology which has various limitations in estimating long run relationships.

Therefore, output of this study is expected to provide estimates of export response of the country with respect to change different variables that potentially determine it. In addition to this the results can be used, as an input towards designing appropriate extension programs and development projects to maximize the benefits of the sector.

1.6. Scope and Limitation of the Study

The study covers the determinants of export performance in Ethiopia only for the period 1970/71-2010/11 due to lack of data before the year 1970/71. The major limitation of this study lies on the descriptive analysis part. On the descriptive part only export of goods are discussed due to lack of disaggregated data for export of services. In addition, the

study does not incorporate the role of domestic institutions that could partly explain export performance in Ethiopia.

1.7. Organization of the Paper

The paper is organized as follows. The next chapter provides overview of the Ethiopian export performance and its trend. Literature reviews, including theoretical and empirical evidence on Determinants of export performance is presented in chapter three. Chapter four provides Model specification, data source and description, estimation techniques. Chapter five presents analysis and results of the study. Finally, chapter six presents conclusion and policy implication based on the estimated results.

CHAPTER TWO

2. OVERVIEW OF THE ETHIOPIA'S EXPORT SECTOR

2.1. Export policies: A review

For the purpose of reviewing and analyzing trade strategies with special emphasis on efforts of export diversification and, structure and performance of exports during the three successive regimes, the researcher tried to categorize the three periods based on the life span of each regime. These are the Imperial (pre 1973/74), the Dergue (1974/75 – 1991/92) and the EPRDF (post 1991/92).

2.1.1. Imperial Regime

During this period the country was in landlord tenancy economic system and the foreign trade sector was governed by a relatively free market oriented policies with the private sector (mainly foreign capital) occupying the lion's share in both export and import activities. The major trade strategy during that time was import substitution. That is the then strategy tried to replace those goods and services that are imported by producing domestically. The idea of export diversification is also emphasized in the First Five-Year Development Plan (1957-1961).

As indicated in the plan, the volume of the country's exports, the balance of payments position and the level of budgetary revenue depends on the price movements and the

extent of demand for the three main export commodities-coffee, hides and skins and oil seeds.

In addition, the plan calls for a diversified structure of exports by exploiting the numerous livestock, the products of agro-industries such as sugar, canned meat, and leather, and minerals to secure average annual export growth of 9 percent and 11 percent share of exports in national income (Imperial Government of Ethiopia, 1957 cited in Berihanu 2003).

Besides export diversification being the core issue in the first year development plan, the Second Five Year Development Plan (1962-1966) also gave great emphasis on structural change to achieve higher level of foreign exchange earnings (Imperial Government of Ethiopia, 1962). According to the plan expansion of the country's export through strengthening their world markets acceptance and competitiveness and greatly contribute to the improvement of the already affected terms of trade and balance of payment status of the nation.

To implement this plan different actions were taken like establishment of government foreign trade corporations; revision of existing customs tariff to protect domestic products and stimulate exports; directing credit, premium and subsidy policies towards the development of production and promotion of exports; conclusion of a series of bi-

lateral and multilateral economic agreements as well as better participation at international trade fairs, so as to keep the targeted average annual export growth rate of 11 percent.

The additional component on export diversification in the third-five year development plan (1968-1973) is the geographic diversification of exports of traditional exports such as coffee, livestock products and oilseeds as well as the development of non-agricultural exports. The plan targeted to reduce the share of primary agricultural exports in the country's total exports 75 percent in 1973.

In addition to fiscal and monetary incentives offered, the then existing system of duty draw back on direct raw materials and other components of export product was revised.

2.1.2. The Socialist Regime

The military government who came to power in 1974/75 continued the import substitution strategy designed by the imperial regime up to 1984/85 and then undertook a ten-year perspective plan of 1985/86-1994/95. The export objective of the Ten Years Perspective Plan of the Dergue Regime were increasing foreign exchange earnings, reducing the dependence of the country's export sector on limited export markets, increasing the amount and composition of manufactured exports and increasing the socialization of the export sector (Provisional Military Government of Socialist Ethiopia, 1985).

During the plan period, average annual export growth rate of 15.4 was targeted and state export companies were expected to play a critical role by occupying 90 percent of the export business. As indicated in the plan, the respective shares of traditional exports (coffee, hides and skins, pulses and oil seeds) as a group as well as that of coffee was expected to be reduced from 78.1 percent and 55.1 percent in 1984/85 to 60.1 percent and 39.9 percent in 1994/95, while the share of other export products like (live animals, meat products, fruits and vegetables, spices, sugar and molasses, natural gum, chat and others) to rise from 21.8 percent to 57.6 percent in the plan period. (Berihanu, 2003, pp. 14)

2.1.3. EPRDF Regime

After the fall of the Derg regime in 1991, the transitional government of Ethiopia (TGE) along with the IMF and World Bank has undertaken liberalization and structural adjustment program to address the internal and external imbalance of the economy. According to the transitional government of Ethiopia (1991), the then economic policy acknowledged the importance of increasing and diversifying the country's export to ease currency shortages along a free market-based economic path. These policies included different trade policies, strategies and trade liberalization measures which have had wide implications on the workings of the economy.

In addition the role of the state in foreign trade sector was minimized so as to ensure adequate private capital participation in the export business by aiming at increasing export and foreign exchange earnings.

In order to effectively implement the development of the export sector the following measures were taken by the government.

- Determination of the currency exchange rate based on daily interbank foreign exchange system
- Devaluation of the Birr and step-by-step liberalization of the foreign exchange market.
- Simplification of export licensing procedure by minimising administrative and bureaucratic procedures;
- Giving 70% loan for export related investment projects through the development bank of Ethiopia if investors cover 30% on their own.
- removing all taxes on exports (except coffee) and subsidies to parastatal exporting enterprises as of December 1992 and since April 2001 exporters were waived from the 6.5 percent coffee export tax,
- No ex ante export price controls by the national bank of Ethiopia.
- The Ethiopian Export Promotion Agency is established very recently as an autonomous body by proclamation No.132/1998. The main objective of the agency is to promote the country's exports. By doing so it is believed to achieve export diversification in agricultural, industrial and mining sectors of the nation's economy.
- A preferential interest rate scheme is also introduced for exporters, which is less by 3.5 percent compared to the interest rate paid on non-export activity loans.

Such low preferential interest rate scheme is provided for exporters because it is believed to strengthen the country's export diversification efforts.

- A duty draw back scheme was introduced where by exporters are re-funded the tax and duty they paid on the imports of inputs and raw materials used in export production. This is to provide exporters a free trade status on their import of intermediate inputs and encourage non-traditional export products, especially that of manufactured goods. But the effectiveness of the scheme on export is constrained by lengthy administrative requirement to get re-funded.
- A foreign exchange retention scheme has been introduced which entitles exporters to retain 10 percent of their earning to hold in their account and to sell the 40 percent at a competitive rate, while submitting the remaining 50 percent directly to the National Bank. But the scheme may not be beneficial in view of the usual control over the use of the retained 10 percent and for the fact that it ties up the working capital.

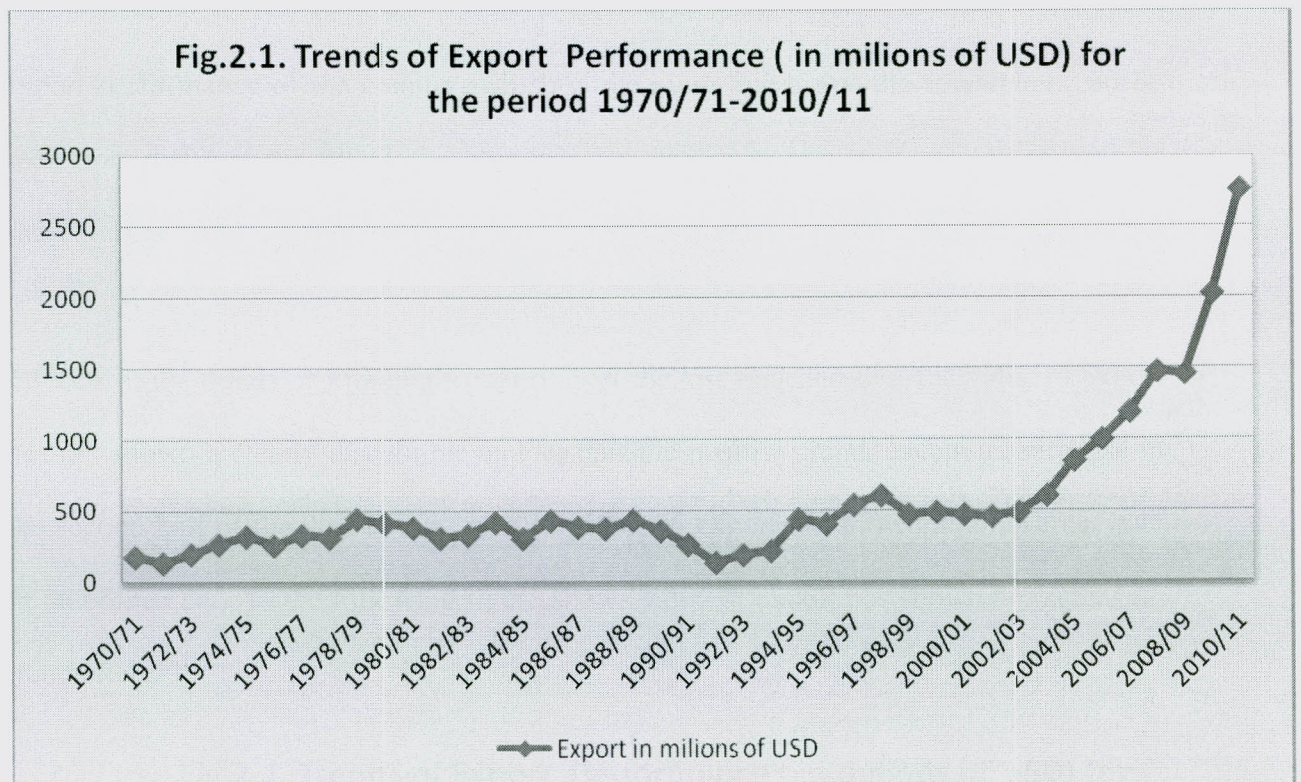
2.2. Trends and Structures of Ethiopia's Export

2.2.1. Trends in Export Performance

Ethiopia, like Sub-Saharan African countries, has an economic structure that is characterized by low per capita income, largely agrarian economy with relatively low growth rates, and serious foreign exchange constraint. There is also less inter-sectoral dependence in the economy. The larger proportion of the active labour force is engaged in agricultural activities and the export sector performance has not been encouraging. The

export performance of the country, which is the main interest of the researcher, can be seen from different aspects like, export structure, the share of export to GDP and export share to import.

To look at the trends of Ethiopia's export, over the last four decades, the value of export has not shown a clearly discernible and sustainable positive trend, except a sharp rise in the second half of the 90s. During 1990/91-1995/96 export has grown at an average rate of 46.55 percent. As the following figure shows value of export has shown an increasing trend after 90's.

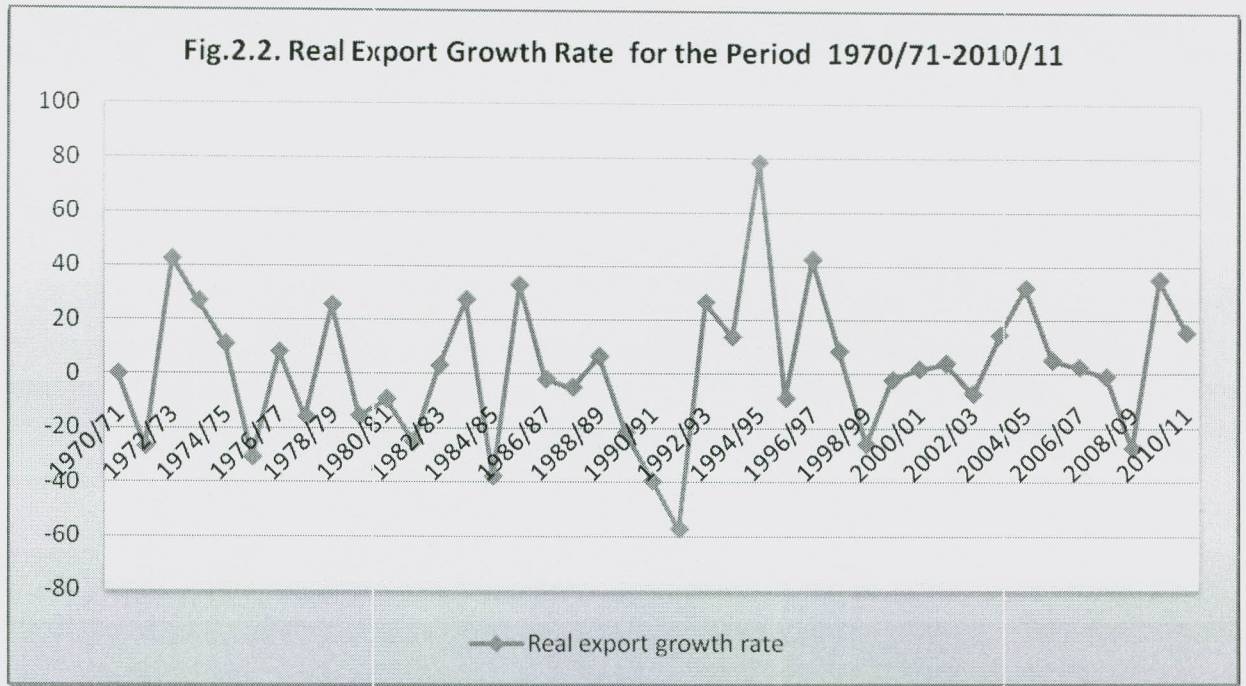


Source: computed from EEA statistical data base 2010 and NBE 2011 annual report

Consistent and remarkable increase in export was registered from 2000 onwards. For example value of export accelerated from 14.3 percent during the period of 2000/01-2004/05 to 37.2 percent for the period 2005/06-2010/11.

More generally, if we look at the following figure (fig 2.2), real export growth rate show a great fluctuated trend for the period 1970/71 to 1990's. But after 1990's the growth rate of export shows relatively stable trend. For example when we look at the average growth rate of export for the period 1974/75-1990/91, Ethiopia's export performance was disappointing. The value of export showed a steady decline at an average rate of 4.98 percent annually.

Different reasons are raised for this poor performance of the country's export. For example Berhane(2000) explains why Ethiopia registers such poor performance. According to him the destructive wars that takes about seventeen years was the main reason. During that time resources of the country were consumed largely for war efforts. The expansion of military spending caused the resource to divert from other sectors and contributed for low level of economic activities. Such conditions adversely affected trade activities of the country.

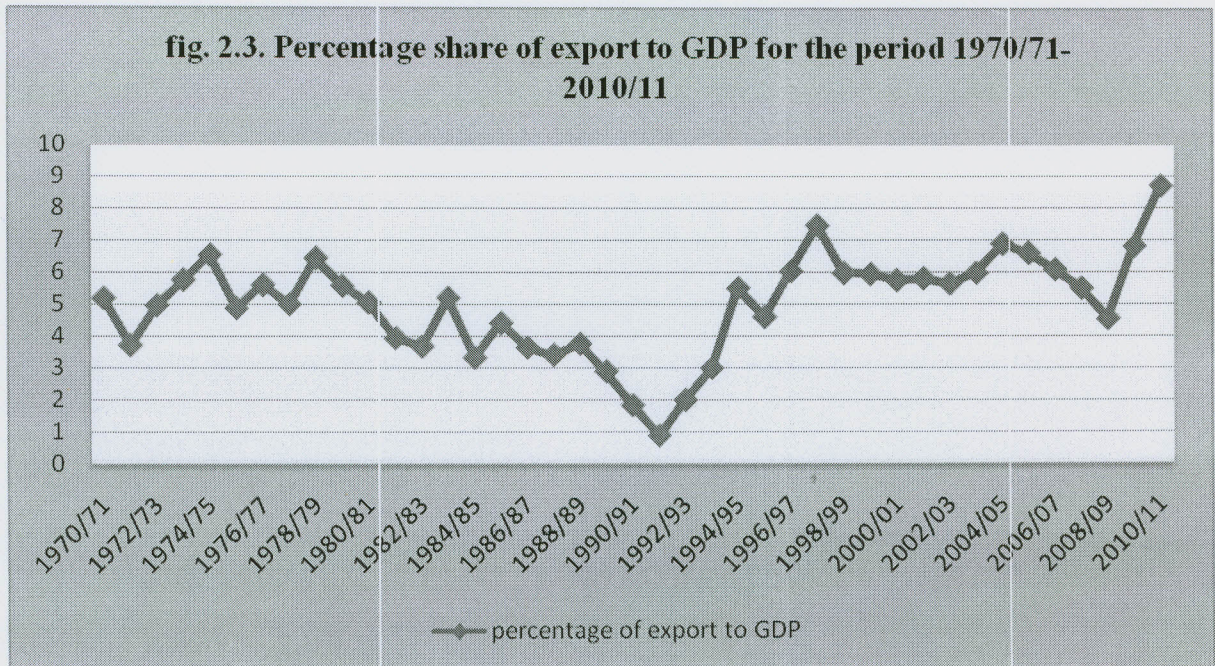


Source: computed from EEA statistical data base 2010 and NBE (2011)

Generally, the overall performance of the export sector was unsatisfactory during 1970/71 – 2010/11 as evidenced by the lower export/GDP ratio and the declining share of exports in import financing.

According to the national bank data (2011) the export/GDP ratio was 4.9 percent on average during 1970/71 - 1973/74 and show a slight reduction during the period 1974/75 - 1990/91 which was about 4.42 percent. Share of export to GDP shows improvements following different actions taken by the transitional government of Ethiopia to boost its share to GDP. Hence the share of export to GDP has almost showed improved trend for the period 1991/92 – 2010/11 which is about 5.48 percent on average. Also, the share of export in import financing (Export/Import ratio) has contracted from the 1970/71 -

1973/74 average level of 95.29 percent to 56.88 percent in 1974/75 - 1989/90 and 26.71 percent in 1990/91 – 2010/11.



Source: computed from EEA statistical data base 2010 and NBE (2011)

Table 2.1: Total Value of Exports, Export/GDP Ratio, GDP, Export Growth Rate and Export/Import Ratio

Period average	Average export (in mil. of birr)	GDP (in mil. of birr)	Export/GDP (%)	Export/Import (%)	Export growth rate (%)
1970/71-1973/74	432.42	8754.1	4.91	95.29	13.26
1974/75-1990/91	740.031	18,050.1	4.42	55.03	-4.98
1991/92-2010/11	8287.80	132,048.9	5.48	26.77	32.72
Overall average	4391.86	72752.33	4.98	45.18	15.23

Source: Author's calculation based on data from EEA (2010) and NBE (2011)

2.2.2. Commodity Structure of Ethiopia's Export

One of the salient features Ethiopian export sector is its lack of diversification or concentration on few commodities. As a part of the developing world, agricultural commodities constitute the major share of Ethiopian exports meaning there are insignificant non agricultural exports in total merchandize export. For the past four decades, primary agricultural products accounted for 80-90 percent of the merchandise export earnings of Ethiopia.

As table2.2 below shows over the 41-year period, coffee was the dominant export commodity accounting for about 52.27 percent of the country's total exports, on average. Hides and skins was the major non-coffee export commodity accounting for 10.61

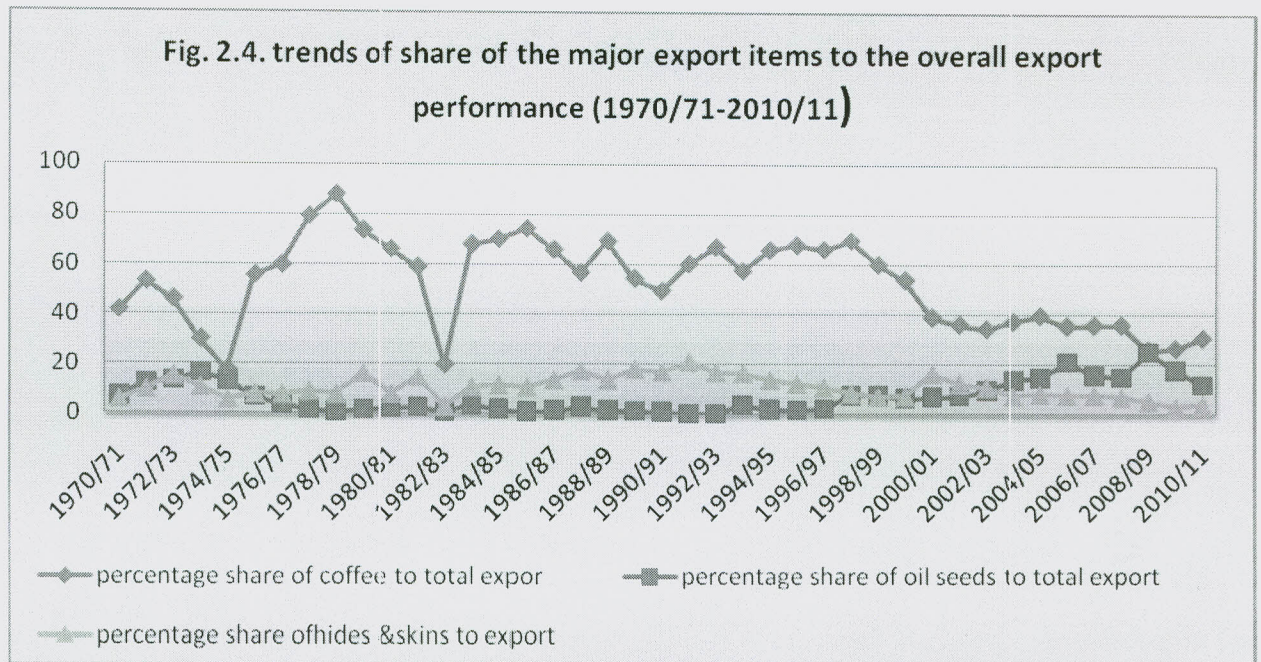


percent of the country's exports followed by oilseeds (6.97 percent), pulses (4.5 percent), fruits and vegetables (3.66 percent) and chat (2.49 percent).

Table 2.2: Average Export Share of Selected Commodities (by percent)

Commodity	1970/71-1973/74	1974/75-199/91	1991/92-2010/11	Overall average
Coffee	42.707	60.448	47.23	52.27
Oilseeds	12.27	2.73	9.51	6.97
Hides and skins	10.31	11.31	10.06	10.61
Pulses	10.93	3.70	3.89	4.5
Meat & meat product	3.39	0.60	0.92	1.03
Fruits & Veget.	9.55	5.08	1.27	3.66
Sugar	2.02	1.45	1.12	1.36
Live animals	0.88	2.17	0.38	1.27
Chat	0.84	1.76	3.44	2.49
others	7.31	10.95	22.84	16.39
Total	100	100	100	100

Source: Author's calculation based on data from EEA (2010) and NBE (2011)



Source: Author's computation based on data from EEA (2010) and NBE (2011)

Regarding the trends of different export items figure 2.4 above clearly shows that the share of coffee to the total export shows extreme fluctuations between 1970/71-1982/83 and relatively stable and constant between the periods 1983/84-1996/97. After 1997/98 the relative share of coffee export shows a decline trend. But after this period the overall export performance shows an increasing trend. Thus this implies that the relative share of non coffee export has been showing an increasing trend. According to EEA, (2011) report there is a noticeable phenomenon in the exportable items which is the rise of cut flower export has been seen after 2000/01 onwards. The other thing that we can observe from figure 2.4 is also, the relative share of oil seeds and hides and skins. While the former showed significant rise the later has been showed a decline trend in recent decade.

CHAPTER THREE

3. LITERATURE REVIEW

3.1. Theoretical Literature

The classical economic view tries to explain why it is beneficial for a country to engage in international trade based on the assumption that countries differ in their ability to produce goods efficiently. Thus, the theoretical foundations for empirical studies of the determinants of export performance lie in the conventional trade theories based on David Ricardo, the Heckscher–Ohlin (H-O) framework, new trade theories and endogenous growth theories (Krugman, 1983).

According to Ricardo's theory that other things being equal a country tends to specialize in and export those commodities in the production of which it has maximum comparative cost advantage or minimum comparative cost disadvantage.

Similarly Salvatore (2001) argues that if each nation specializes in the production of the commodity of its comparative advantage, world output will be greater and, through trade, each nation will share in the gain. With the present distribution of factor endowments and technology between developed and developing countries, the theory of comparative advantage thus prescribes that developing nations should

continue to focus primarily in the production of and export of raw materials and food to developed nations in exchange for manufactured products.

On the other hand for H-O theory, factor endowments determine comparative advantages in production and exports. A country should export those products that use intensively the factor with which the country/industry is well endowed. According to H-O theory the country with abundant capital will be able to produce relatively more of the capital intensive goods while the country with abundant labor will be able to produce relatively more of the labor intensive goods. Despite its simplifying assumptions, notably no economies of scale, identical production functions and preferences across countries, the H-O theory seems to be inconsistent in relation to LDCs, especially African countries (Chanthunya and Murindie,1998). This is because the LDCs export is mainly primary commodity export. Such export as commonly argued is subject to deteriorating terms of trade.

Mulugeta (2007) argues that most underdeveloped countries ought to concentrate in exporting raw materials because it is here that they have comparative advantage over developed nations. Developed nations on the other hand are apt to have greater comparative advantage in manufactured goods.

In addition to the emphasis that traditional trade theory places on comparative advantage, the new trade theory developed by researchers like Helpman (1981),

Krugman (1979), and Lancaster (1980) in the late 1970s and 1980s, was motivated by the failure of more traditional theories to explain some of the most significant facts about post World War II trade data also draw attention to the role of different attributes that results existence of trade between countries. The new trade theories still generally can be interpreted as having trade stem from some type of comparative advantage, but the source of comparative advantage is more subtle, and sometimes does not even exist in autarky, but develops with the opening up to trade.

The feature of the new theories is that one can construct a scenario where exactly identical countries will trade with each other. Some of the new reasons for trade are increasing re-turns to scale (IRS), imperfect competition (especially oligopoly), and differentiated goods (variety or quality).

In addition to the above, Tussie (1989) argued that export competitiveness is most strongly influenced by government policy. This view identifies targeting, protection and export promotion as the key to international success.

Theoretically there are many determinants of export performance. Among several factors real output of exporting country, real output of importing countries, availability of credit to private sector, the relative price of goods or real exchange rate, infrastructural developments are those variables that can potentially affect export performance of a given country.

Starting from the first the inclusion of real output in the model that explains export determination is based on the argument that the output capacity of an economy or secular changes in the level of real output has implications on factor supplies, infrastructure and total factor productivity thus affecting export performance (World Bank, 1987; Goldstein and Khan, 1985).

Secondly, real GDP of importing countries representing world demand for exports has been considered as an autonomous factor affecting exports from developing countries. There is little that the government can do to influence the world demand (Goldar, 1989). Rather, it is argued, by orienting the export strategy to those products and markets in which the growth in demand is relatively faster, could countries improve their export performance. In view of this, real GDP of importing countries is included in the present study just to identify the influence of this variable on Ethiopia's export performance.

With regard to the third variable, studies establishing the empirical link between financial development and financially dependent export sectors (see, for example, Beck, 2004; Manova, 2008), the ratio of private credit to GDP is most commonly used as proxy for country financial development. The researcher uses private credit-to-GDP ratio to measure the overall level of bank deposits as a share of the economy, and with all else equal, countries with higher deposit ratios should have a comparative advantage in exporting from financially dependent sectors.

It is believed that financial sector development is considered as a potential source of comparative advantage for a country. This is due to the fact that nations with a well developed financial sector are able to have an easier access to external finance for investment projects than those without (Hur et, al. (2006), Beck (2003)). Rosson and Susanto (2011) argue that studying the link between finance and trade flows is important, especially given the reliance of many developing countries on production agriculture for significant shares of GDP and foreign exchange earnings.

Theoretically there are a number of papers related to the role of finance to trade flows that have been proposed with the earliest versions like those by Kletzer and Bardhan (1987) and Baldwin (1989) as cited in Rosson and Susanto (2011). These two authors using the Heckscher-Ohlin framework try to compare two international trade models with the same factor endowments but one sector in one of the models depends also on external finance for working capital. They explained that the country with more credit market access specializes in the sector that uses external finance and the country with the low credit market access higher level of credit market restrictions specialize in the sector that does not require working capital or external finance. From their analysis it is possible to understand that a well developed financial sector can theoretically lead to a comparative advantage in industries that rely more on external financing and can explain the variance of the trade structure across countries.

Thus inclusion of private sector credit in the export determination model is based on the premise that improved access to export finance will have a positive contribution

to export growth. In fact, lack of access to pre- and post shipment export finance was reported as one of the fundamental constraints on export growth and diversification in Ethiopia (Berhanu, 2003).

The fourth and very common variable is real effective exchange rate in which a fall in the relative domestic prices due to exchange rate depreciation makes exports cheaper in international markets resulting in increased demand for exports; therefore one can expect the positive impact of real exchange rate on export growth. In the literature, it is acknowledged that depreciation of the real effective exchange rate has positive contributions for increased exports while real appreciation of the exchange rate is generally associated with a slowdown in exports. Thus, the importance of maintaining a realistic real exchange rate is being propagated as a policy prescription to ensure the competitiveness of exports in the world market (Prasad, 1992).

Real effective exchange rate is included in the present study, to empirically test the relationship between this variable and the level of exports. It is well known that the effect of the exchange rate on exports performance depends on the price elasticity of export supply due to the fact that real exchange rate should incorporate the price effect on exports. Thus, the higher the price elasticity, the more competition face exports of a particular country on the world market. In general, manufactured products have a higher price elasticity than primary products, which causes manufactured or finished exports to respond perfectly to changes in the exchange rate (Roshan, 2007).

Conversely, the low response to price changes of demand for primary products, which are the main exports of LDCs, implies that LDC exports respond imperfectly to changes in the real exchange rates. That is the effect of exchange rate changes on LDCs exports is ambiguous.

The other variable that can determine country's export performance is infrastructure which is captured by public expenditure in transportation and communication as a ratio of GDP. Better infrastructure should lead to higher trade and therefore more exports from Ethiopia.

Availability of physical infrastructure is one and very critical factor for a given country to expand the size and the growth of the supply capacity. The UNCTAD (2002b) study used internal transport infrastructure as a proxy for infrastructure as a whole. It found that the importance and the significance of internal transport structure vary from period to period and from one group of countries to another. It appears that internal transport costs had a significant negative impact on export performance over the 1988-1991 periods among the weakest performers. Internal transport facilitation played an important role across all regions in explaining export performance in later periods. Its significance appears to be more marked among the better performing exporters.

Openness which is approximated by exports plus imports as a percentage of GDP may have impact on export but the direction depends on the magnitude of both export

and import. If import is by far larger than export, it creates macroeconomic shocks by deteriorating of current account balance which in turn affects export negatively.

There is also consensus that assures that developing countries have a great deal makes them to gain from free trade (Stiglitz, 2000 cited in Amponsah (2002). The economics literature supports the contention that development requires economic growth to alleviate poverty, and greater access to world markets is perceived as a necessary condition for more rapid growth. Therefore, it is believed that LDCs have more to gain from a freely functioning global market or that LDCs have the most to lose from a failure of the multilateral World Trade Organization (The Economist, 2000 cited in Amponsah (2002).

3.2. Empirical Literature

Different studies have been conducted by different people to analyze the determinants of exports and to analyze their impact on export performance. Export demand functions at the aggregate level, specified as a function of relative export price and real income of importing countries, has been employed in econometric modeling of export performance and the functions has been estimated in log-linear form using ordinary Least Squares Method. Such an approach was, however, challenged by some empirical researchers such as Goldestein and Khan (1985), Prasad (1992), Goldar (1989), who maintained that the supply-side should also be taken in to account as there exist a simultaneous relationship between quantities and prices. For example Riedel (1988) argues that the typical demand function of exports yields biased

estimates of the parameters if the supply side variables are not taken into account. Thus, ideally, export equation should be estimated simultaneously. However, such an approach tends to be constrained by data availability.

Therefore, to account for such simultaneity, a number of empirical studies in this research area (e.g., Goldstein and Khan 1985, Bushe et al. (1986), Arndt and Huemer 2004, Athukorala 2004, Prasad (1992) examine export behavior using a single-equation approach where both demand and supply equations are solved together to yield an expression for the equilibrium volume of exports. That is the model is derived from the conventional equations of demand for and supply of exports.

Similarly, many studies have included demand-side and supply-side determinants of export performance in the same regression equation. For instance, Beng (1992) for exports of manufactures from Malaysia and Goldar (1989) for exports of engineering products from India have specified a reduced form equation for export behavior incorporating both demand and supply side factors in a single regression equation. This latter model is termed as export function or export determination model because it is neither an export demand function nor an export supply function.

Different studies used the imperfect substitution model proposed by Goldstein and Khan (1985) to analyze the determinants of countries export performance. For example Munoz (2006) analyze the impact of parallel market and governance factors

on Zimbabwe's export performance using quarterly data and found positive and significant relationship between exchange rate and export.

Similarly, on a study made on the factors affecting export performance in three different export categories; total merchandize exports, manufacturing exports and exports of machinery and equipment on nine East & South East Asian countries by Jongwanich (2007) using quarterly data and Imperfect Substitutions Model, Results found from the long run equation reveal that real exchange rate to have different elasticities in the three export categories, it was found to have highest elasticity for merchandise export while lowest elasticity for exports of machinery and transport equipments. Real exchange rate impact also varies among the nine countries, it was found to have lowest elasticity for Philippines while the largest elasticity for Indonesia. Contrary to real exchange rate influences, world demand was found to have highest impact for exports of machinery and transport equipment and lowest impact for merchandize export.

World demand as determinants of countries' export has been significant, but it was found to be insignificant for Indonesia's export in all the three categories. The coefficient of world demand was highly elastic for China, more than 1, but less than 1 for the other countries in the group (ibid). The same study also revealed that, production capacity was found to affect positively & significantly all countries exports in all categories with elasticities nearly above 1 in all cases.

Recent studies on export have been focused on the role of trade facilitation reforms on export performance. A study made by Portuga-Perez and S.Wilson (2010) tried to analyze the role of hard infrastructure (roads, ports, airports, rail infrastructure and information communications technology) and soft infrastructure (efficiency of customs and domestic transport and business regulatory measures and transparency) on export performance of 101 countries during 2004 -07. The results from their study revealed that an improvement in hard and soft infrastructure leads to more exports which ensure that investments on physical infrastructure have a positive impact on exports, but declining as per capita income increases, on the contrary investments in ICT and soft infrastructures were found to have more impact on richer countries.

More generally, those factors that can potentially influence export performance of a country vary from one country to another. (UNCTAD, 2005 and 2007 Bacchetta, (2007) as cited in yishak (2009) have categorized determinants of a country's export performance into two major factors: internal supply and external market conditions.

The fundamental thing in defining the export potential of an economy needs understanding the supply conditions of that economy. According to Biggs, (2007) export supply constraints should consider traditional export supply on one hand and on the other hand shifting resources into new export activities.

Regarding domestic transport infrastructure, infrastructure development is a key element of a countries' ability to produce and move goods. It is one of the major factors affecting export supply capacity of a nation. Most African countries are

characterized by poor transport infrastructure, which is a major impediment to trade, competitiveness and sustainable development (UNCTAD, 2005; Bacchetta, 2007), and this isolates countries, hinders their involvement in international market (Limão and Venables, 2000). Infrastructure conditions in SSA have a significant effect on the ability of firms to produce and export goods and services competitively USITC (2009). Therefore, an improvement in transportation services and infrastructure is indispensable which can lead to improvements in export performance (Fugazza, 2004; Edwards and Odendaal, 2008). Fugazza (2004) found that the internal transport infrastructure has a significant and positive impact in raising exports.

The role of financial development on export has been discussed by many authors as a supply side determinant. Empirical literatures like Berman and Hericourt (2008) tried to study the role of financial development on export. Using a large cross-country firm level database in developing and emerging economies, they found that financial constraints create a disconnection between firms' productivity and their export status. These two authors conclude that an increase in a country's financial development increases the number of exporters and hence countries overall export performance.

Manova (2008) also developed a model to explain the role of financial development on trade flow with countries at different levels of financial development, credit-constrained heterogeneous firms, and sectors of varying financial vulnerability. The author showed that financially developed countries are more likely to export more.

The other variable that affects export is exchange rate which affects export supply capacity or export demand decision. The real exchange rate can be an important variable in determining export growth, diversification and international competitiveness of goods produced in a country (UNCTAD, 2005).

There are different empirical evidences that prove significant relationship between real exchange rate and export performance; for example it has been proven that the real exchange rate has a significant effect on a country's export performance (Mouna and Reza, 2001). While appreciation of the real exchange rate affects exports negatively (Edwards and Alves, 2005; Morrissey and Mold, 2007), depreciation affects exports positively (Mouna and Reza, 2001; Edwards and Alves, 2005).

On the other hand, some studies indicate that the effect of exchange rate on export is negative. For example in estimating the relationship between exchange rate and export competitiveness for Singapore which may have more relevant for small economies whose export have highly dependent on raw materials and intermediate goods from abroad, Telak and Yeok (1998) showed that in the presence of high import content, export is not adversely affected by currency appreciation. Their justification for this result is in the presence of high import content appreciation results lower import price which in turn reduce cost of export.

Similar result was found by Fang and Miller, (2004) but for different reason. They tried to show currency depreciation doesn't improve export rather it results exchange rate risk (generated by fluctuations) which significantly impedes export.

The other factor affecting export performance is degree of openness to trade. Opening economic policies to trade with the rest of the world is needed for export and economic growth. This is because in recent decades there is no country achieving economic success in terms of substantial increases in living standards for its people without liberalizing itself to the rest of the world. Trade liberalization has generally taken place in LDCs as part of the structural adjustment program (Yared, 2010).

Trade liberalization implies considerable reduction in tariff and non-tariff barriers, so as to establish a noticeable open market as compared with the pre- liberalization era.

The empirical researches focusing on the impact of trade liberalization (openness) on export earnings have exhibited positive results. For example literatures show that countries which get on liberalization programs have improved their export earnings (Ahmed, 2000; Thomas et al., 1991; and Santos-Paulino, 2000). Similarly, Seyyed et. al (2011), using panel data evidence for 19 countries found that open trade policy enhance GDP and export growth. Using these results clearly prefer open trade policy over more trade barrier which enhance GDP and export growth.

Conversely, Giovani and Levencko, (2006) argue that increased trade openness has contributed to rising uncertainty and exposed countries to external shocks and hence, adversely affects country's export.

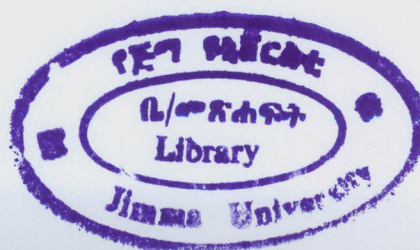
3.2.1. Literature on Constraints to Ethiopia's Export Growth

Ethiopia, like sub Saharan African countries, has an economic structure that is characterized by low per capita income, large agrarian economy with relatively low growth rates, and serious foreign exchange constraints. This is manifested by the country's export performance.

Abay and Zewdu (1999) identified the major supply side and demand side factors that constraints Ethiopian export performance. According to them the demand side problems usually emanate from the nature of the products that the country exports.

This includes:

- Low level of demand for primary products due to very slow population growth rate in industrial countries.
- Very low income elasticity of demand for primary products.



- Production of synthetic products by industrialized countries which decreases the demand for natural products.
- Restrictive trade policies.

On the other hand the supply side factors include:

- The exportable items are more of primary products which have low income elasticity.
- Limited production capacity
- Poor domestic policies perused by previous government such as price control, grain movement restrictions, overvalued exchange rate, discouragement of the private sector participation both in production and export.

Table3.1 ;Major empirical reviews on Ethiopian export

Title	Author/s	period	Method	Major findings
Determinants of export performance of Ethiopia (Discussion paper)	Yishak Tekalign (2009)	1995-2007	Gravity Model	The empirical results suggest that supply side conditions are a major factor to determine Ethiopia's export performance. Besides domestic national income, the major supply side factors such as internal transport infrastructure and institutional quality are found to be statistically significant and affect Ethiopian exports positively; where as FDI and real exchange rate are found to be statistically insignificant.
		1970/71	Using export	The estimation of the model revealed that real exchange rate and

Prospects for Export Diversification in Ethiopia	Berhanu Lakew (2003)	- 1999/00	determination model by applying Engle and Grager co-integration analysis)	real private sector credit are the positive and significant determinant of the country's exports in the long run. Real GDP and real private sector credit were found to be positively and significantly related with the country's exports in the short run while negative and significant relationship was reported in the case of real private consumption.
The Booming Non traditional export commodities: The case of cut flower	Amin Abdela (2007)	2000/01 - 2004/05	Using export determination model by applying Engle and Grager co-integration analysis)	Relative price (represented by REER) has not been the major factor behind the increment in the volume of export. A clear and positive relationship between the comparative advantage and the volume of cut flower export is witnessed. The comparative advantage includes the weather condition and availability of cheap labor force. No relationship is observed between the per capita incomes of Ethiopia's trading partners and the volume of cut flower export.
Economic Impact and Determinants of Export: The Case of Ethiopian Textile and Apparel Industry	Yared Mesfin (2010)	1971/72 to 2008/09	Supply side determinants Using Johansson methodology	Availability of raw cotton, trade liberalization (openness), has positive and significant effect on export of textile and apparel; whereas, labor cost nominal exchange rate has negative and significant impact.

CHAPTER FOUR

4. METHODOLOGY

4.1. Data Source and Type

Time series secondary data have been used in this study. The data set has been collected from National Bank of Ethiopia (2010/11), Ministry of Finance and Economic development (2011), and International Institutions like IMF and WB (2011). For the purpose of analyzing the country's determinants of export performance, the export equation in this study has been estimated using time series data for the period 1970/71-2010/11.

The time series data that are used in this study are export of goods and services valued in US dollar, real income of trading partner (average real GDP of 13 major trading partners which accounts about 78 percent of Ethiopia's export destination) valued in USD, real GDP of home country valued in USD, credit to the private sector as a ratio of GDP which is unit free and openness (calculated using the sum of export and import of goods and services as a ratio of GDP) are collected from IMF(2011) and WB (2011). Data for real effective exchange rate is collected from EEA statistical data base CD- ROM (2010) and NBE (2011) and checked to WB data for consistency and no change has been observed. Government expenditure for transportation and communication is calculated by taking

both capital and current expenditure for communication and transportation including road. Since the researcher did not find data for such variables from IMF and WB, these variables are collected from both NBE (2011) and EEA statistical data base CD-ROM (2010).

4.2. Econometrics Model Specification

The response of export performance to changes in macroeconomic variables depends primarily whether those changes are transitory or permanent. Therefore, it is imperative that this decomposition is undertaken in the context of econometrics estimation⁴. Here, the author outlines an econometric model that distinguishes between the permanent (trend) or transitory (short-run) components of export earnings and its macroeconomic determinants.

To be specific, let y_{Et} be the export earnings for Ethiopia in year t and X_{Et} be a set of its economic determinants. Following Calderon *et al* (2000), the permanent and transitory effects are given by

$$y_{Et} = y_{Et}^T + y_{Et}^P \quad \text{And} \quad X_{Et} = X_{Et}^T + X_{Et}^P \text{-----} \quad (4.1)$$

Where, the superscripts T and P represent the transitory and permanent components, respectively. Transitory fluctuations are defined as deviations from the trend or permanent components. In practice, whereas the transitory component represents short lived fluctuations, the permanent component represents movements in the (long-run) tendency of a variable.

⁴ *In practice, I cannot avoid arbitrariness since there is no single way to decompose economic shocks into transitory or permanent.*

This study focuses on demand and supply side determinants of Ethiopia's export performance. Hence, the study signifies Ethiopia's export performance as a function of real GDP of trading partners, real effective exchange rate, and openness, real GDP of home country, infrastructural development, and financial development. The model that has been used in this paper is thus the adopted Goldestien and Khan (1985) imperfect substitution model which is expressed as follows:

$$\text{Export performance (EX)} = f(\text{RGDPTP}, \text{REER}, \text{OPN}, \text{RGDP}, \text{TCEX}, \text{PRC}) \dots \dots \dots (4.2)$$

Thus to determine Ethiopia's export performance, a log-linear form export determination model is employed incorporating both supply and demand related variables. The model is therefore akin to the one used by Amin (2007) in estimating determinant of cut flower export in Ethiopia and Hailegiorgis (2011) in estimating export performance of oil seeds in Ethiopia. In contrast, however, the model includes the ratio of exports and imports to GDP as a measure of openness to trade, identified as the most important determinant of export by Chinn and Prasad (2003) and domestic production (GDP) which is identified as very important determinant of export by Ahmad (2006) in estimating developing countries export performance.

Therefore, the regression equation is given by:

$$\ln EX = \alpha + \beta_1 \ln RGDPTP + \beta_2 \ln REER + \beta_3 \ln OPN + \beta_4 \ln RGDP + \beta_5 \ln TCEX + \beta_6 \ln PRC + \varepsilon_t$$

(+)
(+)
(?)
(+)
(+)
(+)
(+)

----- (4.3)

Where,

EX = Export earnings at time t in log form is the dependent variable

$RGDPTP$ = The real GDP of our trading partners (about 78 percent of Ethiopian export destination countries)

$REER$ = Real Effective Exchange Rate in log form (which is found by trade weighted birr/foreign currency*foreign price index/domestic price index)

OPN = Exports plus imports as a percentage of GDP, a proxy for degree of openness in log form

$RGDP$ = Real GDP at home country in log form

$TCEX$ = Public expenditure in transportation and communication as a ratio of GDP as a proxy for infrastructural development in log form

PRC = Private sector credit as a ratio of GDP in log form

ε_t = Error term

Based on available theoretical literature the first three variables in the model are called external (demand side) determinants of export performance. Ethiopia is one of the countries whose export performance depends on overseas economic situation. As the country is a small open price taker economy in the world market World market forces, generally determine the prices of its exports. Hence, the demand for Ethiopia's export in the world market is influenced by fluctuations in developed countries income particularly that of our trading partners. That is, all other things remain constant; an increase in the real GDP of Ethiopia's major

trading partners, which is denoted by *RGDPTP*, either due to the output growth of our major trade partners, liberalization measures, or diversification measures increases the demand for our product and hence increase Ethiopia's export earnings ($\beta_1 > 0$).

The movement in value of export also correlates with relative prices. In theory, real effective exchange rate movements are also negatively correlated with the growth in exports performance. Thus, the expected sign of the REER coefficient is ambiguous. This is because it depends on the exchange rate regime that the country experiences. According to the Marshal-Lerner condition and Mundel-Fleming model, a decrease in real effective exchange rate or appreciation of domestic currency will make exportable items costly, then the demand for our exports in external market is likely to fall and this in turn will reduce foreign exchange earnings. In such a case, the expected sign of real effective exchange rate (REER) will be positive (i.e. $\beta_2 > 0$). The reverse is likely to occur (i.e., $\beta_2 > 0$) if the increase in real exchange rate (devaluation) worsens export by increasing cost of export by decreasing the country's competitiveness in international market.

As reviewed in the literature part, the impact of openness is also ambiguous. Some scholars strongly acknowledge that the more open an economy to the external world the higher will be its foreign exchange earnings from export. The implication is that a country needs to integrate to the world market by diversifying

its trading partners. The degree of integration of a country to external market is thus measured by openness to trade, which is proxied by the sum of exports and imports of goods and services to GDP ratio. Thus, an increase in the ratio of exports and import of goods to GDP (or *OPN*) implies better integration of Ethiopia to the external world and hence higher export earnings. In short, an increase in openness will have positive impact on export performance (or $\beta_3 > 0$). However, if openness leads to shocks in the goods market that declines in export demand, it will decrease exports earnings ($\beta_3 < 0$).

On the other hand, the fourth, fifth and sixth variables are regarded as internal (supply side) determinants of export earnings. The inclusion of real output in the model is based on the argument that the output capacity of an economy is an indication for future supply capacity. Thus, an increase in output will enhance export earnings ($\beta_4 > 0$).

Economic theory also strongly acknowledges that the quality of infrastructure is one of the key determinants of export performance. Infrastructure (road, power, communication, etc) development, which is the key determinant factor for the flourishing of any industry especially export sector is proxied by the ratio of public investment on transportation and communication to GDP (*TCEX*) Therefore, expanding infrastructure density of various types with an acceptable level of quality or the increase in public investment in infrastructure to GDP ratio

(*TCEX*) in Ethiopia will have positive impact on export growth. That is, the expected sign of (*TCEX*) is positive (or $\beta_5 > 0$).

The empirical findings of Amin (2007) suggest a strong positive relationship between a cut flower export and the export credit. According to him since the industry need huge finance the business is impossible without credit facility by banks and would not have registered such a remarkable result. In light of this argument, therefore, private sector credit as a ratio of GDP (*PRC*) by the banking system is added as an explanatory variable in export model in order to examine whether there is a friendly credit access by banks to country's export performance. In this case, the impact of *PRC* on exports is positive ($\beta_6 > 0$).

4.3. Estimation Technique

Many macroeconomic time series are not stationary at levels and are most adequately represented by first differences. Non-stationarity of time series data has often been regarded as a problem in empirical analysis. Working with non-stationary variables lead to spurious regression results, from which further inference is meaningless. Thus, it is better to distinguish between stationary and non-stationary variables. Harris (1995:15) noted "... a data series is said to be stationary if its error term has zero mean, constant variance, and the covariance between any two-time periods depends only on the distance or lag between the two periods and not on the actual time at which it is computed."

Hence, the first step in time series econometric analysis is to carry out unit root test on the variables of interest. The test examines whether the data series is stationary or not. To conduct the test, the conventional Dickey-Fuller (DF) and Augmented Dickey – Fuller (ADF) test has been used with and without a trend. Since the actual data generating process is not known a priori, the test of determining the orders of integration of the variables has conducted first by including a constant only and then both a constant and a trend. The ADF test is based on the regressions run in the following forms.

$$\Delta Y_t = \alpha_1 + \beta Y_{t-1} + \mu_t \text{-----} (4.7)$$

$$\Delta Y_t = \alpha_1 + \alpha_{2t} + \beta Y_{t-1} + \mu_t \text{-----} (4.8)$$

Where, t is the time or trend variable. Equation (4.7) adds a drift, and equation (4.8) introduces both a drift and a time trend. In each case the null hypothesis is that $\beta = 0$, that is, there is a unit root. The null hypothesis (H_0) is thus a series contains a unit-root (non-stationary) against the alternative hypothesis (H_1) stationary (deterministic trend).

Even though the individual time series are not stationary, a linear combination of these variables could be stationary (i.e. they may be co-integrated). If these variables are co-integrated, then they have a stable relationship and cannot move “too far” away from each other. In contrast lack of co-integration suggests that such variables have no long run relationship, in principle they can wonder arbitrarily far away from each other (Rao, 1994).

Thus, once the stationarity of the variables under consideration is known or after checking the order of integration of variables in the model a researcher should proceed to the estimation of model (4.3). There are two common methods for testing co-integration and estimating the relationship among co-integrated variables. These are the Engle and Granger (1987) two-step procedure and the Johansen's (1988) maximum likelihood methods.

In the Engle Granger methodology, the residuals from the long-run relationship are tested for stationary to determine whether the variables are co-integrated or not. The DF test could be performed on the residuals to determine their order of integration. If the residuals do not appear to be white noise, the ADF test can be used instead.

Testing for co-integration using the Engle-Granger procedure has a number of weaknesses. First the test for co-integration is likely to have lower power against the alternative tests. Second, its finite estimates of long-run relationship are potentially biased and third, inferences cannot be drawn using standard t-statistics about the significance of the parameters of the long run model (Harris 1995). In addition to the above the test procedure assumes that there is only one co-integration vector, when in fact there could be more, that is any linear combination of these vectors is obtained when estimating a single equation.

The Johansen procedure takes care of the above shortcomings by assuming that there are multiple co-integrating vectors. Thus, testing for co-integration using the multivariate VAR approach developed by Johansen (1988) is necessary because failure to capture the existence of more than one co-integrating vector yields misleading long-run coefficients. In which case, the estimated parameters of the long run coefficient would only be a linear combination of the parameters of the two or more co-integrating long-run relationship (Harris, 1995). Thus, an unrestricted VAR can be formulated to estimate the long run relationship among jointly endogenous variables.

The co-integrating regression so far considers only the long-run property of the model, and does not deal with the short-run dynamics explicitly. Clearly, a good time series modeling should describe both short-run dynamics and the long-run equilibrium simultaneously.

Finally, whether the long run parameters are obtained using the Johansen co-integration analysis, the Johansen (1988) Vector Error Correction Model (VECM) will be estimated by saving the residuals of the long-run equation using the Hendry general-to-specific reduction method of the insignificant variables to obtain parsimonious short run parameters. Diagnosis tests on the estimation technique should also be performed at each stage of reduction to check parameter consistency.

CHAPTER FIVE

5. ESTIMATION RESULTS AND DISCUSSIONS

5.1. Test for unit root

Table 5.1; Results of Dickey fuller and Augmented Dickey fuller unit root test of time series at level values.

Variables	Dickey Fuller Class			
	Dickey Fuller		Augmented Dickey Fuller	
			Lag length 1	
	Constant	Constant & Trend	Constant	Constant & Trend
LEX	-2.063	-2.067	-2.33	-2.63
LRGDPTP	-1.783	-1.717	-2.225	-2.167
LREER	-0.948	-1.674	-1.214	-2.151
LOPN	-1.805	-2.331	-1.940	-2.808
LRGDP	2.812	0.378	2.412	0.184
LTCEX	-1.280	-3.068	-1.035	-2.787
LPRC	-1.91653	-2.009	-2.343	-3.034

Thus this table confirms that all variables are non stationary at level. Therefore, in order to make the variables stationary the researcher has computed their first difference. And the result for unit root test is presented as follows.

Table 5.2: Results of Dickey fuller and augmented Dickey fuller unit root test at first difference values

Variable	Dickey Fuller Class				Order of integration
	Dickey Fuller		Augmented Dickey Fuller		
			Lag length 1		
	Constant	Constant & Trend	Constant	Constant & Trend	
Δ LEX	-4.8289**	-4.7541**	-4.8289**	-4.7541**	I(1)
Δ LRGDPTP	-4.6720**	-4.7955**	-4.6726**	-4.7955**	I(1)
Δ LREER	-4.4855**	-4.4412**	-4.4855**	-4.4412**	I(1)
Δ LOPN	-5.1396**	-5.2033**	-5.1396**	-5.2033**	I(1)
Δ LRGDP	-4.5561**	-5.4988**	-4.5561**	-5.9945**	I(1)
Δ LTCEX	-6.5071**	-6.4525**	-6.5071**	-6.4525**	I(1)
Δ LPRC	-4.6495**	-4.6730**	-4.6495**	-4.6730**	I(1)

*Note:-** denotes rejection of the hypothesis of unit root in the first difference of the variable at 1%. Cut point for DF and ADF statistics are attached on annex 2*

From Table 5.2 the null hypothesis of a unit root is rejected for all variables with a drift term (constant). Moreover, the null has been rejected for lag one of all variables at one percent level of significance. Therefore, it is possible to conclude that the variables are integrated of order one.

5.2. Lag order Selection for VAR

It is well known that the VAR analysis may depend critically on the lag order selection of the VAR model. Usually, different lag order can affect the interpretation of the VAR estimates when those differences are large enough.

The most common strategy in empirical studies is to select the lag order by some pre specified criterion and to condition on this estimate in constructing the VAR estimates. There are four most commonly used lag order selection criteria in the literature, which are the Akaike Information Criterion (AIC), the Schwarz Information Criterion (SIC), the Hannan---Quinn Criterion (HQC) and the general-to-specific sequential Likelihood Ratio test (LR).

Thus, Eviews 7 output shows the following result for lag length selection according to each criterion.

Table5.3: Lag length Selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	39.66049	NA	4.42e-10	-1.674897	-1.376309	-1.567766
1	312.5431	433.8134*	4.75e-15*	-13.15606*	-10.76735*	-12.29901*
2	358.8970	57.05098	6.99e-15	-13.02036	-8.541542	-11.41340

* indicates lag order selected by the criterion calculated using EViews-7

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

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

According to the above table SBC criterion, the lags (ρ) of VAR model, AIC criterion the lags (ρ) and other criterion the order of VAR is 1. All criterions gave the same results, so the lag (ρ) of 1 was used in the model as the order of VAR. Then the Johansen (1988) test of co-integration was applied and results are shown in the following table.

5.3. The Long run Export Performance Model Estimation

Following the unit root tests and lag length section test of co-integration was applied using the Johansen (1988). The results of VAR (1) co-integration are shown in Table 5.4 below.

Table 5.4: Johansen's Co-integration Test

Ho:	Eigen values	Maximum Eigenvalues (λ_{max})			Trace Statistics (λ_{trace})		
		Johansen's Test statistics	Critical Value (5%)	Prob.**	Johansen's Test statistics	Critical Value (5%)	Prob.**
H=0	0.702003	47.21620*	46.23142	0.0391	129.0263*	125.6154	0.0305
H≤1	0.568399	32.76990	40.07757	0.2627	81.81013	95.75366	0.3067
H≤2	0.361111	17.47296	33.87687	0.9023	49.04024	69.81889	0.6789
H≤3	0.351122	16.86791	27.58434	0.5913	31.56728	47.85613	0.6359
H≤4	0.213428	9.362751	21.13162	0.8021	14.69937	29.79707	0.7992
H≤5	0.127879	5.336269	14.26460	0.6989	5.336615	15.49471	0.7721
H≤6	8.86E-06	0.000346	3.841466	0.9872	0.000346	3.841466	0.9872

*denotes rejection of the hypothesis at 0.05level

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

The maximum value was greater than critical value at zero co-integrating vector ($r = 0$) for both trace test and Maximum-Eigen value test. This indicated the existence of one co-integrating relationship. Thus the above table shows that the null hypothesis of no co-integration is rejected at the conventional level (0.05) and the study conclude that there exists a relationship among the proposed variables in the long run. Trace test and Eigen value test indicates that there are one co-integrating vector. All the variables are co-integrated of order one having the long run relationship.

Once the order of co-integration is identified for each variable that enters the specified model of export determination, the next step is to estimate the long run relationship between Ethiopia's export performance and it determinants using the Johansen (1988) maximum likelihood method. This method is selected because it produces consistent estimates of the long run parameter, which could be tested using likelihood ratio (LR) statistics. The method also obtains estimates of α and β using the reduced rank regression.

Table 5.5: Standardized β' eigenvectors

LEX	LOPN	LPRC	LREER	LRGDP	LRGDPTP	LTCEX
1.00000	-0.53853	-0.43885	-0.70425	-1.69956	-0.11033	-0.300265
-0.38236	1.00000	-0.96784	-0.49423	0.934518	-3.33807	1.257898
-0.3196	-0.0891	1.00000	0.64903	0.914923	-2.28314	1.023148
-0.87948	0.665445	0.262574	1.00000	0.701403	-0.80169	1.157073
-0.60389	-2.22599	-2.0311	2.402551	1.00000	6.988377	0.11804
-0.03714	-0.66177	0.106695	-0.39254	-0.21305	1.00000	0.155448
-24.5166	13.24885	6.051837	11.12366	4.176787	15.34305	1.0000

Table 5.6: Standardized α -Coefficients

D(LEX)	-0.06562	-0.05688	-0.01444	-0.00922	-0.01068	-0.00092	-0.00014
D(LOPN)	-0.02929	-0.04781	0.007099	0.049237	-0.00319	-0.02698	6.49E-05
D(LPRC)	0.031008	-0.05179	-0.03221	-0.00486	-0.041	0.010252	5.87E-06
D(LREER)	0.022686	-0.02594	0.019657	0.014427	0.037144	0.021791	-0.00011
D(LRGDP)	-0.00086	-0.0167	-0.01166	-0.01866	0.009816	-0.00606	1.73E-05
D(LRGDPTP)	-0.00066	-0.00324	0.001287	0.001746	0.000678	0.001507	4.73E-05
D(LTCEX)	-0.02606	0.050694	-0.07339	0.036607	0.00017	0.005452	7.97E-05

By taking the opposite signs of Standardized β' eigenvectors in the first row, it is possible to write the export determination equation. But before writing the equation, the author has to identify the variables that are endogenously determined and conditional on other variables in the VAR. Thus the test for weak exogeneity has been conducted. This requires imposing zero restriction on the first column of α coefficient. And hence the results are presented on table 5.7.

Table 5.7: Test of Weak Exogeneity (Test for Zero Restriction on α Coefficient)

α - Coefficient	LR test of restrictions: Chi ² (1)	Probability Value
LEX	6.1641	0.0013**
LOPN	1.2673	0.2602
LPRC	1.433	0.2311
LREER	1.10949	0.2921
LRGDP	0.0076	0.9300
LRGDPTP	0.503	0.8225
LTCEX	0.716	0.39744

Where, ** denotes rejection of the null hypothesis at 1% significance level

The above table reveals that the null hypothesis of weak exogeneity has been rejected at 1 percent level of significance using the likelihood ratio for all variables except LEX. This indicates that the unique co-integration vector that carries the long run relationship among the variables is the dependent variable. Hence the long relationship can be expressed by testing the significance of each coefficient as follows.

Table 5.8: Test of Zero restriction on the Long – run Parameters (Significance of long run Coefficients)

β - Coefficient	LR test of restrictions: Chi ² (1)	Probability Value
LEX	14.032	[0.0001]**
LOPN	8.7302	[0.0031]**
LPRC	7.285	[0.0069]**
LREER	12.8423	[0.0003]**
LRGDP	13.8409	[0.0000]**
LRGDPTP	0.08255	[0.7740]
LTCEX	4.806	[0.0430]*

Where, ** and * denotes rejection of the null hypothesis at 1% and 5% significance level respectively.

Table 5.9: Normalized co-integration coefficients(standard errors in parenthesis)							
LEX	LRGDPTP	LREER	LOPN	LRGDP	LTCEX	LPRC	constant
1.000000	-0.110334 (0.24269)	-0.704254 ** (0.06421)	-0.538535** (0.06417)	-1.699555 ** (0.13440)	-0.300267* (0.11351)	-0.438845** (0.07890)	-16.79659
t-statistics	0.454629	10.96798	8.392317	12.6455	2.645291	5.562041	-

** Significance at 1% * significance at 5%.

MULTIVARIATE DIAGNOSTIC TEST

Vector Portmanteau (5): 250.936

Vector AR 1-2 test: $F(98,84) = 1.1884 [0.2087]$

Vector Normality test: $\text{Chi}^2(14) = 18.311 [0.1930]$

Vector hetero test: $\text{Chi}^2(392) = 419.32 [0.1641]$

The normalized co-integration equation is depicted in above table by changing the signs of the standardized β coefficients (see table5.9) which reveals that openness, credit to the private sector, real effective exchange rate, real gross domestic product of home country and infrastructural development are positive determinants of Ethiopia's export in the long run. Since all variables are used in the logarithmic form, the estimated coefficients can directly be interpreted as long term elasticity. All the above variables except infrastructural development, which is significant at 5 percent, are significant at 1 percent level. But RGDP of trading partner is found to be statistically insignificant.

The impact of the real GDP of trading partner on export performance is statistically insignificant. The finding is similar to the finding of Amin (2007) for Ethiopia where the increase in the per capita incomes of our trading partners has no impact on the demand for exports. Moreover, the finding supports Prasad (2000), who argued the growth of trading partner income will not drive movements in developing countries exports. Hence, its impact is insignificant in the sense a 1% growth in the world GDP will lead only to a 0.11% increase in the demand for our export. This insignificant demand might be due to the possibility of substituting our exports either by producing at home or importing from other countries during adverse global shocks that may increase the prices of exports or reduce our production. Besides, the result also seems to confirm one of the two unanimously accepted arguments among scholars that “traditional export commodities of developing countries have low income elasticity of demand”.

Thus we can argue that the insignificant impact of trading partners' income on Ethiopia's export is due to the fact that the nature of Ethiopian exports which is characterized by export of primary products which is income inelastic. The intuition here is as income of Ethiopia's trading partners' increase, since majority of trading partners⁵ are developed nations, the income allocated to primary product will not be changed significantly because of the fact that the income allocated to finished and assembled product increases substantially. On his study Jongwanich(2007) by taking nine east and south east Asian countries found statistical results that support the above idea. According to him for Indonesian export categories; no statistically significant external demand influence can be detected. Because primary nature of exports where prices are set in world markets.

⁵ Data for trading partners are listed in annex

The movement in real effective exchange rate has also appears to have a positive relationship with export performance. In theory, Marshal-learner condition, real effective exchange rate movements are positively related with the growth in exports performance in long run. An increase in the real effective exchange rate means a real depreciation of the domestic currency, which makes exportable items cheap. Thus, according to this research output a one percent change in real effective exchange rate results 0.7 percent change in the total export earnings. It is well known that exports of LDCs are price inelastic in the international market due to nature of the product that LDCs produces. Hence this result is consistent with this fact. The positive and significant coefficient also shows that export may be influenced by exchange rate policy. It follows that devaluation of birr in terms of foreign currency improves price competitiveness of export and hence leads to an increased export performance of Ethiopia.

The coefficient for trade openness has also found positive. One percent trade liberalization (openness) affects the Ethiopian export performance to increase by 0.54 percent per year. This result is consistent with the theoretical expectations of trade liberalization for exports. And the result is also consistent with empirical evidences like Ahmed (2000); Thomas et al., (1991); and Santos-Paulino, (2000) which asserts the importance of trade liberalization programs that improved export earnings. In studying the determinants of Ethiopian textile and apparel export Yared (2010) also found positive relationship between trade liberalization (openness) and textile and apparel export earnings.

The result for impact of RGDP of home country is also in accordance with Macroeconomic theories. For example the coefficient for real gross domestic product for home country is 1.699 which means that a one percent change on real out GDP of home country results 1.699 percent increase in total export earnings. This is consistent with Ahmed and Majeed ,(2006) in estimating developing countries export. They found that GDP of home country affects their export positively. This is due to the fact that output capacity of an economy has implication of supply capacity by maintaining a country's competitiveness in the international market in the long run.

Regarding the fifth variable, government investment in infrastructure has significant positive impact at 5 percent significance level in increasing export earnings in Ethiopia in the long run. That is expanding physical infrastructure (transportation, road construction, and communication) density of various types with an acceptable level of quality has significant positive impact on the volume of production and hence earnings from export. The result indicates that a 1% increase in public investment in transportation and communication leads to an increase in export earnings by 0.3 percent. This result supports UNCTAD (2000), which argued infrastructure (road, power, communication, etc) development is a key determinant for the flourishing and development of any industry, especially export sector in developing countries and will have positive impact on the volume of production for export. This result is also consistent with empirical findings like Fugazza, (2004) and Edwards and Odendaal, (2008) which emphasizes

improvements in transportation services and infrastructure can lead to improvements in export performance

Finally, the result also indicates that an increase in domestic credits to the private sector has increased Ethiopia's export earnings significantly by 0.44 percent during the study period. This might be due to the fact that, an increase in domestic credit in Ethiopia has led to the depreciation of our currency and hence stimulates export as found and argued by Kim, (1985) an increase in domestic credit (expansionary monetary policy) will have positive impact on export earnings if it results in an equi-proportionate depreciation of the exchange rate. Hence the result is consistent with what Berhanu (2003) found in estimating Ethiopian export performance. Which assures improvement in financial development in the country brings growth in the country's export sector.

The result of the diagnostic test confirms the sufficiency of the model. That is, the null of no serial correlation and homoscedasticity are not rejected at any conventional significant level. Graphical test of vector auto regressive (VAR) stability and residual autocorrelation graphs of long run equations are presented in annexes 5 and 3.2 respectively.

The diagnostic graphs of residuals(1-step residual $\pm 2^{\text{nd}}$ SE) has been also employed by using PcGive 10 so as to check the consistency of the result that is found from Eviews 7. Thus this graph, the plots of the recursive graphics that bounds within the 95% critical values are shown in figure annex 3.1. Thus, the null hypothesis of overall parameter

consistency from the VAR cannot be rejected based on the 1-step recursive residuals. Hence this result guarantees the stability of the model regardless of regime changes.

5.4. The Short Run Error Correction Model

In this section, the author estimates the VECM for export earning equation by saving the error term obtained from the long run model. Thus, to integrate the short run dynamics with long run model, the first difference of the variables to allow for delayed response⁶ is estimated using OLS. Since all the variables in the model are now I (1), statistical inference using standard t- and F tests is valid.

In the estimation of the dynamics short run model, a one period lag was initially imposed on all variables including the vector error term saved from the long run equation, which should always enter in its first lag. Then, the Hendry general to specific procedure that involves simplifying the model into a more interpretable characterization of the data by reducing sequentially insignificant variables based on t-value was employed. At each stage of reduction F-test for model evaluation and diagnostic test are carried out to check that the reduction is reasonable. Table 5.11 below reports the parsimonious short run model.

The most important thing in the short run results is speed of adjustment term. It shows that how much time would be taken by the economy to reach at long run equilibrium. Negative sign of speed of adjustment term shows that the economy will converge towards

⁶ *First differencing and regressing using OLS will throw away potential valuable information about the long run relationship which economic theories postulate (Maddala, 1992)*

long run equilibrium. But if it is positive, the economy will not converge to the long run equilibrium. Thus the output from Eviews 7 is presented as follows.

Table 5.10: Speed of adjustments

Error Correction	D(LEX)	D(LOPN)	D(LPRC)	D(LREER)	D(LRGDP)	D(LRGDPTP)	D(LTCEX)
CointEq1	-0.610554	-0.276598	0.292865	0.214267	-0.008120	-0.006197	-0.246122
Standard errors	(0.18106)	(0.22904)	(0.22330)	(0.20766)	(0.08845)	(0.03009)	(0.26986)
t-statistics	-3.42272	-1.20762	1.31153	1.03181	-0.09181	-0.20594	-0.91204

The above table shows speed of adjustments coefficients, which show that only one variable is adjusting to its long run equilibrium. Here the adjustment coefficient is negative which shows that the variable will converge towards long run equilibrium after taking 61 percent annually adjustments in the short run.

Table 5.11: Results for VECM estimates

<i>Dependent variable: $\Delta \ln EX$</i>				
<i>Observation: Time series data for the period 1971/72-2010/11</i>				
<i>Estimation technique: OLS</i>				
Variables	Coefficient	Std.Error	t-statistics	Prob.
DLREER	-0.322332	0.186039	-1.732608	0.0931
DLOPN	0.358927	0.128394	2.795517	0.0088**
DRGDP	0.368027	0.367102	0.987768	0.3312
DLTCEX	0.187204	0.113870	1.644015	0.1103
DPRC	0.032239	0.133305	0.241844	0.8105
DLEX	0.049670	0.165054	0.300929	0.7655
C	0.033874	0.024316	1.393094	0.1735
ECM_1	-0.610554	0.163715	-3.729374	0.0008**
R-squared	0.539381		Mean dependent VAR	0.084432
Adjusted R-squared	0.435370		S.D. dependent VAR	0.156776
			Akaike info criterion	
S.E. of regression	0.117804		Schwarz criterion	-1.258906
Sum squared resid	0.430212		Hannan-Quinn criter.	-0.917663
Log likelihood	32.54867		Durbin-Watson stat	-1.136471
F-statistic	5.185824			2.365803
Prob(F-statistic)	0.000547			
<u>Model Diagnostic test;</u>				
Normality test:	jarque-Bera = 2.604023		prob.= 0.271984	
LM test for serial correlation ;	prob. F(1,30) =0.1056		Prob.Chi-square(1) = 0.0687	
Heteroskedasticity test; ARCH;	Prob. F(1,36)=0.6907		prob. Chi-square(1)=0.6809	

Note: ECM-1 is the lagged residual saved from the estimated long run equation

The Vector Error Correction Model (VECM) result in table 5.11 above shows that only one variable affects the Ethiopian export performance in the short run. That is only openness in the previous year affects current export in the short run. The more trade liberalization in the previous year the more export would be. This may due to the fact that

the more the economy is integrated to the rest of the world; it has immediate response to enhance the country's export.

As can be seen from the diagnostic tests above, the hypothesis of the non- existence of serial correlation, the presence of normality and the existence of homoscedasticity are not rejected for the Export performance error correction specification.

The diagnostic graph of residuals (1-step residual ± 2 ndSE) has been also employed for VECM by using PcGive 10. The plots of the recursive graphics that bounds within the 95% critical values are shown in figure annexes 4.1. Thus, the null hypothesis of overall parameter consistency from the VECM cannot be rejected based on the 1-step recursive residuals

CHAPTER SIX

6. CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1. Conclusions

This paper analyzed Ethiopia's export performance and contribution of different export items for the period 1970/71-2010/11. In addition to this time series econometrics method is employed to identify determinants of Ethiopia's export performance. In order to know the long run and short run determinants, Johansson co-integration methodology is employed. The model includes determinants export like real GDP of the home country, real effective exchange rate, financial development (taking credit to the private sector as a ratio of GDP as a proxy), infrastructural development, trade liberalization (openness) and real GDP of Ethiopian major trading partners.

The result of the descriptive analysis revealed that the trend of Ethiopian export shows an increasing path on average. More specifically, for the past 41 years Ethiopian export grew 15.23 percent per annum on average. But when we look at the percentage of export to GDP, show slight improvement after 1991/92, and export to import showed a decline trend. One noticeable fact is that the overall export performance was unsatisfactory during 1970/71-2010/11 as evidenced by lower export GDP ratio and decline share of export in import financing.

Regarding the composition of Ethiopian export; it is characterized by dominance of few primary products. Coffee was the dominant export item for the past 41 years which accounts 52.27 percent of the total export on average followed by hides and skins and oil seeds which account 10.6 percent and 6.97 percent respectively.

The empirical finding on Ethiopian export determination model confirms that, real GDP of home country, real effective exchange rate, financial development, trade liberalization, infrastructural development are positive and significant determinants of country's export. Real GDP of trading partners were found to be statistically insignificant to determine country's export in the long run. Among the aforementioned variables only trade liberalization (openness) was found to be the only determinant of country's export in the short run. It is found to be positive and statistically significant where as the rest variables are found to be statistically insignificant.

6.2. Policy Recommendations

Based on the findings of this study the following policy recommendations can be drawn.

- The empirical result suggests that an increase in the country's real effective exchange rate cause a gain in competitiveness of that country. Thus, a conducive and stable exchange rate policy has to be ensured. That is government has to control up rising movement of domestic price and allow further nominal depreciation of local currency in longer run in order to encourage more export.

- The conclusion also reveals that government should work more with the major trading partners to liberalize its trade and succeed its aspiration to join WTO. This can be done through bilateral and multilateral trade agreements by reduction of tariff and other trade restriction mechanisms so as to maintain export growth.
- In promoting Ethiopian export the role of maintaining a high and sustainable economic growth is indispensable. Because maintaining this has an implication of boosting the supply capacity of the country's export sector.
- The development of telecommunication and transportation facilities is crucial not only in promoting countries economic growth; it is also to sustained export performance. Thus, it needs investment in infrastructural development. This pertains in particular improvements of the main roads that connect the production areas and central markets. The role of communication service should also due attention. Thus it needs more investment to improve the role of the sector for export growth.
- Access to finance is critical. That is the empirical finding has policy implication that needs encouragement of credit to the private sector. This can be maintained by further reduction cost of borrowing, improving the institutional qualities, controlling inflation and reducing the government budget deficit.

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ANNEXES

Annex 1: summary statistics of the LEX, LOPN, LPRC, LREER, LRGDP, LRGDPTP, and LTCEX index for the period 1970/71 to 2010/11.

	LEX	LOPN	LPRC	LREER	LRGDP	LRGDPTP	LTCEX
Mean	6.374547	3.020229	2.435445	5.244000	8.822012	15.87545	0.453357
Median	6.325397	2.970732	2.432415	5.396351	8.709417	15.88765	0.492621
Maximum	8.124707	4.035922	3.090691	6.009304	9.815909	16.39322	1.577039
Minimum	4.781205	1.466514	1.691575	4.574711	8.435207	15.25378	-0.438190
Std. Dev.	0.799802	0.715936	0.417048	0.431471	0.381805	0.360296	0.583432
Skewness	0.081265	-0.453027	-0.069135	-0.244768	1.139727	-0.058366	0.033309
Kurtosis	3.095778	2.459400	2.069484	1.764010	3.297412	1.719059	1.805181
Jarque-Bera	0.060799	1.901688	1.511840	3.019164	9.027461	2.826330	2.446385
Probability	0.970058	0.386415	0.469578	0.221002	0.010958	0.243372	0.294289
Sum	261.3564	123.8294	99.85326	215.0040	361.7025	650.8934	18.58763
Sum Sq. Dev.	25.58732	20.50256	6.957171	7.446693	5.830988	5.192529	13.61571
Observations	41	41	41	41	41	41	41

Annex 2: DF and ADF statistics values

test critical values	<i>Dickey-Fuller</i>		<i>Augmented Dickey-Fuller</i>	
	<i>Constant</i>	<i>Constant & Trend</i>	<i>Constant</i>	<i>Constant & Trend</i>
1% level	-3.610453	-4.211868	-3.610453	-4.211868
5% level	-2.938987	-3.529758	-2.938987	-3.529758
10% level	-2.607932	-3.196411	-2.607932	-3.196411

Annex 3

Figure 3. 1: Recursive Test, 1-step residuals +/- 2nd SE

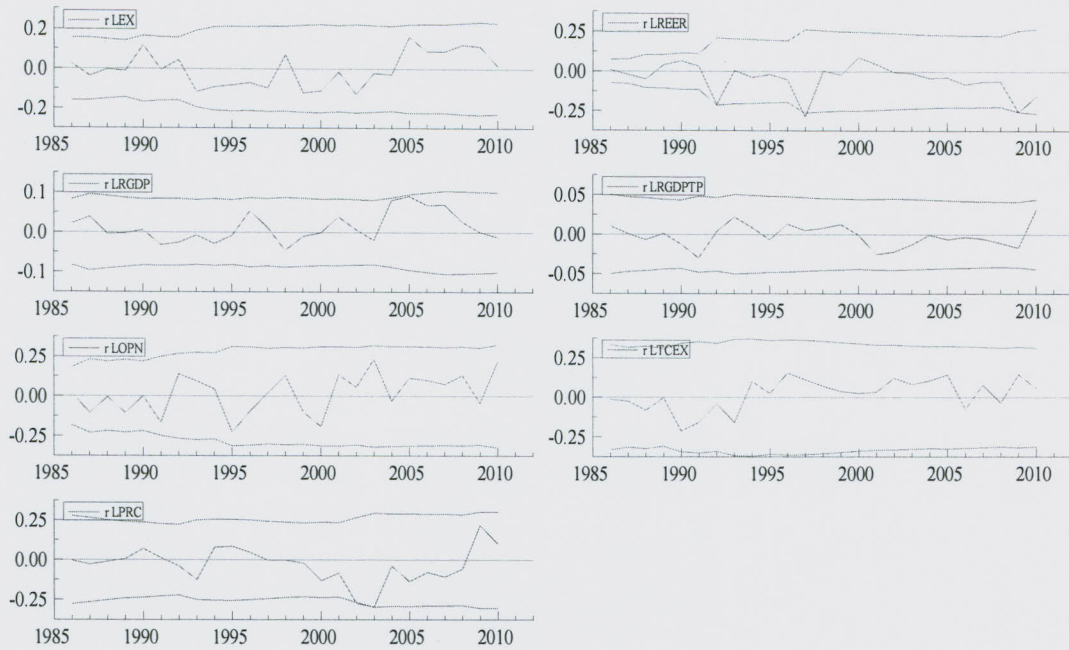
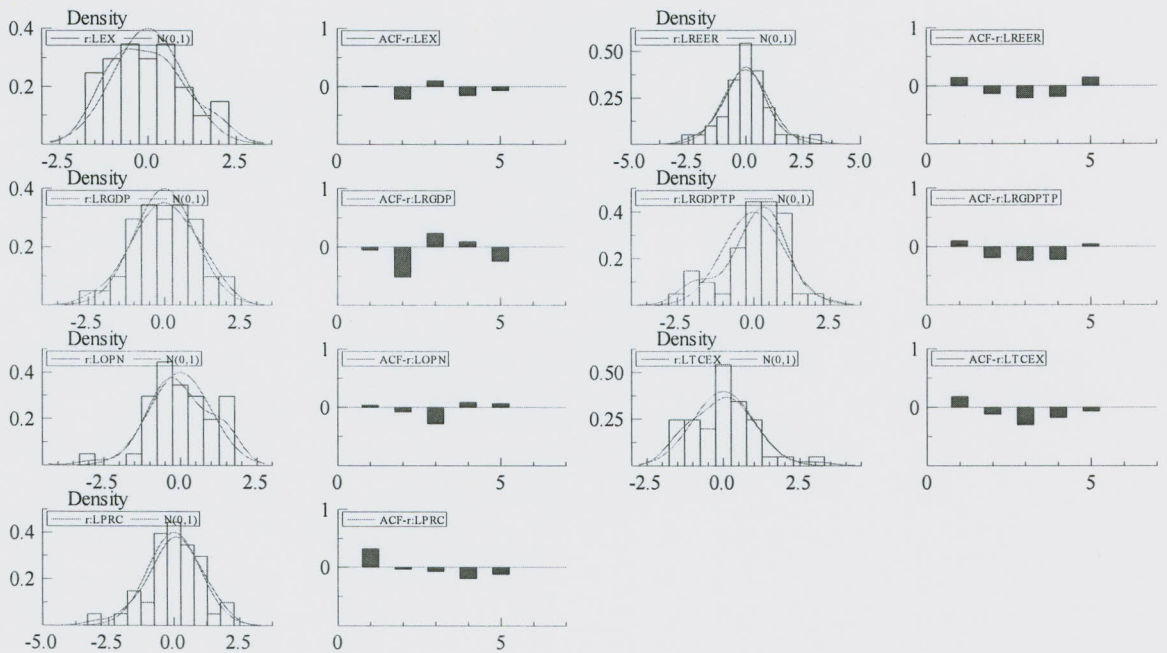
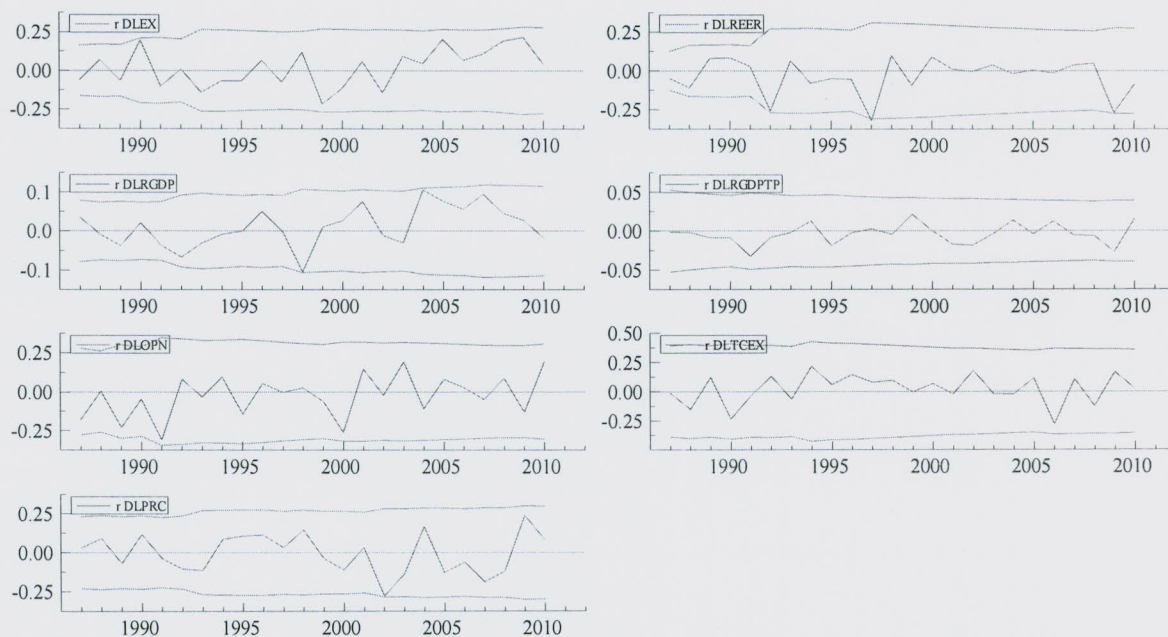


Figure 3.2: Diagnostic graph test: Correlogram (Autocorrelation Function) and Distribution



Annexes 4: Diagnostic Tests for the Dynamic ECM (5% critical level)

Fig. 4.1. Recursive Test, 1-step residuals $\pm 2^{\text{nd}}$ SE(for VCEM)



Annex 4.2. Breusch-Godfrey Serial Correlation

LM Test:

F-statistic	2.785080	Prob. F(1,30)	0.1056
Obs*R-squared	3.313035	Prob. Chi-Square(1)	0.0687

Test Equation:

Dependent Variable: RESID

Method: Least Squares

Sample: 1972 2010

Included observations: 39

Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	0.104887	0.171153	0.612825	0.5446
C(2)	0.154968	0.185425	0.835747	0.4099
C(3)	0.033602	0.126463	0.265709	0.7923
C(4)	0.041604	0.132001	0.315178	0.7548
C(5)	0.056631	0.184058	0.307682	0.7604
C(6)	0.155044	0.361090	0.429378	0.6707
C(8)	-0.037303	0.112960	-0.330227	0.7435
C(9)	-0.018792	0.026189	-0.717566	0.4786
RESID(-1)	-0.440330	0.263851	-1.668856	0.1056
R-squared	0.084950	Mean dependent var	-2.96E-15	
Adjusted R-squared	-0.159064	S.D. dependent var	0.106402	

S.E. of regression	0.114552	Akaike info criterion	-1.296400
Sum squared resid	0.393665	Schwarz criterion	-0.912502
Log likelihood	34.27981	Hannan-Quinn criter.	-1.158661
F-statistic	0.348135	Durbin-Watson stat	2.191122
Prob(F-statistic)	0.939223		

Annex 5 . VAR stability test by table and figure

Roots of Characteristic Polynomial

Endogenous variables: LTCEX LRGDPTP LR GDP LREER LPRC LOPN LEX

Exogenous variables: C

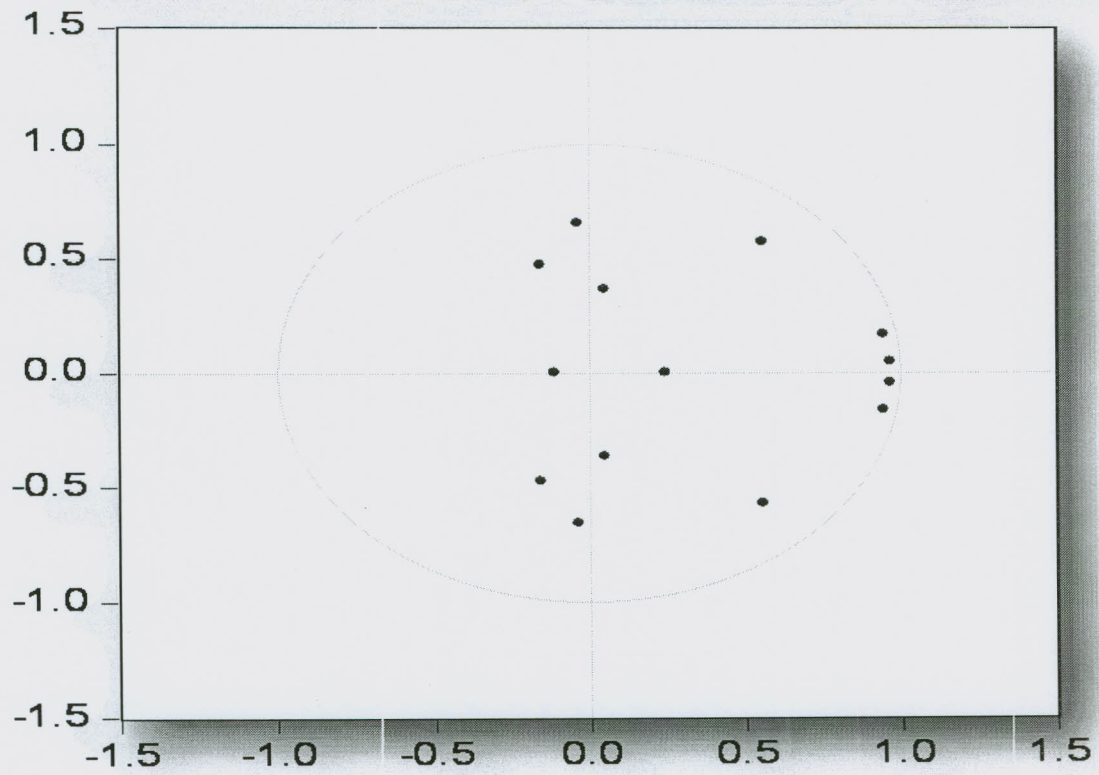
Lag specification: 1 2

Date: 06/21/12 Time: 16:41

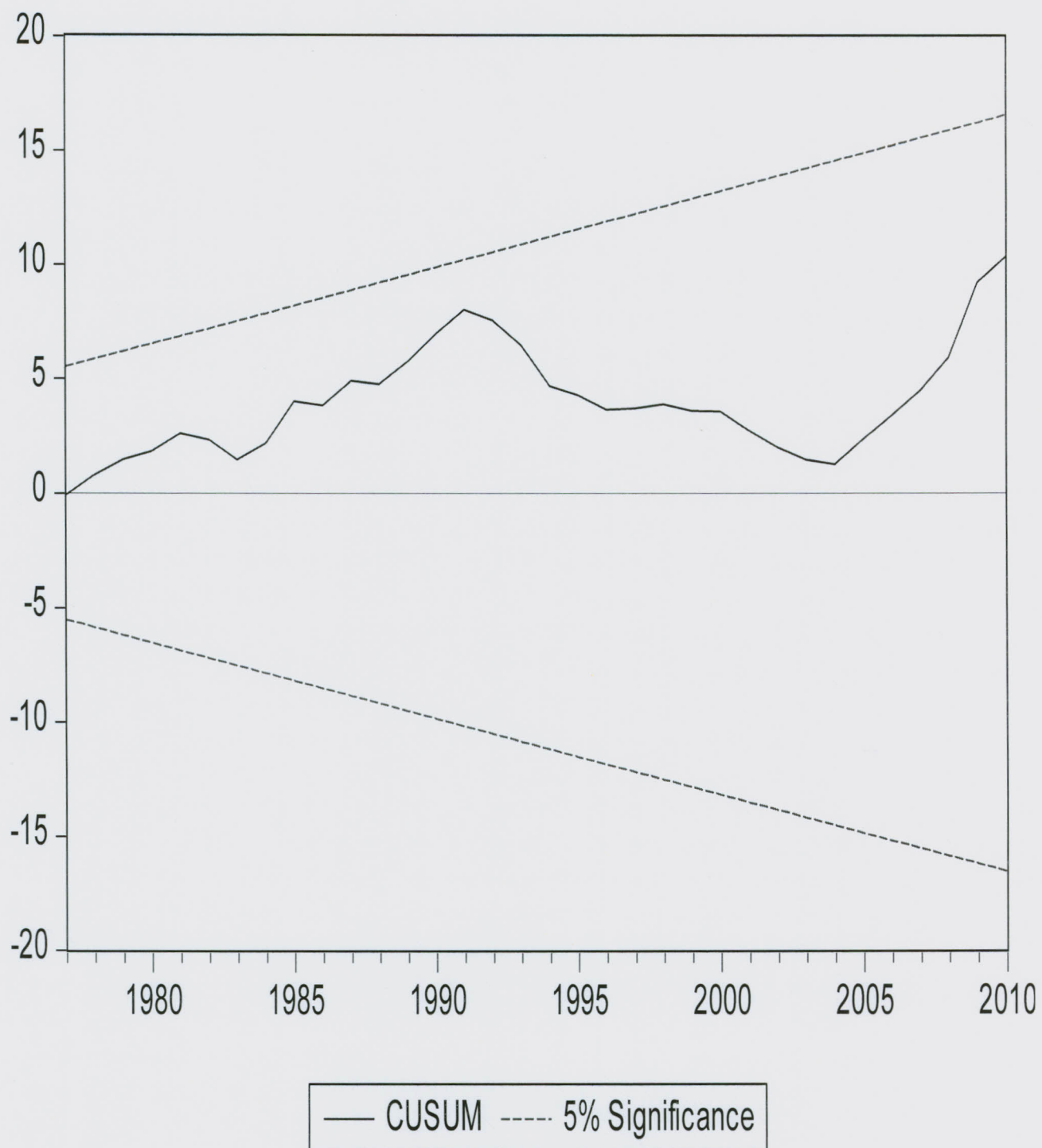
Root	Modulus
0.969018 - 0.045455i	0.970083
0.969018 + 0.045455i	0.970083
0.946180 - 0.164447i	0.960364
0.946180 + 0.164447i	0.960364
0.559338 - 0.568778i	0.797726
0.559338 + 0.568778i	0.797726
-0.035012 - 0.654586i	0.655521
-0.035012 + 0.654586i	0.655521
-0.156110 - 0.471951i	0.497099
-0.156110 + 0.471951i	0.497099
0.052251 - 0.364074i	0.367805
0.052251 + 0.364074i	0.367805
0.246288	0.246288
-0.111050	0.111050

**No root lies outside the unit circle.
VAR satisfies the stability condition.**

Inverse Roots of AR Characteristic Polynomial



Annex 6. Model stability



Annex 7. Value of export by country of destination

Value of Exports by Country of Destination* (Millions of Birr)						
Countries	1985/86 (1978)	1986/87 (1979)	1987/88 (1980)	1988/89 (1981)	1989/90 (1982)	1990/91 (1983)
Djibouti	34.9	61.2	52.0	30.8	65.2	53.4
Kenya	0.6	1.3	1.2	1.6	3.3	1.8
Sudan	5.7	0.1	0.9	3.1	0.7	0.0
U.A.R	1.9	-	-	0.0	-	-
France	33.2	32.2	24.9	43.9	18.5	25.7
Germany	284.0	209.3	185.8	209.4	138.5	114.8
Italy	71.9	61.0	55.2	58.2	64.4	30.7
Netherlands	80.3	27.1	21.4	79.8	10.2	17.6
U.K.	16.9	24.8	15.0	13.4	20.9	58.6
Russia	39.9	73.0	48.2	57.8	77.7	2.2
Yugoslavia	0.6	2.6	0.1	0.0	1.5	0.8
U.S.A.	118.6	142.7	107.5	112.0	89.6	28.0
China, P.Rep.	2.2	1.2	2.2	0.0	-	1.1
Japan	79.7	66.3	102.0	89.2	96.9	97.7
Saudi Arabia	46.5	28.0	57.3	52.8	75.5	38.8
Rest of the World	107.1	64.1	100.1	151.2	74.0	27.0
Total Export	923.8	794.9	773.7	903.2	736.8	498.3
1991/92 (1984)	1992/93 (1985)	1993/94 (1986)	1994/95 (1987)	1995/96 (1988)	1996/97 (1989)	1997/98 (1990)
8.2	71.9	149.1	192.8	254.4	263.6	551.6
0.8	0.1	0.0	0.6	0.4	78.5	3.1
0.0	1.4	29.9	7.2	-	-	1.0
-	0.0	0.0	29.6	19.7	11.8	38.7
20.5	33.7	36.1	165.0	90.7	127.1	147.8
49.9	141.2	258.5	873.9	854.5	927.5	910.9
23.1	63.6	110.1	215.1	217.0	247.6	347.4
5.3	19.8	20.4	56.1	38.7	40.2	79.7
18.8	43.4	46.6	100.0	81.6	102.8	108.0
0.2	0.1	0.2	0.1	0.0	0.0	0.5
0.1	-	-	6.7	1.4	0.1	-
13.5	86.9	97.8	171.4	142.8	390.3	317.1
0.1	0.1	0.3	3.3	1.0	0.6	18.2
78.3	159.0	190.8	367.4	329.0	368.6	350.4
40.0					270.1	275.2

	116.0	110.6	16.8	237.8		
20.3	91.3	388.8	525.8	269.8	909.9	991.9
279.0	828.5	1,439.3	2,731.8	2,538.8	3,738.8	4,141.6

1998/99 (1991)	1999/00 (1992)	2000/01 (1993)	2001/02 (1994)	2002/03 (1995)	2003/04 (1996)	2004/05 1997	2005/06 1998	2006/07 1999	2007/08 2000	2008/09 2001
394.0	405.4	620.1	272.1	289.8	381.5	359.2	498.3	434.3	485.4	464.0
0.3	8.4	15.7	0.2	134.3	2.6	17.9	21.1	32.8	28.8	32.7
0.3	3.4	5.9	0.9	77.1	80.3	146.6	219.2	457.1	508.9	725.1
30.7	41.3	19.8	20.5	64.6	78.5	230.3	251.2	273.8	515.8	125.7
150.6	138.3	95.1	111.3	273.6	98.0	127.2	178.0	212.1	231.3	170.3
647.7	711.6	396.4	437.9	352.9	576.2	1,068.7	876.0	1,230.1	1,403.5	1,378.6
246.1	240.7	322.7	391.8	183.2	277.2	384.8	473.9	663.0	668.2	631.0
50.8	76.0	48.2	55.2	142.0	802.7	259.4	334.9	497.8	849.0	1,267.9
90.5	86.7	114.9	139.8	76.7	146.9	219.7	238.1	295.3	314.6	615.8
-	0.9	1.8	0.5	0.4	9.5	17.9	14.4	30.8	46.3	40.8
-	-	-	0.3	-	-	-	-	-	0.3	0.9
145.1	176.1	124.6	165.9	340.1	268.0	389.9	418.0	522.8	915.7	622.3
8.1	6.9	14.7	91.0	22.5	91.5	363.1	1,166.7	526.5	583.0	1,899.2
563.7	429.0	380.9	294.6	188.4	554.4	554.7	676.2	640.3	861.3	69.0
418.3	353.4	295.1	229.5	182.4	342.1	438.2	531.0	646.0	1,000.5	1,162.1
891.1	1,279.8	1,410.8	1,652.8	1,814.3	1,467.3	2,753.6	2,788.4	3,995.1	5,218.9	5,882.7
3,637.3	3,957.8	3,866.6	3,864.3	4,142.4	5,176.6	7,331.3	8,685.4		13,631.6	15,088.1

Declaration

I, the undersigned, declare that this Msc. thesis is my original work, has not been presented for a degree in this or any other University and that all sources of materials used for the thesis have been fully acknowledged.

Student Name **Belayneh Kassa**

Signature _____

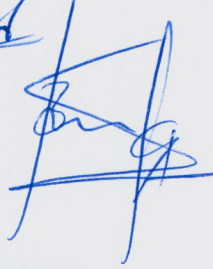
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Date of submission _____

This thesis has been submitted for examination with my approval as a University advisor

Name and signature of the first advisor **Wondaferahu Mulugeta**

Name and signature of the second advisor **Tolina Temesgen**

Corrected


JIMMA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

**DETERMINANTS OF EXPORT PERFORMANCE IN
ETHIOPIA: A VAR MODEL ANALYSIS**

By

BELAYNEH KASSA

Approved by Board of Examiners

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