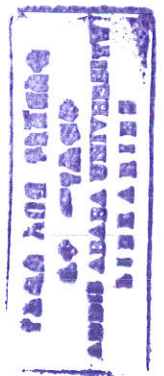


**EVALUATING THE IMPACT OF TRADE PREFERENCE ON  
ETHIOPIAN EXPORT  
GRAVITY MODEL APPROACH**

BY  
**DANIEL TSEFAYE**



**A PROJECT SUBMITTED TO THE SCHOOL OF GRADUATE STUDIES OF  
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REQUIRMENTS FOR THE DEGREE OF MASTERS OF ART IN ECONOMICS**

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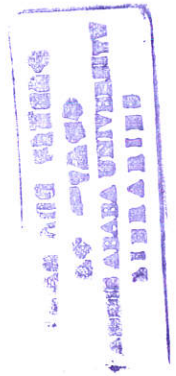
**ADDIS ABABA UNIVERSITY  
SCHOOL OF GRADUATE STUDIES**

**“Evaluation of the impact of Trade preferences on  
Ethiopian Export: An Augmented Gravity Modeling  
Approach.”**

**By**

**Daniel Tesfaye Asfaw**

**Approved by Advisor:**



*Girma Estephanos*

**Advisor**

*[Handwritten Signature]*

**Signature**

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A. M





## ABSTRACT

To integrate least developed countries including Ethiopia in to international trade market, African Growth Opportunity (AGOA) and Everything But Arm (EBA) initiatives have been designed by U.S. and European countries respectively. The purpose of these initiatives is to enhance and diversify the export of the beneficiary countries. Therefore the purpose of this study is to analyze the effects of these programs on Ethiopian export. The study employs the fixed effect gravity model using panel data for the period 1974/75 - 2005/06 of annual data.

The main findings of the study show that AGOA has negative contribution to Ethiopian Export. This might be explained from both beneficiary (i.e. Ethiopia) and granting country's limitation. Poor infrastructure, lack of skilled manpower, poor public services, etc of Ethiopia is some of the limitation to exploit the scheme. Whereas un stability of the program, rules of origin, non tariff barriers are some of the factors that hinders the exploitation of the scheme.

The result of the study also indicates that the European Union initiative has

no significant effect on Ethiopian export. Like U.S. initiative this program has also its own limitations, but still Ethiopia has to identify the drawbacks in exploiting the program.

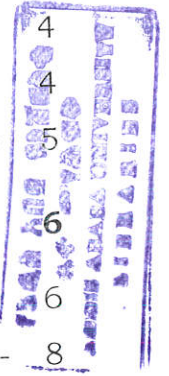
The policy implication of the finding is that to exploit the program Ethiopia has to solve the drawbacks for her poor export performance. Especially she has to use export diversification strategy, i.e. the government has to peruse to diversify exportable commodities from agriculture to other products both vertically and horizontally in order to be competitive. Since most of export items relied on few primary products. In addition to this the government has to give due attention to improve social capital, skilled manpower, public services infrastructure etc.

key words: AGOA,EBA,EXPORT

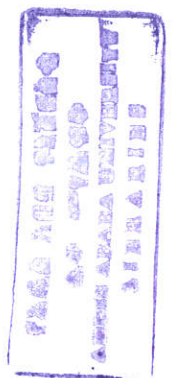


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# CHAPTER ONE

## Introduction

### 1. Background

Trade has proved to be one of the most effective tools to foster development. The notion of trade has becoming global phenomenon. That is trade is getting free among nations. It involves grater interdependence among countries and currently linked to the phenomenon globalization.

In the period from 1960 to 2005 world trade has grown amazingly faster than world Gross Domestic Product /GDP/. While in 2005 world output was about four times higher than in 1960 trade increased 12 fold during that time. The relative rapid growth in trade is related to the ongoing process of liberalization. That took place under the auspices of the GATT/WTO/ Herz & Wanger (2006).

Trade preferences are seen by many as an essential element in integrating the developing countries, and particularly the Least Developed Countries (LDCs), in the world trading system. Thus it is believed that trade preferences are a key element in industrial countries' effort to assist the integration of LDCs in the world economy. The increased trade of developing country with developed country will enhance their export earning, promote their industrialization and encourages the diversification of their economies. To achieve these goals

developed countries have designed different instruments. Although each scheme has their own pro and cons all are designed to import goods from developing country at lower or with free tariff rate. Hence, with these trade preferences goods that imported from developing countries are not submitted to the normal customs duties. It provides an incentive to traders to import products from developing country and help them to compete on international markets.

These trade preference schemes are the tools designed to have unilateral trade liberalization. That is LDCs are exporting their products to developed countries with out reciprocal tariff. Some of the instruments offered by developed countries are Generalized System of Preference /GSP/, Everything But Arm /EBA/ and African Growth and Opportunity /AGAO/

## **2. Statement of the problem**

Ethiopia is one of the beneficiaries of unilateral trade liberalization scheme. The Ethiopian export performance has grown annually. For the last ten year on average the Ethiopian export increased above 9% per annum. Thus, this growth of export has an important policy implication i.e., having clear understanding of export determinant helps policy makers to design appropriate policies.



There are plenty of studies indicating the variables that determine the export of Ethiopia. But these studies are conducted before a time of such trade preference scheme have been introduced or come to practices. Thus it is necessary to see the significance of this policy relative to other variables in determining the export performance of Ethiopia. Hence this study will fill this literature gap.

**The main research questions are**

- Does trade preference scheme enhance Ethiopian Export?
- What is the relative importance of each trade preference in determining export?

**3. Objective of the study**

The general objective of the study is to examine the impact of trade performance scheme offered by developed country on Ethiopian Export.

**Specific Objectives**

- To see the significance of trade preference scheme in determining Ethiopian Export
- To examine the relative importance of each trade preferences.

#### **4. Research hypothesis**

The study has the following hypothesis to be tested.

Trade preference schemes have positive significant impact on the Ethiopian Export.

#### **5. Significance of the Study**

The issue of trade liberalization is a hot agenda of ministerial meetings. Unilateral or not-reciprocal trade liberalization has been offered to LDCs to increase their export earnings, to prompt their industrialization and to accelerate their rates of economic growth. On the other hand this non reciprocal trade liberalization given by developed countries aims integrating the developing countries particularly the LDCs in to the world trading system.

For the post ten years the Ethiopian Export performance increases significantly. Thus, understanding the cause factor for the improvement of export helps to design appropriate policy. Especially this study gives due attention to trade instruments designed by developed county offered to LDCs to faster export performance. Therefore the result of the study may have an important implication for Ethiopian performance in Exploiting trade preferences granted by developed county.



## **6. Scope and limitation of the Study**

The improvement of Ethiopian export performance could be explained from different perspective. But this study is specifically focused on measuring the contribution of trade preference scheme i.e. AGOA and EBA for export enhancement. The limitation of the study was the nature of the data i.e., it is aggregated. In addition to this the study covers only two trade preference schemes (AGOA and EBA).

# CHAPTER TWO

## 2. Literature Review

### 2.1 Theoretical Review

International Trade is the exchange of goods and services across international boundaries. In most countries it represents significant share of gross domestic product. While international trade has been present throughout much of history, its economic, social and political importance has been on the rise in recent centuries.

Increasing international trade is crucial to the continuous of globalization. International trade is a major source of economic revenue for any nation that is considered a world power. Without international trade, nations would be limited to the goods and services produced within their own borders. Thus, if trade has such an effect on international economy, does every nation benefit fairly from trade or does every nation have equivalent participation in international trade?

Several different theories have been proposed to predict patterns of trade and to analyze the effects of trade policies. According to Adam Smith's absolute advantage theory when countries engage in the production of goods and services in which they have absolute advantage and engage in trade for their other needs, both trading partners will benefit from trade, i.e. trade allowed



countries to produce what they were best at and buy from abroad every thing else. This theory, however, does not explain why countries should engage in trade while one of the countries poses absolute advantage in both goods. But for Ricardo, even if a country had an absolute advantage in all production lines, it could still gain from trade, i.e. countries specialize in producing what they produce best (comparative advantage). In other words this theory asserts if countries specializes in production and (possibly export) of goods and services in which they have comparative advantage; and engage in trade to meet their needs, both countries will gain from trade.

Literally there is no doubt about the effects of this trade theory in exploiting the trade patterns among nations. But the unsatisfactory nature of economic relation between developed and under developed countries could not be explained with this trade theory. That is, the unfavorable terms of trade between developed and developing countries. Beside to this what might become of, if the source of comparative advantage will be universalized?

As an alternative to the Ricardian model of basic comparative advantage Hecksher Ohlin /H.O/ mode, argues that the nature of international trade is determined by differences in factor endowments. It predicts that countries will export those goods that make intensive use of locally abundant factors and will import goods that make intensive uses of factors that are locally scarce. But most of the trade is between countries with similar factor endowment and



productivity level, and large amount of multinational production (i.e. foreign direct investment) which exists. Thus the H.O model could not explain several facts about trade especially trade of least developing countries with developed countries. Thus still developing countries could not equally participate in international trade. To integrate less developed countries in international trade different schemes has been designed by developed countries such as General System of Preferences/GSP/, African Growth opportunity Act /AGOA/, Everything But Arm/EBA/.....

### **2.1.1 The Least Developed Countries in International Trade**

Special attention to what were then called the "less developed" among developing countries began at the first session of United Nation Conference on Trade And Development/UNCTAD/ in 1964 and has gathered momentum since. It should be recalled that until mid 1960s, developing countries were considered as homogenous with the only distinction being the structure of their commodity exports. As such an approach was simplistic and inadequate for conceptualizing certain policy measures.

During the 1970s, it become evident those Least Developing Countries /LDCs/ were lagging further and further behind, and some cases moving backwards. As a group LDCs recorded per capital declines in this period in each of the

following key economic areas; agricultural production, manufacturing out put, gross domestic investment, exports, purchasing power, and import volume .The general Assembly of UNCTAD approved the list of the LDCs in 1971 , the original list included the following countries, Afghanistan, Benin, Bhutan, Burundi, Chad, Ethiopia, Guinea, Halite, the Lao people's, Democratic Republic, Lesotho, Malawi, Maldives, Mali, Nepal, Niger, Rwanda, Somalia, Sudan, Uganda, United Republic of Tanzania, Upper Volta (Burkina Faso), Samoa ,and the Yemen Arab Republic.

Subsequently the following countries were added to the list. Bangladesh, central Africa Republic, Democratic Yemen and the Gambia in 1975, Cape Verde and the Comoros in 1977, Genie Bissau in 1981, Djibouti, Equatorial Gunnies, Sao Tome and Principe sierra Leone and Togo in 1982, Zaire and Zambia in 1982 Eritrea and Angola in 1994. Botswana is the only country which is graduated from the list of the LDCs in 1994. The present group o 48 LDCs comprised a population of 610 Million in 1997. The list of LDCs selected based on per capital gross domestic products(GDP) of \$100(in 1968 united states dollar) or less share of manufacturing in total GDP of 10 percent of less adult literacy rate of 20 percent or less.

As a result of the creation of a specific list, UNCTAD was able to begin more focused analytical work about special measures in favor of LDCs. In 1974, the UNCTAD Trade and development Board recognized the need to have integrated



action on behalf of the least developed countries and decides to convince an inter governmental group to initiate intensified efforts towards the formulating development review and appraisal of policies and measures in their favor.

The UNCTAD's work that originally leads to the creation of the list of LDCs has subsequently led to an increasing awareness of the special needs of these countries. This awareness has changed policies of countries and multilateral agencies in several important ways. There has been a shift in the share of official assistance going to this group of countries several donor countries have not only provided an increasing share of their assistance but have also cancelled the debt or taken other debt relief assistance in favor of these countries. The awareness has also led to a few innovations in commercial policy measures on behalf of these countries. They create a special sub-committee for LDCs. Within General Agreement on Trade and Tariff /GATT/ previously and now within World Trade Organization /WTO/ should be noted trade preferences including provision within the generalized system of preferences have also resulted.

Improving the ability of LDCs to participate in world markets can stimulate growth and reduce poverty. To help those goals industrial countries offer developing countries preferential access to their markets through lower or zero duties.

Tariffs introduce a wedge between the world price of product and the price in the domestic market. The premium normally accrues to the government of the importing country as tariff revenue under preferences; however, it may go to the developing country beneficiary, thereby raising returns to the activity that enjoys the preference and depending on the nature of competition in domestic product and factor markets, stimulates expansion of that activity, with implications for wages & employment. However, if there is little competition among importers/buyers in the developed country then the suppliers/exporters in developing country may be unable to acquire much of the price premium. Ozden and loaireage (2005) find that only one third of the available returns for African exporters of clothing to the US under AGOA actually accrue to the exporters.

The arguments underling trade preferences are that the small scale of industry and low level of development in developing countries lead to high costs, which reduces countries ability to compete in global markets, and to a lack of diversification, which increases risks.

Developing countries especially LDCs face much higher trade related costs than other countries in getting their product into international markets. Some of these costs may reflect institutional problems in the exporting counties such as inefficient practices or corruption, which require a domestic policy response. They may also reflect weak transport infrastructure firm's lack of



access to standard trade facilitating measures such as insurance and trade finance.

### **2.1.2 Differential and More Favorable Treatment**

International trade is more important for development and poverty alleviation. It helps rise and sustain growth—a fundamental requirement for reducing poverty by giving firms and house holds access to the world markets for goods services and knowledge lowering prices and increasing the quality and variety of consumption goods, and fostering the specialization of economic activity in to areas where countries have a comparative advantage. But estimates of sub-Saharan African's share of global trade are consistently below 4 percent <sup>1</sup>. To increase the share of LDCs in global market developed countries designed different schemes. Accordingly in 1974 "Enabling clauses" Entitled Differential and more Favorable Treatment, Reciprocity and Fuller Participation of Developing countries made Standard and Differential treatment (SDT) a central element of the trading system. It calls for preferential market access for developing countries limits reciprocity in negotiation rounds to levels. Consistent with development needs and provides developing countries with grater freedom to use trade policies than would other wise be permitted by GATT rules. Hoekman, Michalopoulos and Winters (2003).

<sup>1</sup> see <http://www.agoa.info>

Historically, the major focus of efforts to operationalayze SDT have centered on preferential access through the generalized system of preferences in 1970s. Generalized system of preference is the tool that designed to have unilateral trade liberalization. That is to say those goods that imported from developing countries are not submitted to normal customs duties. It provides an incentive to traders to import products from developing countries and help them to compete on international markets.

The objective of GSP is to increase their export earnings, to promote their industrialization and to accelerate their rates of economic growth. The European Community was the first to implement a GSP scheme in 1971. The European Countries GSP grants products imported from GSP beneficiary countries either duty free access or tariff reduction, depending on which of the GSP arrangement a country enjoys.

In subsequent years several additional schemes have been added. These schemes are graded to differed groups of countries, cover different products and offer different types of access. For instance The European Union offers not only the GSP, but also the GSP regimes for LDCs the regime to combat drug production and the Cotonou agreement for African Caribbean and pacific countries (ACP). Lately the European Unions introduced Everything But Arm (EBA). Similarly the United States offers for approved African countries the African Growth and Opportunity Act (AGOA). In the next section, we will

discuss some of the schemes designed by developed countries to developing countries.

### **2.1.3. African, Caribbean, Pacific (ACP) preferences; from Lome to Cotonou**

The ACP preferences have been granted through Lome conventions. The first Lome convention has been established in 1975. These preferences are characterized by its non-reciprocal nature, under which the European Union has permitted almost completely duty free accesses for most of the products originated from the ACP countries. The exceptions are mostly agricultural product. There have been exclusions or restrictions in the form of tariff and /or quantitative or seasonal restrictions.

Exports from ACP to the European Union are hardly diversified and concentrated in raw materials and agricultural products. Possible explanation for under achievement of the agreement could be that market access for some key products was still restricted or that the development impact of the agreement has failed (Yu and vig Jensen, 2003).

As quoted by Yu and Vig Jensen, The European commission (2002a) indicate that the unimpressive performance of ACP preferences has led to a re-design and re-negotiation of the Lome convention. As a result of this effort the latest

Lome convention has been replaced by the Cotonou agreement, which ambitiously aims at reducing and eventually eradicating poverty consistently with the objective of sustainable development and the gradual integration of ACP countries into the world economy. At present, the trade component of Cotonou is only a framework for the European Union and ACP countries to renegotiate regional economic partnership agreement with the aim of liberalizing all bilateral trade between them on reciprocal basis.

#### **2.1.4 The Generalized System of Preferences (GSP)**

The GSP scheme was allowed under the WTO through its Enabling clause, which states that preferential treatment under the GSP has to be nondiscriminatory, non-reciprocal and autonomous. There should be no discrimination between developing countries, except for the benefit of least developed countries.

As quoted by Yu and Vig Jensen, 2003 The European communities ,(2001b) shows that the scheme operate at two levels: the general system provides tariff preferences depending of the sensitivity of the product ,known as modulation. Preferences are granted to two differentiated product categories:

- For non-sensitive products duty free access is granted
- For sensitive products the reduction of the ad valorem duty is 3.5 percent, whereas specific tariff should be reduced by 30 percent

Accordingly, the GSP scheme covers around 7,000 of the dutiable products, of which 3,300 are classified as non-sensitive and 3,700 are classified as sensitive.

Since 1998 the European Union has tried to extend similar preferences as contained in the ACP preferences to the nine LDCs that are part of the GSP scheme but not part of the ACP. The initiative to further improve market access for LDCs was followed up in February 2001, when the European Union formally adopted the "Everything But Arms" regulation.

### 2.1.5 Everything But Arm (EBA)

The period from 1989 to 1993 was one of absolute decline in the value of exports to European Union. The figure shows that the relative decline of LDCs exports to the European Union continued throughout the 1990s with slight recovery in 200 and 2001. In 2001 the LDCs share of the European Union import market was about 25 Percent lower than in 1983 Berenton (2003). The possible impact of these changes introduced in 2001 EBA initiative. The



initiative is a continuation and enhancement of the non-reciprocal preferences granted under ACP and GSP. Unlike the Cotonou agreement, which provides for both trade and aid, the EBA is based on the principle of trade rather than aid, and provides tangible trade incentives to LDCs wishing to enter the European Market. The EBA beneficiary countries are those 48 LDCs of the world. Least Developed Countries are categorized by World Bank, those countries that have below 1,500 of per capita income.

According to CEC (2002) as sighted by Brenton (2003) the EBA regulations grant duty free access to imports of all products from the LDCs with the exception of arms and munitions and without any quantitative restrictions. The European Union has argued that this significantly enhance export opportunity and hence potential income and growth for these countries. Liberalization was immediate except for three products Fresh bananas, rice and sugar where tariffs will be gradually reduced to zero (in 2006 for bananas and 2009 for rice and sugar).

It is important to note that the majority of products from these countries already received duty free treatment under the GSP or Cotonou agreement. The EBA proposal extended tariffs and quota free access to the EU markets to the remaining 919 tariffs lines. The majority of these 919 products the agricultural products, including certain meat products, vegetables, fruits, wines are prepared food stuffs, such as biscuits and Jeans. Brenton (2003).

For being considered as origination in the exporting country, products have to meet certain requirements, which are led down in the rules of origin. The European Union considers that the rules of origin applying to import under the GSP are meant to ensure that the tariff preferences foster the development of beneficiary countries.

Products total obtained in the exporting country are considered as originating there and products manufactured with inputs from other countries are considered so only if they have undergone sufficient working or processing.

A key difference between EBA and other unilateral preference granted by European Union is that preference for the LDCs are granted for an unlimited period are not subject to periodic review. This will provide exporters and investors with grater certainty of market accesses to European Union and therefore stimulate grater capacity in the production of existing products and an environment conducive to the export of a wide range of products

### **2.1.6 African Growth Opportunity Act (AGOA)**

The aim of reduction in U.S aid to Africa and by pointing to the relatively limited amount of commerce between the U.S and Africa, AGOA was singed in to law by president bill Clinton on March 18, 2000 as part of the larger trade and development Act of 2000 President Bush signed amendment to AGOA,

also known as AGOA II, it to law on August 6, 2002. AGOA II substantially expands preferential access for imports from beneficiary Sub-Saharan countries. By modifying certain provisions of AGOA the AGOA acceleration act of 2004 (AGOA III is signed by President Bush on July 12, 2004) extends preferential accesses for imports from beneficiary Sub-Saharan African countries until September 3, 2015; extends third country fabric provisions for three years, from September 2, 2004 until September 2007, provided additional congressional guidance to the administration of how to administer the textile provision of the bill. Further amendment of AGOA was signed on December 20, 2006 and is referred to as AGOA IV. The legislation extends the third country fabric provisions for an additional five years from September 2007 until September 2012; adds an abundant supply provision; designates certain denim articles as being in abundant supply and allow lesser developed beneficiary Sub-Saharan African countries export certain textile articles under AGOA. AGOA is a preferential trade agreement between the United States and approved African Countries, allowing duty free and Quota free access to the US market<sup>4</sup>.

The eligibility criteria for GSP and AGOA substantially overlap, and countries must be GSP eligible in order to receive AGOA's trade benefit including both expanded GSP and the apparel provisions. The AGOA qualification criteria are extensive. They stipulate that the country must establish a market based economy uphold the rule of law eliminate barriers to U.S trade and investment

<sup>4</sup> see <http://www.agoa.info>

pursue economic policies to reduce poverty protect internationally recognized worker rights, and implement a system to combat corruption. Additionally, a country (1) can not engage in activities that undermine U.S national security of foreign policy interests, (2) can not engage in gross violation of human rights (3) cannot provide support for acts of international terrorism and (4) must have implemented commitments to eliminate the worst forms of child labor. Rolfe and Wood ward (2005). Countries must meet customs-related criteria that are designed prevent the re-export of garments actually made elsewhere.

Overall, the United States certified 37 SSA countries for AGOA benefits, even if the United States doesn't automatically ensure apparel exports for the trade concessions. Accordingly by late 2005 the united states declared 24 countries eligible for the AGOA textile and apparel: Benin, Botswana, Cameron, Cape-Verde, Ethiopia, Ghana, Kenya, Lesotho, Madagascar, Malawi, Mauritius, Mozambique, Namibia, Nigeria, Niger, Rwanda, Senegal, Sera lion, South Africa, Swaziland, Tanzania, Uganda and Zimbabwe. In contrast, Sub-Saharan African /SSA/ countries that did gain under AGOA Lesotho, Kenya, Madagascar and Namibia had duty free programs for intermediate goods like cloth and were able to respond quickly to U.S market access opportunities Rolfe and Wood ward (2005).

The Act allows for duty free imports under two broad categories apparel and non-apparel. For non-apparel, approximately 1800 items were added to the list

of products with 2000 import duty under the GSP. As a result for AGOA countries the number of goods on the U.S.GSP list expanded from 4,600 to more than 6400 items defined as the 8 digits Harmonized system/HS/ level. Frazer Van Bieseboelk, (2007). The additional GSP line items which include such previously excluded items as foot wear, luggage, handbags, watches and flatware were implemented after an extensive process of public comment and review.

In order to qualify for duty free access to the U.S under AGOA, the rules of origin underlying this trade act require that a product be the “growth, product or manufacture” of an AGOA beneficiary Sub-Saharan African countries. The rules of origin requirement for attire and non-apparel are not identical. The silent features of AGOA’s (i.e. non textile and apparels) rules of origin are:

- The product must be imported directly from AGOA beneficiary country in to the United States.
- Items must be “growth, product or manufacture” of one or more AGOA beneficiary countries
- Products may incorporate materials sourced from outside countries (i.e. non AGOA beneficiaries) provided that the sum of the direct cost or value (i.e. the transaction value) of the materials produced in the AGOA beneficiary country (s) plus the “direct cost of processing “under taken in



the AGOA beneficiary countries, equal at least 35 percent of the product's appraised value at the U.S port of entry.

- In addition ,up to a total of 15 percent of the 35 percent value (as appraised at U.S port of entry)may consist of U.S parts and materials

But for apparel under especial rules for lesser developed beneficiary countries, those countries with per capital gross national product under \$1500 in 1998,will enjoy an additional preferences in the form of duty free /quota free access for apparel made from fabric originating any where in the world.

Preferential treatment for apparel took effect on October 1, 2000, but beneficiary countries must first establish effective visa systems to prevent illegal transshipment and use of counterfeit documentation and that they have instituted required enforcement and verification procedures.

### **2.1.7 The Implementation of AGOA and EBA**

Trade preferences are seen by many as an essential element in integration the developing countries, and particularly the LDCs into the world trading system. Accordingly developing and LDCs receive unilateral or non- reciprocal preferential access to the market of developed countries. The aim of these preferences is to help developing economies to expand their production capacity, diversify their export by offering them bigger potential markets for their production.

The impact of these unilateral trade preferences has been the subject of numerous studies. Many studies criticize the effectiveness of these programs. There are a number of reasons why most developing countries don't benefit from existing preferential market access programs. First, in many cases, exports are dominated by primarily products and raw materials that are already subject to low often zero tariffs Brenton (2003). Second the absence of stability in the unilateral preferences schemes, which are not binding but are subject to frequent revisions, appeared to have discharged long term investments. Kenna, Stevens (2000). Third for a wide range of products, rules of origin, non tariff barriers and administrative requirements seem to have prevented exporters from exploiting the schemes. Brenton and Ozden (2005) conducted a study on trade preferences for apparel and role of rules of origin the case of Africa. The study indicates that the preferences tend to impose rather strict rules of origin requirements. As a result compliance with these generous preferences requires significant bundles interims of additional input costs and bureaucratic paper work that decrease their utilization and benefits considerably. As sighted by Brentton (2003), Brentton and Man chin (2003) argues the prime suspects for the lack of utilization of European Union trade preferences are the rules of origin both in terms of the nature of the rules defining specific processing requirements, with the constraints that this entails for international sourcing from lowest cost locations, and the cost of providing the necessary documentation to prove conformity with the rules.

Forth, with the implication of the schemes Africa exports face the competitive challenges posed by China. Wines (2005) indicate that, with the end of multi fiber Agreement (MFA), Chinese exports have risen rapidly while many Asian investors fled SSA countries. Among other countries Lesotho lost thousands of jobs from 2004 through 2005, promoting economic crises. Unlike to the above studies Frazer Biesebroeed (2007) indicates that following the phase out of MFA, African exporters faced increased competition in the U.S market from China and other Asian countries, were the years with the largest impact on apparel exports. But the continuing duty preferences offered to Africa countries under AGOA could be sufficient to offset any relative competitive advantage of the Asian countries.

For Collier and Gunning (1999) trade restriction is not the primary constraint on African exports. They identified that the chief factors explaining African's poor economic performance as distorted product and credit markets, high risk inadequate social capital, inadequate infrastructure and poor public services. External factors such as developed countries trade restrictions are not considered as important. Therefore, the internal factors may continue to constrain African Exports after the removal of the U.S import restrictions.

## 2.2. Empirical Literature

Trade Preference are seen by many as an essential element in integrating developing countries and particularly the least developed countries in to the world trading system . However economists are increasingly questioning the feasibility of preferences from a development perspective. And hence their is an intense controversy has been going on among trade economists regarding the cost and benefit of allowing preferences within the special and differential treatments framework

Rose (2004) conducts research on the impact of unilateral trade preferences on the volume of export and economic significance of WTO member ship using a gravity regression and a dummy variable that takes the value of one if the import county grants unilateral trade preference to the existing country in the period taken into consideration. The result indicates that having the GSP is associated with an approximate doubling of trade but membership in the WTO seems that not to have an economically significant effect on trade. Rose's conclusion has been challenged in a number of papers. Tomz, Goldstein and Rivers (2005) criticize the use of an OLS estimator, as it is a standard result in the econometric literature that the existence of individual specific effects cause OLS estimation to be biased and inconsistent. Instead they used specific panel estimation such as fixed effects. They finds that the WTO has a substantial effect on aggregated bilateral trade increasing the trade volume by about 72%

if both trading partners are WTO member and 31% if only one country participated in the WTO . In comparison the generalized system of preferences is less effective and increase trade by 21%.

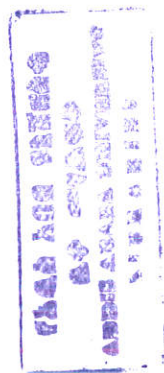
Herz and Wagener (2007) criticized Tomz Goldstein and Rivrs (2005) findings of short coming of Rose's (2004) analysis namely the use of aggregated bilateral trade data. They used annual data from 1962 to 1999 for disaggregated export and import flows and apply the fixed effect estimator. Contrary to the above results they find that the generalized system of preferences is negatively associated with the imports of the preferences granting countries. According to them this might be due to the political economy of GSP schemes which are typically granted for products that are relatively unimportant for GSP granting countries.

Lederman and Ozden (2004) analyze the impact of USA's unilateral preferences. Their analysis is based on the value of USA imports from developing countries at the two digit harmonized system in 1997 and 2002. They implement a cross section Tobin analysis on the two years separately and find that GSP has a negative effective and being part of the free trade Area (FTA) has a positive impact .But concerning the European unilateral preference programs, Nilson (2002) estimates separate cross section gravity equations for the period 1973-1992 and he finds a positive effect of the European GSP scheme on the value of European countries' imports.

In contrast to the above approach, Elisa Gamberoni (2007) measure the impact of European unilateral trade preferences on the extensive and intensive margin of trade. The analysis is based on recent developments in trade theory (Meltiz 2002) <sup>3</sup>and econometric estimation of gravity equation. Using these new developments and detailed data base he finds that he GSP for least developing countries did not change the beneficiaries' export pattern.

Rolfe and woodward (2005) carried out the study on garment exports from the African Countries most affected by the preferential access with the United States under AGOA. They find that following AGOA's implementation in 2000 several African countries experienced a dramatic increase in exports to the United States.

Kenya Lesotho, Namibia, Madagascar, South Africa and Swaziland experienced pronounced rise in a apparel exports Notably Kenya clothing exports to the US increased 607 percent from 1999 to 2004. Another significant success is Lesotho which saw export rise by 311 percent after AGOA, making this small land locked country the largest African garment exporter to US. According to Rolf and Wood ward (2005) although some eastern and southern African countries experienced impressive export growth it is a short term gain i.e. a form of temporary trade diversion from Asia countries.



The U.S. policies towards Africa (AGOA) evaluated whether its desired result is achieved by Frazer and Biesebrock (2007). They estimate the impact with a triple difference in difference estimation. The results indicate that despite the challenges of transaction cost in Africa countries, AGOA has a large and robust impact on apparel imports into the U.S. as well as on agricultural and manufactured products covered by AGOA. For them 2005 and 2006 is the period for African exporters face competition in the U.S. market from China and other Asian countries. But the continuing duty preferences offered to African countries offset the relative advantage of the Asian countries. Thus AGOA imports were not merely diverted from elsewhere.

Similar to Frazer Biesebrock (2007) several other papers have suggested the impact of AGOA could well be very limited due to beneficiary side limitations rather than U.S. supply side limitations. Liamo and Venables (2001)<sup>4</sup> find that the relative low level of African trade flows "is largely due to poor infrastructure". The possible causes of poor export performance in Africa are low levels of per capita income, small country size, poor geographic and domestic (African) trade policy. Morrissey (2005) notes that transport costs, natural barriers to trade are variables that hinder the African export promotion. Hoekman, Michalopoulos and Winters (2003) states that the schemes can have a significant positive effect on recipients, but that very much depends on their supply side capacity (e.g. a large proportion of the benefits of GSP have accrued to small number of more advanced developing countries), their ability to put the rents generated to good

use, and on the ancillary documentary requirements that are imposed by preference granting countries.

Olarreaga and Ozeden (2005) analyze the impact of AGOA's preferences on prices received by apparel exporters. Under AGOA the exporters should capture as tariff rent to the difference between preferential and non preferential export prices. But their finding indicate that exporters receive around one third of the tariff rent. Furthermore there is variation in these share of the tariff rent that accrues the exporters across countries, with poorer and smaller ones capturing a low portion. Finally they conclude that small group of apparel exporters have been the main beneficiaries of AGOA preferences so far and there has not been significant change in the exports of any of any other product from the eligible countries.

Baier, Jeffrey and Bergstrand (1999) made a research on the relative effects of transport cost reduction, and tariff liberalization and income convergence on the growth of world trade among OECD countries between the late 1950s and the late 1980s. Their findings show that income growth explain about 67%, tariff rate reduction about 25%, transport cost declines about 8% and income convergence virtually none. Thus the relative contribution of trade liberalization was three times that of transport costs.

Sangeeta khorana (2006) evaluate the efficiency of preferences as means to enhance market access for 144 developing countries and 53 LDCs Production and identifies the constraints to an effective utilization of preferences by the beneficiaries' countries and Proudest in Switzerland. It evaluates the efficiency of preferences with calculations on utilization rates, potential coverage and utility rates. The results clearly show that the GSP schemes have not provided additional market access for all the beneficiary countries and products in Switzerland.

Brenton and Ikezuke (2005) also evaluate the efficiency of preferences in Switzerland with the estimation of utilization ratio, potential coverage and utility rates preferences. It analyzes the extent to which developing countries' agricultural products gain preferential access into the Swiss market under the existing GSP frame work. The result show that despite an increase in agricultural imposts of Switzerland, the share of developing countries has declined from 26% to 13%, while Switzerland's import from the European Countries have grown five fold between 1992-2002.

The impact of agoa for agricultural exports from Sub-Saharan African to the United States has been measured by Nove and Staatz (2003). The Methodological framework used in this study is based on a modified version of what Chang and Wall (1999) called a fixed effects gravity trade equation using quarterly pan//data. Results indicate that, AGOA may have contributed to an

average of \$ 376,000 additional increase in agricultural export earnings for an average Sub-Saharan African beneficiary countries.

Yu and Vig Jensen (2003) evaluates the impact of the recently adopted "Everything But Arm" initiative of the European Union on the least developed countries and to show how the EBA preferences eroded with further multinational trade liberalization. To realize the two objectives they used a global computable general equilibrium framework. Therefore, the result reflects a more optimistic picture of the reforms. That is exports from the LDCs will benefit from such a move, especially for a sectors with deeper tariff cuts.

There is no direct work on Ethiopian export performance and trade preferences. Most of the studies measure the performance of Ethiopian export sector based on internal external factors. Accordingly, Berhane Tesfaye (2000) examined the factors determining performance of Ethiopian export using demand and supply in simultaneous equation. The result of the study indicates that, the world demand is crucial determinant of Ethiopian export. It has been also found that the real exchange rate , relative price, domestic demand pressure and price factors which referred as the learning process(e.g. quality, diversification, packing, marketing...)significantly determine performance of exports.

From the above, it is clear that neither theoretical nor empirical studies have established definitely whether the non reciprocal preferences granted to LDCs would achieve its target. This clearly suggests in studying the preferences schemes, it is crucial to identify their short run and long run impacts of development for LDCs.

Having discussed the expected effect of AGOA and EBA on the export volume and diversification of LDCs, we construct the hypothesis the case of Ethiopia under chapter one section four and will be tested in chapter five.



## CHAPTER THREE

### 3. An Overview of the Ethiopian Economy

#### 3.1 Background

Like most of Sub-Saharan African Countries, Ethiopia is one of the poorest countries in the world with majority of its people living in absolute poverty and insufficient economic and social conditions. The country's economic condition of the country in general has been affected by the adverse international economic environment and by the role of strictly different form of political regimes, which come to power at different times and follow different economic system.

Prior to 1974(the Imperial era), the country was in landlord tenancy economic system. During this time, the country was in a period of relative political stability. The overall economic development was reasonably healthy, in relation to the experience of the subsequent years even if, it was poor by global standards.

The military administration came to power in 1974/75 .The economic policy of military government was socialist system. As a result the major production industry and agriculture including the exporter were nationalized and replaced by government owned production and Export Corporation. In the socialist

period, even if the land reform was an important step in improving the economy, it was not accompanied by other institutional changes. The state policy diverted large investment to the inefficient state farms and inefficient state pastoralists. The inefficient state policy combined with the drought and a costly war led to a protracted decline in the economy output.

In the post 1991 period, Ethiopia began moving from a state run economy to the market oriented economy and it allows the private sector to play an active role in the economy. During this period, the country is in the process of taking various reform measures. Among the economic reform packages, under the guidance and support of international financial institutions, the IMF and the World Bank, the country has undertaken a series of structural adjustment programs. Under these programs a number of macro and sectoral policies, with a decidedly different orientation from what prevailed in the previous decades a half, have been introduced.

One of the central elements of the new policy regime is to increasingly open the economy to foreign competition with a view of benefiting the economy from expanded markets and increasing its efficiency. The available data shows that after the downfall of the military regime, Ethiopia's economy has bounced back from a negative performance to positive one and in some cases showed remarkable growth. Derrese Degafe (1996).

## **3.2 The Role and Performance of the Ethiopian Export**

### **Sector**

The export sector has played an important role to bring rapid economic growth in developing countries. However, most of them largely depend, for their source of currency earning on a single product or a very narrow range of low value of products, mostly agricultural commodities and minerals. Basically these traditional exports face limited demand due to their low income elasticity.

Likewise, the Ethiopian commodity export sector is basically characterized by the dominant share of Agricultural raw commodities in generation the greater proportion of the export earning of the economy. These export commodities together have account for about 90 percent of the total merchandise export earning.

According to Birihan (2000) the share of total coffee export for 1973/74 before 1974 revolution was about 28 percent, this has rises to above 78 percent after 5 years in 1977/78. In recent years the coffee export shares is still dominant, which accounts about 70 percent in 1997/98. Export of pulses was the second largest exportable before the revolution. E.g. in 1973/74 it was accounted 19.4 percents .However, it was surprisingly declined, in some years it was below 1 percent. In recent years (E.g. 1997/98) it accounted only 2 percent of the total

exports. Oilseeds export before the revolution stands in third place. In 1973/74 it was accounted about 15 percent of the total exports, which dropped to below 1 percent in 1990/91. However currently it is showing improvements.

The contribution of the sector to the national economy was not sustainable rather it fluctuates time to time. According to Eshete (2007) the total amount of exports value in 1770/71 was 425.12 million Birr. It has steadily increased to 1338.53 million Birr in 1978/79. In 1991/92, however, fluctuated and reached 279.03 million Birr. After the reform period i.e. 1991/92, export earnings increased with little fluctuates and recorded 7331 million Birr in 2004/05. The merchandise export on the large contributed about 3.5% of GDP during 1990/71 to 2004/05 was the highest was 0.93% of GDP in to 2004/05 and the lowest was 0.5% in GDP in 1991/92.

According to Shiferaw (1995) as sighted by Miheret (2006) in 1942 merchandise export was valued at 66 million Birr. Between 1945 and 1950, merchandise export averaged about 64 million Birr. In 1950, earnings from merchandise export increased quite considerably and averaged about 143 million Birr. During the period 1960 to 1974, export steadily increased with average growth of 8.83% per annum rising from 194.6 million Birr in 1960/61 to 556.5 million Birr in 1973/74. However, the contribution of GDP remains low. Starting fro 6.8% of GDP in 1960/61 it averaged 7% until 1973/74. Even

in the year where export earning was above imports, 1972/73, the earning was 8.7% of GDP.

Although series structural adjustment program undertaken in the post 1991/92 to promote the export sector its contribution to the national economy is still remained unchanged. According to Eshete (2007) ,in the post 1992 ,period export was increased from 1601.63 million Birr in 1993/94 to 7331.26 million Birr in 2004/05. The rate of growth of export averaged about 46.19% annually. Its contribution to GDP, however, doesn't show any improvement; it was on average 5.08% post the reform.

Therefore, in general agriculture is under vagaries of nature, particularly in the Ethiopian case, the high consternation on non traditional export goods resulted in an unstable export performance. What is more, the sector is highly susceptible to the erratic nature of prices and unpredictable demand in the international market.

### **3.3 The Structure of Export**

The volume of exports in Ethiopia for the past three decades has not changed significantly. This shows the production structure of the country has not changed for a long time. Ethiopian export has a very narrow base it is highly dependant on few agricultural products, with very limited exports of

manufactured and semi-manufactured goods. This structure of concentrating on few agricultural commodities has not significantly changed over time.

Most of the export items directly originate from the agricultural sector. Besides, coffee has still remained to be dominant export commodity, though its share in the value of total exports fluctuates from time to time. It accounted for average of 56.92 percent of export earnings between 1970/71 and 2004/2005. Hides and skins, oil seeds, pulses, chat fruits and vegetables, live animals and meat and meat products constituted 11.76 percent, 5.31 percent, 4.35 percent, 5.12 percent, 4.14 percent, 1.19 percent and 0.94 percent respectively Eshete (2007)

Ethiopia's share of the world coffee market has been stable at less than 2 percent during the last twenty years and coffee exports have declined since 1997/98 along with the decline in the world prices.

According to World Bank report (2005) as cited by Debel (2002) the absence of diversification and high dependency on specific commodities make the export sector to be exposed to external shock. Accordingly, the value of major export items fluctuated from year to year in terms of value due to the volatile and erratic behavior of prices and unpredictable demand in the international market. Similarly on the supply side, those agricultural items are influenced



by a large number of factors that are endogenous to the suppliers' production decision and behavior.

Even after structural adjustment program, Ethiopia continues to export the same primary commodities, dominated by coffee as it has been doing decades ago, a confirmation of the lack of structural transformation of the economy.

As shown in table 1, having a share of more than 50 percent, coffee still remains the dominant export crop. What is more concerning is that the share of hides and skins, the major manufactured export commodity, is showing a declining trend. Equally worrying, at least in the longer term, is the sharp rise in the share of Chat, which is now becoming the second major export earning commodity of the country. Not only that its future prospect is not promising, as is expected for tobacco, but also it is competing coffee for land resource. It is said that some farmers are sub-planting coffee to grow Chat.

These four commodities alone, which have been accounting for about 80 percent of total export way back in the early 80s, have now increased their share to over 85 percent. This is typical of increasing concentration rather than diversification, a testimony of the lack of improvement in international competitiveness

**Table 1. Export structure: share in percent**

<b>Year</b>	<b>Coffee</b>	<b>Pulses &amp; Oilseeds</b>	<b>Hides &amp; Skins</b>	<b>Chat</b>	<b>Total</b>
1981	61.6	5.1	10.8	2.6	81.1
1985	62.6	4.4	12.8	2.1	81.9
1990	55.0	5.0	18.2	2.8	82.0
1995	65.8	5.6	13.7	5.3	91.4
2000	54.0	8.5	7.2	15.6	85.3

Source: NBE, Quarterly Bulletin, Vol. 16, No. 3.

Another structural rigidity is shown in the destination of export commodities. For decades Europe remains Ethiopia's major trading partner, accounting for nearly half of its export. [Table 2] Germany, Italy France, Belgium and United Kingdom are the major importing countries with a share of over 85 percent of the exports to this region.

Outside Europe, however, there is an indication of a shift from American to Asian markets. Export share to America (both North and Latin America) has been consistently declining, while the opposite has been taking place to Asia. The latter's share of Ethiopia's export increased from 17 percent in 1980 to 35

percent in 2000. But within Asia itself there is little diversification. Japan and Saudi Arabia alone account for over 70 percent of total export to the Asian market.

Table 2. Direction of exports: share in percent

Year	Africa	Europe	America	Asia
1980	13.2	51.0	18.1	17.2
1990	12.6	45.2	13.6	27.4
1995	12.4	50.8	5.8	29.7
2000	18.0	40.9	5.6	35.2

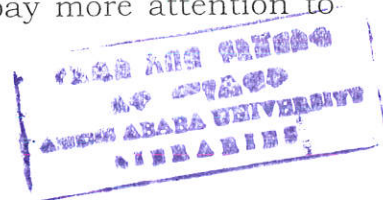
Source: NBE, Quarterly Bulletin, Vol. 16, No. 3.

### 3.4 Ethiopian trade Policy and Export Sector

The issues of accelerated economic growth are gaining much attention by many development economists. The decline in economic growth of most of the sub-Saharan African countries and other LDCs coupled with the alarming population growth resulted in stagnation and even a continual decline in the per capital income of these countries.

One area that has been given much focus in order to promote the economic performance of these countries is external trade. Following the traditional trade argument, trade is viewed as an “engine” if not as a “handmaiden” of

growth playing a supportive role in the economic growth of the LDCs. Proponents of this theory argues that trader can contribute substantially to the development of primary exporting countries while opponents of he theory strongly contend that international trade as being complexly irrelevant for development process of LDCs. The controversy on the role of trade led to the emergencies of the import substitution (IS) and export promotion (EP) trade strategies. Failure of the IS strategy and success of some developing countries that once pursued the EP strategy, led many LDCs to pay more attention to the EP trade strategy.



In Ethiopian owing to structural problem and policies that were pursued by the different regimes that came to power the performances of the export sector has been less satisfactory. The policy adopted in the period 1991/92 period(both the imperial and military government of Ethiopia) was characterized by strongly inward oriented development strategy which used a prolonged over valuation of the Birr, high tariff rates, extensive foreign exchange control and other non tariff barriers as well as a heavy taxation on exports. This had a negative impact on exports through influencing directly or indirectly the profitability and competitiveness of Export.

Even though both previous government of Ethiopia were commonly pursuing import substitutions strategy and export sector was secondary for them in their economic development plans it doesn't mean that they didn't make any

effort to promote and diversify the country's exports. The three five year development plan of the imperial Government and the Derg's ten year perspective plan have their own contribution to promote and diversify the export.

The first five year development plan (1957/58-1962/63) of the imperial government gave priority to import substitution industrial promotion while it gave minor attention for export promoting. The second five year development plans stated the export sector to rely mainly on traditional export products such as coffee, hides and skins, oil seeds and pulses and other. Similarly the third five year development plans gave great deal of attention for foreign trade in general, and for the export sub-sector development through diversifying variety of export items in particular.

The military government ten-year perspective plan of 1985/86-1994/95 orient the country's export structure towards manufactured products from the already existing primary exports of agricultural product and expand substantially the county's foreign exchange earnings. Different measures, like provision of favorable tax, tariffs, foreign exchange measures, improving exports in terms of quality, quantity and Variety has been employed to promote the export sector.

However, despite the measures taken by both imperial and Derg government, the Ethiopian Export remains un-diversified and concentrated on very few primary products.

Ethiopia has undertaken a series of structural adjustment programs under the guidance and support of international financial institutions, the IMF and the World Bank. Under these programs a number of macro and sectoral policies, with a decidedly different orientation from what prevailed in the previous decade and a half, have been introduced. The measures undertaken include devaluation of the Birr, public enterprise reform, tariff reduction, financial sector reform, investment policy external sector liberalization, simplification of import and export licensing system, preferential interest rate for exports and others. One of the central elements of the reform is to increasingly open the economy to foreign competition with a view of benefiting the economy from a broad markets and increasing its efficiency. As a result of this trade policy reform a decrease in the anti-export bias incentive structure and an increase in export volume and earnings was realized.

### **3.5 Ethiopian Export and Trade Preference**

Efforts by Ethiopia to address poverty and raise general living standards through trade policy reforms, creation of infrastructure and institution for purposes will not e fully realized to the extent it faces market access

constrains. Moreover, such beyond the border barriers prevent the country from diversifying its trade structure particularly exports. In particular diversification would be hampered by low export growth.

In spite of some progress in the second half of the 1990s, Ethiopian's export bundle remain relatively small and very concentrated both in terms of products and markets. Moreover products exported by Ethiopia have been experiencing negative growth in world markets even though some of Ethiopia's export has sometimes been able to grow in these declining markets capturing a large market share.

Besides, to the supply side limitation, tariffs and non-tariffs barriers abroad act as an important barrier to export growth and diversification efforts of Ethiopia. The study conducted by an international and Ethiopia team of trade and sector specialist on Ethiopia trade and transformation indicts that, on average, across the whole spectrum of countries the tariff imposed on products exported by Ethiopia is 25 percent higher.

In nine countries, the tariff imposed on Ethiopia's export product is double their average tariff. These include the European union-Ethiopia's main trading partner. Similarly non-tariff barriers represent a series problem for Ethiopian exports especially in the European Union market. These include technical

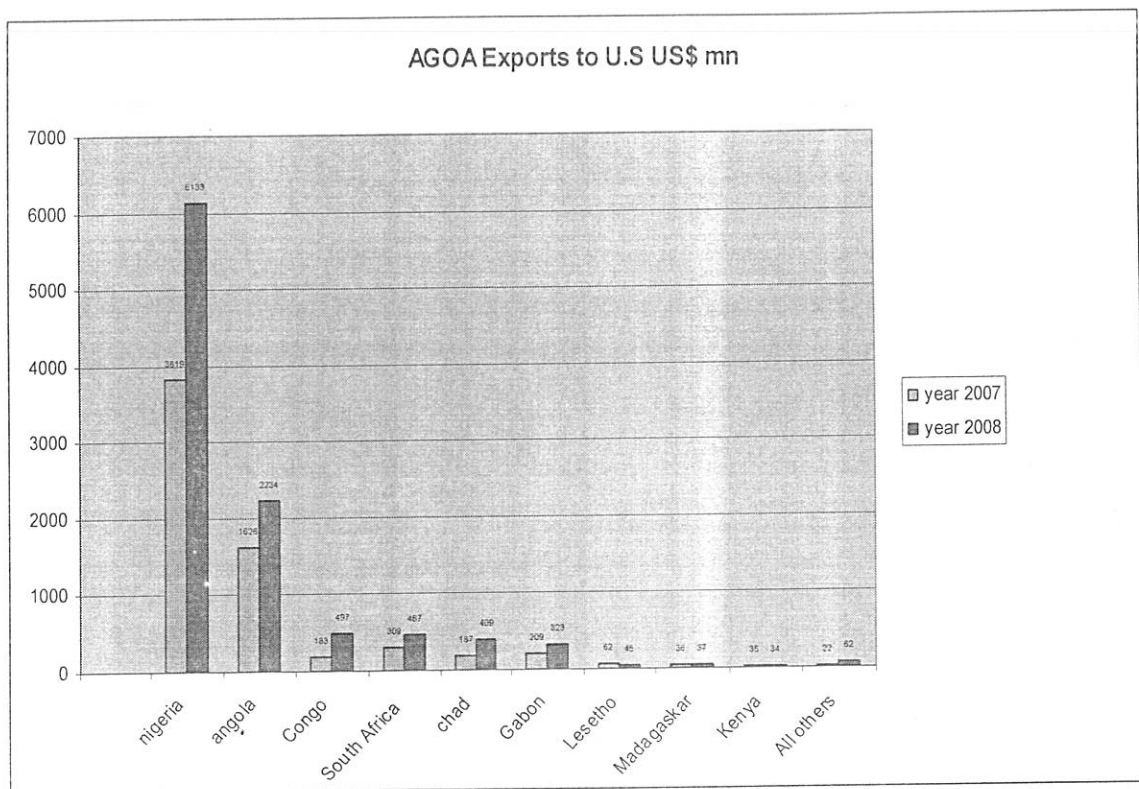
requirements and testes to protect human health (meat of sheep or goat) on non automatic licenses or labeling requirements. Thus to enhance the market access for LDCs including Ethiopia developed designed different schemes like GSP, AGOA ,EBA Etc.

Like any other sub-Saharan African countries Ethiopia has enjoy the trade preferences scheme designed by developed countries. Accordingly U.S declared Ethiopia as AGOA eligible country on October 2/2000, just immediately after the announcement of AGOA by the U.S government. Beginning from August 2001 Ethiopia has started to utilize provision for textile and apparel. The act allows Ethiopia to export eligible products to U.S market, free from tariff and quotas. Similarly the European Union grants like others duty and quota free access for all products except arms under to EBA initiative

### **3.6 Ethiopian Export Experience Post AGOA and EBA**

Although with the aim of enhancing the economic performance of sub-Saharan African countries, both U.S and EU introduced non-reciprocal unilateral trade performance, the benefits is concentrated to small number of countries. That is while most AGOA eligible countries recorded some exports to the US, the bulk (by value) is concentrated among a relatively small countries.





Overall exports to US by Nigeria, Angola, Gabon and South Africa exceed those of the other countries. The total amount of export from AGOA eligible Sub-Saharan countries to U.S market in values was 560, 13264 in 2006 and 645, 32295. Nigeria, Angola, Congo, South Africa Chad & Gabon share was 81.5% in 2006 and 95% in 2007. While, the rest of the countries share was below one percent. For Ethiopia in both fiscal years the share was 0.14 percent of the total exports. (See annex1). Therefore, even if all SSA enjoys AGOA's privilege, the benefit is still concentrated towards small number of countries. Thus, beside elimination of tariffs and quotas for SSA countries export, the product coverage, technical support, and other issues should be addressed by integrating these countries into international market.

Pre EBA			post EBA		
Year	Value (in billions)	growth rate % age	Year	Value (in billions)	growth rate % age
1998	13.8		2002	53.2	
1999	26.5	91	2003	10.5	97
2000	52.4	98	2004	13.7	-99
2001	26.9	-49	2005	13.9	2

Source: Author's calculation using data from custom Authority

As depicted in the above table, the value of export before EBA has registered at 91%, 98% and -49% in the year 1999, 2000, and 2001 respectively. On the other hand post EBA it has been registered 97%, -99% and 2% for the year 2003, 2004, and 2005. The figures implies that, growth of export value fluctuate from year to year in both the period pre EBA and post EBA. Pre EBA its value increases from 1999 to 2000 by 7%. However it decreased by 147% and reached to -49% in the year 2001. Like pre EBA the value of export fluctuates in post EBA period. It has registered 97% increase in 2003 and decreased by 196% and registered -99% in 2004. In the year 2005, it has registered a 2% increase in the value of export. Generally, in both the periods the impact of EBA is not consistent and fluctuates from year to year.

## CHAPTER FOUR

### 4. Data, Methodology and Model specification

To estimate the effect of multilateral trade agreements on international trade researcher would apply different techniques. The most common techniques used to measure trade flow across country is gravity model.

Although Newtonian physics used gravity equation to study human behavior, it has been widely used in the social science. More recently, gravity model studies have achieved empirical success in explaining various types of inter-regional and international flows, including labor migration, customers, hospital patients, and international flows.

The gravity model of international trade was developed independently by Tinbergen(1962) and Poyhonen (1963).<sup>1</sup> In its basic form, the amount of trade between two countries is assumed to be increasing in their sizes, as measured by their national incomes, and decreasing in the cost of transport between them as measured by the distance between their economic centers.

$$M_{ij} = \frac{Y_i Y_j}{D_{ij}} \text{-----(1)}$$

Where,  $M_{ij}$  = imports of good  $i$  by country  $j$

$Y_i$  = national income of country  $i$

$Y_j$  = national income of country  $j$

$D_{ij}$  = the distance between the two countries.

Following this work by including additional explanatory variables to the basic gravity model (what we call augmented gravity model) has been developed. For instance, according to Linnemann (1996) and Cuairan and Sanz (1963) as cited by Cheng and Wall (2004) incorporated population and per capita income to the basic gravity model respectively.

The work of Rose (2004) ,augment the basic gravity equation with a number of extra conditioning variables that affect trade, in order to account for as many extraneous factors as possible. These includes: culture (e.g. whether a pair countries share a common language, geography, weather none one or both are landlocked) and history (e.g. whether one colonized the other)

Thus gravity model has been used widely as a base line model for estimating impact of Varity of policy issues, including regional trading groups, currency unions, political blocks, partner's rights and various trade distortions. It is the most successful empirical trade device of the last twenty five years Anderson (2007).

Although theoretical foundations have been established, the empirical application of the gravity model may lead to weak results in the presence of heterogeneities. In the following section we will briefly set out the various forms of gravity model.



#### 4.1 Statistical overview

Various forms of gravity model that have been used to estimate bilateral trade flows have been developed by different trade economists. These models have a long linear specification.

The volume of trade between countries  $i$  and  $j$  in year  $t$  can be characterized by

$$\ln x_{ijt} = \alpha_0 + \alpha_1 + \alpha_{ij} + \beta_{ijt} Z_{ijt} + \epsilon_{ijt} \quad t=1 \dots T \quad \text{-----(2)}$$

Where:  $X_{ijt}$  is exports from country  $i$  to country  $j$  in year  $t$  and

$Z_{ijt} = (Z_{it}, Z_{jt}, \dots)$  is the  $1 \times k$  row vector of gravity variables (GDP, Population and distance).

The intercept has three parts, one which is common to all years and country pairs,  $\alpha_0$ , one which is specific to year  $t$  and common to all pairs,  $\alpha_t$  and one which is specific to the country pairs and common to all years  $\alpha_{it}$ . Nearly all estimates of the gravity model of trade provide basic estimates due to presence of heterogeneity. Similarly Rose (2004) estimates the effect of international trade of multilateral trade agreements - the world trade organization and its

predecessor the general Agreement on tariffs and trade, and the Generalized System of Preferences extended from rich countries to developing countries using national income, population area, language ,distance,

The existence of individual specific effects causes OLS estimation to be biased and inconsistent. That is no heterogeneity allowed for the regression. With such heterogeneity; a country would export different amounts to two countries, even though the two exports markets have the same GDP's and are equidistant from the exporter. These can be because, there are historical, cultural, ethnic, political or geographical factors that affecting the level of trade, and are correlated with the gravity variables (GDP, Population, Distance). If so, such estimates that do not account for these factors will suffer from heterogeneity bias. Cheng and Wall (2004). Moreover, they argues that although some studies have to some extent tried to control for this using pooled cross sectional model by including things such as whether trading parterres share a common language have had a colonial history, are in military alliance, etc, these factors are often difficult to observe ,let alone quantify. Thus to alleviate this problem they introduced fixed effects into the gravity equation.

Fixed effects model allow for unobserved or miss specified factors that simultaneously explain trade volume between two countries.

According to Cheng and Wall (2004) the use of fixed effects as a solution to unobserved heterogeneity is roughly the same, but there is little agreement about how to actually specify the fixed effects. For them, for instance, on their previous work, Cheng (1999) and Wall (1999) purpose two fixed effects for each pairs of countries, one for each direction of trade, Glick and Rose (2001), each pair of countries has only one fixed effects, and Matyas (1997) each country has two fixed, one as an exporter and one as an importer. Finally based on the empirical analysis they show that:

- Pooled cross section method for estimating gravity model of trade suffer from estimation bias due to omitted or miss specified variables. This problem is eliminated using the two way-fixed model of Cheng (1999) and wall (1999) in which country-pair and period dummies are used to reflect the bilateral relation ship between trading partner. But, since these factors (i.e. physical distance, the length of border (or contiguity) history, culture, language etc are not observable and are difficult to measure.
- The alternative fixed effects model proposed by Grick and Rose (2001), Matyas (1997), the restrictions they imposed to gravity model has little or no economic support.

Thus they conclude that as the gravity model has become the “work horse” of empirical work on the effect of integration, country pair fixed –effects model is preferably statistically to all others specifications.

## 4.2 Empirical Model and Data

The methodological framework used in this study is based on a modified version what Chenge and Wall (2004) called a fixed-effects gravity trade equation. The modification is an augmentation that incorporates several variables of trade. In addition to its simplicity, it is able to capture the effects of all observable and non observable variables on trade. Thus the empirical model used in this study is:

$$\ln x_{ijt} = \alpha_{ij} + \alpha_t + \beta_1 \ln PClit + \beta_2 \ln PCljt + \beta_3 \ln r_{erijt} + \beta_4 \text{agoa}_{it} + \beta_5 \text{eba}_{it} + \sum_{ijt} \dots \dots \dots (3)$$

Where, i denote exporting country (i.e. Ethiopia), j denotes her trading partners and t denotes time. The rest variables defined as follows:

$x_{ijt}$  = the real value of Ethiopian export to her trade partners j at time t.

$\alpha_{ij}$  = is the specific “country pair” effect between Ethiopia and her trading partners. It includes the effects of all omitted variables that are

CROSS-

sectional specific but remain constant over time, such as distance, contiguity, language, culture etc.

$PClit$  = per capital income of Ethiopia at time t



$PCI_{jt}$  = per capita income of trade partners of Ethiopia, country  $j$ , at time  $t$   
 $rer_{ijt}$  = is the real exchange rate between Ethiopia and her trading partner  
country

$j$ , at time  $t$ .

$agoa_{it}$  = captures when Ethiopia nominated as AGOA eligible. Thus it takes the

value one after Ethiopia enjoys AGOA eligibility, other wise zero

$eba_{it}$  = captures dummy variables. That is, it takes one at the time Ethiopia

enjoys European Union scheme (EBA), otherwise zero

$\Sigma_{ijt}$  = represent the omitted other influences on bilateral trade.

### **4.3 Data Sources and Definition of variables**

#### **4.3.1 Source of Data**

The data used in this study are collected from different institution. Annual data of Gross Domestic product (GDP) of Ethiopia is obtained from national Bank of Ethiopia and Ministry of Finance and Economic Development (MOFED) the real exchange rate of Ethiopia against her trade partners is obtained from National Bank of Ethiopia (NBE) The population site and GDP of Ethiopia trade partner countries and their real per capita income are obtained from the report of World Development indicator. The author computed Ethiopian real per capital income. The data collected is annually for the period 1974/75 to 2005/06 of U.S. and European Union countries who are the major trade partners of Ethiopia

#### **4.4. Definition of variables and Expected signs**



The modal specified in this study require data on the following variables.

##### **i. Real Per Capital income (PCI)**

Per capital income is the ratio of national income to the population size. To manipulate real per capital income, I used real Gross National Product (GNP). Real Gross National Product is the value of goods and services measured using a constant set of prices. That is, real GNP shows what would have happened to expenditure on out put if quantities had change but prices had not changed. Where as nominal GNP for any particular country is simply the value of GNP measured in terms of current money price. There fore, since society's ability to provide economic satisfaction for its members ultimately depends on the quantities of goods and services produced, real GNP provides a better measure of well being than nominal GNP

#### **Expected signs of real per capital income index**

##### **A/ Real per capital income of Ethiopia**

It state that the trade balance is affected by the rise of domestic per capital income. Increase in per capital income would lower the trade balance due to increased demand for imports. However, it was revealed in recent years that

adverse trade balance response to the rise of domestic incomes is not so certain a priori, as a rise of per capita income can increase both the demand for the country's exports if the latter have been supply constrained. More over if the rise of per capita income stems from an increase in the production of import-substitute goods, imports may decline. That is why the sign of the coefficient of per capita income is ambiguous i.e. either positive or negative.

#### **B/ Per capita income of importers (PCjt)**

It is used as a proxy measure for foreign income. A rise in foreign per capita income is led to an increase in the demand for country's exports. So, its sign is expected to be positive.

#### **ii. Real exchange rate (RER)**

Exchange rate is the price of one currency in terms of another. Since there is an essential symmetry between the two currencies, the exchange rate may be defined in one of the two ways: as the amount of the foreign currency that may be bought for one unit of the domestic currency, or as the cost of domestic currency of purchasing one unit of the foreign currency. The data on real exchange rate that I got from national bank of Ethiopia is based on the IMF definition of the nominal exchange rate (USD per Birr)

Therefore, I used the definition of exchange rate as, price of domestic currency against foreign currency

$$RER = E.P/P^*$$

Where, E = Nominal Exchange rate

P = Ethiopian consumer price index (CPI)

P\* = wholesale price indices (WPI) of foreign country

The fall of domestic currency in terms of foreign currency results devaluation of home currency, but if the price of domestic currency against the foreign currency rises, the home currency will appreciate. Generally it is believed that devaluation of home currency will induce to rise in import price and decrease of export prices. As a result of change in relative prices of exports and imports, the demand for imports decrease in the country of devaluation its currency and foreign demand of its product increase.

Therefore, a real depreciation of the exchange rate enhanced competitiveness of the currency goods vis-à-vis foreign goods. On the other hands, an appreciation in real exchange rate will decrease competitiveness of home economy in international market.

## **Expected sign of Real exchange rate index**

As we have seen above, on theoretical arguments the impact of the real exchange rate of Export is clear. That is devaluation of home currency will enhance the export. But this might not be necessary for countries like Ethiopian. Even if devaluation will decrease the price of home products, the demand of foreign countries will matter. Especially, for countries like in which the export is dominated by primary products, it might not be necessary. Because the income elasticity demand for these products is vary low. There for the expected sing of real exchange rate is ambiguous.

### **iii. Dummy variables in the model**

In regression analysis, a dummy variables (also know as indicators or bound variables) is one that takes the values **0** on **1** to indicate the absence or presence of some categorical effect that may be expected to shift the out comes. The following two dummy variables are included in over model.

A/ agoa : is a dummy Africa growth opportunity act with vale one(1 ) after 2001/2002 were , U.S government introduced duty and quota free imports from Ethiopia and other Sub -Sahara African

counties and zero (0) otherwise. Since agoa create a market opportunity for Ethiopia the expected sign will be positive. But, since the Ethiopian export is dominated by few primary products it might not be necessarily positive. Since these products have low income elasticity which make the sign of agoa ambiguous.

**B/. eba:-** is also a dummy variable with value one(1) for European unions grants to Ethiopia and other developing countries to export duty and quota free under Every thing But Arm initiative, since 2002/2003 , otherwise zero(0). Similarly the expected sign of eba is positive. However, as explained in the agoa the result might be negative. Therefore the expected sign of eba is ambiguous.

#### **4.5. Method of Analysis**

The econometric procedure that we follow in this study is described as follows .The traditional gravity model use random effect model to measure bilateral trade or any multinational effects on trade volume. That is most of them including distance, language, common colony etc in their study. But these variables are constant over time, (i.e. they are time invariant variables). Thus, to control these unobservable and un-quantifiable variables, I treated using fixed effect model. Thus, following the work of Cheng and Wall (2004) I used fixed effect gravity model. To control for heteroscedasticity of the dummy variables I regress the model using robust. Similarly the multicollinearity of the explanatory variables has been tested (see annex 2).

## CHAPTER FIVE



### 5. Empirical Results and Interpretation

#### 5.1 Empirical result

The data analysis is carried out using annual data on variables, Export, per capital income of Ethiopia and importing country, real exchange rate and the dummy variables , AGOA and EBA for the period 1974/75 to 2005/06. The soft ware used to analyze the data is stata version 9.

#### Estimated equation

Using fixed gravity model, the estimated equation is given in the following table

`xtreg lnxiijt lngdppcitexp lngdppcjt lnrerijt agoaijt ebaijt,fe robust`

	Robust				
lnxiijt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
-----+-----					
lngdppcitexp	3.521365	1.886094	1.87	0.064	-2.003344 7.243064
lngdppcjt	.000229	.0000616	3.72	0.000	.0001075 .0003504
lnrerijt	-.8928163	.3876609	-2.30	0.022	-1.657761 -.1278719
agoaijt	-2.323531	.6513127	-3.57	0.000	-3.608722 -1.038341
ebaijt	.0334351	.6741833	0.05	0.961	-1.296884 1.363754
_cons	36.3896	12.68316	2.87	0.005	11.3628 61.4164
-----+-----					

$X_{ijt}$  =Export of Ethiopia to country j,  $gdppcitexp$  =per capital income of Ethiopia,

$gdppcjt$  =per capital income of importing country,  $rerijt$  = real exchange rate

Based on the above results, the equation can be written as follows.

$$\ln x_{ijt} = 36.39 + 3.52 \ln \text{gdppcitexp} - 0.89 \ln \text{reri} + 2.32 \ln \text{agoai} + 0.033 \ln \text{ebai}$$

## 5.2 Interpretation

Based on the results presented above, we can interpret the estimated model as follows:

### i. Per Capital Income of Ethiopia

The pre capital income of the exporting country, Ethiopia, has positive relationship with export of Ethiopia. On the other hand it is a significant variable which has a positive impact on export of Ethiopia. In the previous section, we explained that the sign of per capital income of the domestic country is ambiguous i.e. either positive or negative depending on the domestic country demand on imports. In our case the sign is positive which is consistent with the theory, for which if the per capital income of the domestic country increase, the production capacity increases and then export increases. The coefficient of pre capital income of Ethiopia shows that export of Ethiopia increases by 3.52% if per capital income of Ethiopia increase by 1%.





## ii. Per Capital Income of Importing Countries

The sign of per capital income of the selected trading partners of Ethiopia is positive, which is consistent with the theory and its effect on export is insignificant. The result indicates that a rise in per capital income of Ethiopia's trading partners does not lead to a significant improvement for export of Ethiopia. This result supports the view that exports of developing countries like Ethiopia have low -income elasticity and it is also consistent with the hypothesis that exports from developing countries are supply rather than demand determinant. The world demand for Ethiopian's major export items / agricultural products/ is limited due to slow growth of population, low income elasticity of demand for these goods.

## iii. Real Exchange rate

The model predicts a negative relationship between export of Ethiopia and real exchange rate with elasticity of **-0.89**. This is consistent with the theory that appreciation of real exchange rate deteriorates export of Ethiopia. The negative coefficient of real exchange rate revealed that export of Ethiopia will decrease by **0.89%** if real exchange rate appreciated by 1 %.

## iv. AGOA

There are two controversial ideas regarding with the effect of AGOA on exports. Some scholar is in favor of AGOA on exports while others explain the

negative impact of AGOA on exports. For those oil exporting African country like Nigeria, (See Annex I) AGOA has a positive impact for its exports, since the importing country demanding oil than primary products. For country like Ethiopia AGOA affects its exports negatively, since more than **90%** of Ethiopian major export items are agricultural produces which may not be competitive qualitatively as compared to other counties which produce the same agricultural products like Ethiopia.

As it was explained in chapter two in section two the sign of agoa is ambiguous i.e. it may be positive or negative based on numerous studies regarding with the effectiveness of AGOA. In our case the sign of AGOA is negative which supports the idea of those scholars, who criticize the effectiveness of this program on developing countries like Ethiopia. The following reasons may support the negative impact of AGOA on Ethiopian exports:

- In many case exports are dominate by primary products and raw materials that are already subject to very low, often zero tariffs.
- The absence of stability in the unilateral preformed schemes, which are not binding but subject to frequent revisions, appears to have discouraged long term investments.
- A wide range of products, rules of origin, non-tariff barriers and administrative requirements seem to have prevented exporters form exploiting AGOA.

- The internal factors such as poor infrastructure, scarcity of skilled labors force, inadequate social capital, poor public services etc are constraints of African exporters like Ethiopian even after the removal of the U.S import restrictions.

#### **v. EBA**

Even if the coefficient of eba is positive it does not statistically significant in explaining the Ethiopian export.



## CHAPTER SIX

### 6. Conclusion and policy implication

#### 6.1. Conclusion

The share of the least developed countries in international market is insignificant. The limitation of their performance could be explained from both demand and supply side perspective. Especially to enhance their export volume and diversification, developed countries have designed different schemes. Among the tools designed by developed countries are AGOA and EBA by U.S. government and European Union respectively. The ultimate goal of these schemes is creating of market opportunity for LDCs products by removing tariffs and quotas with out reciprocal.

Ethiopia is like any other developing countries enjoy AGOA since 2001/2002 and EBA 2002/2003. Therefore this paper analyses the impact of these preferences on Ethiopian export volume. The data source of this study is from different institution such as National Bank of Ethiopia, customs Authority of Ethiopia, Ministry of Finance and Economic Development and World development indicators report. The export of Ethiopia to European countries in this study is used for selected European countries who are the major trade partners of Ethiopia .The study employs annual data in the period 1974/75-2005/2006. This study used a penal data to examine the above trade preference schemes granted to Ethiopia and other developing countries using

fixed effect gravity model. Because fixed effect model helps to control an observable variable that determine the volume of bilateral trade. To control the heteroscedasticity of the error robustness has been used and also the multicollinearity of the explanatory variables is tested.

The variable specification of the statistics model showed that the per capital income of Ethiopia has positive impact on export of Ethiopia. This result will consistent with the theory for which if the per capital income of the domestic currency increase, the production capacity increases and export also increases.

The sign of per capital income of the selected trading partners of Ethiopia is positive consistent with the theory and its effect on export is insignificant. Thus though the theory states that the rise in per capital income of foreign country increases the import of Ethiopia commodities, the result indicates that almost zero imports of Ethiopia commodity with the rise of their per capital income. This result will coincide with the view that export of developing countries, like Ethiopia have low-income elasticity.

The coefficient real exchange rate is negative .This implies that the rise in real exchange rate will reduce the export of Ethiopia and vice versa. This is also consistent with the theory that appreciation of real exchange rate deteriorates exports and the devaluation of the home currency (in our case Ethiopia) will enhance the export volume.

The impact of the trade preference, AGOA and EBA on Ethiopian trade will not coincide with the basic motive of the initiation. That is these acts are designed to enhance and diversify the export of beneficiary countries. The result of the study shows that AGOA has negative effect on Ethiopia Export. This result will support the idea of those scholars of the area who criticize the effectiveness this program. The short coming of the program is explained from both beneficiary country and granting country of the program. The frequent revision of the program, absence of stability, rules of origin is some of the factors that hinder its effectiveness from the initiative country of the program. Whereas the beneficiary countries poor performance with the scheme could be explained by absence of infrastructure, poor social capital, lack of awareness, etc. But the European Union EBA would not affect the export of Ethiopia. The coefficient of EBA is statistically insignificant.

## **6.2 Policy implication**

The main objective of this paper has been to empirically test the impact of generous grant of U.S. and European Union for Ethiopia and other Developing countries, on export volume of Ethiopia. The empirical results indicate that U.S's AGOA has negative impact on Ethiopian Export. Even if the program has its own shortcoming from granting country's perspective, the finding has its own policy implication for the beneficiary country (i.e. Ethiopia) point of view.

Ethiopia should have to assess the internal problem within the sector. The lack of adequate infrastructure, skilled manpower, poor public service etc. has to be addressed in order to exploit the grants.

The poor performance of Ethiopian Export might be explained by absence of product diversification i.e., Ethiopian export is dominated by few primary product which have low income elasticity. Thus to be competitive on international market, the structure of the external trade ,which relies on few primary commodities has to be changed and the government of Ethiopia has to peruse to diversify export commodities from agriculture to other products both vertically and horizontally. By increasing the number of export sectors, horizontal export diversification can reduce the dependency of Ethiopia on limited number of primary commodities that are subject to extreme price and volume fluctuations. Vertical diversification out of primary into manufactured exports is also useful for Ethiopia if there is a general trend toward declining terms of trade for primary products.

Normally international trade needs advance and fast communication as well as promotion of products. But for Ethiopia this may not be the case. This might be due to lack of awareness of the nature of international trade and capacity limitation of Ethiopian exporters. Therefore the Government of Ethiopia should create awareness on international trade especially with reference to AGOA and

EBA and build capacity (i.e. provide technical support) of exporters.

The result of the study indicates that the European Union EBA has no impact on Ethiopian export. This does not mean necessarily has no positive contribution for export performance. Like AGOA this preferences has its own limitation from granting nation point of view. The above limitation and policy implication might be also applicable for EBA. In addition to this, it is necessary to identify the basic internal limitation to exploit the program.

Generally, to exploit both schemes to be competitive on international trade the Ethiopian government has to have skilled experts of the area. So that she can peruse foreign countries on trade negotiation. For instance to get technical support of developed country's the roll of expertise is highly significant.

The drawbacks for her poor export performance, especially she has to use export diversification strategy, i.e. the government has to peruse to diversify exportable commodities from agriculture to other products both vertically and horizontally in order to be competitive. Since most of export items relied on few primary products. In addition to this the government has to give due attention to improve social capital, skilled manpower, public services infrastructure etc.

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Annex I. The export of Sub-Saharan African country under AGOA program

Name of the country	Total export		Export share in %	
	2006	2007	2006	2007
Nigeria	27863412	32525048	49.74	50.40
Angola	11513833	12210961	20.56	18.92
Congo	3045473	3098745	5.44	4.80
South Africa	7497257	9131863	13.38	14.15
Chad	1904713	2238277	3.40	3.47
Gabon	1330984	2146911	2.38	3.33
Lesotho	408407	443018	0.73	0.69
Madagascar	281065	337895	0.50	0.52
Kenya	352804	326086	0.63	0.51
Swaziland	155807	147963	0.28	0.23
Mauritius	218649	187020	0.39	0.29
Malawi	79010	69007	0.14	0.11
Senegal	21450	18734	0.04	0.03
Botswana	252107	187453	0.45	0.29
Ethiopia	81120	88236	0.14	0.14
Cameroon	223517	306742	0.40	0.48
Ghana	192228	198652	0.34	0.31
Namibia	115650	219743	0.21	0.34
Uganda	21787	26622	0.04	0.04
Tanzania	34567	46196	0.06	0.07
Mali	7851	9712	0.01	0.02
congo	85111	206404	0.15	0.32
Ruanda	8854	12675	0.02	0.02
Burkinafaso	1020	1466	0.00	0.00
Mauritania	0	718	0.00	0.00
Sierra Leone	38895	48104	0.07	0.07
Sao Tome and Prin	187	393	0.00	0.00
Zambia	28969	48780	0.05	0.08
Mozambique	15594	5356	0.03	0.01
Benin	555	5076	0.00	0.01
Burundi	1866	1111	0.00	0.00
Seychelles	10121	10332	0.02	0.02
Guine	91689	95748	0.16	0.15
Niger	123695	9082	0.22	0.01
Liberia	0	115303	0.00	0.18
Guina-Bissau	470	38	0.00	0.00
Gambia	287	148	0.00	0.00
Djibout	3295	4484	0.01	0.01
Cae verde	965	2193	0.00	0.00
Total	56013264	64532295		

Source: hht//www.agoa.info

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## Annex II.

. xtreg lnxiijt lngdppcitexp lngdppcjt lnrrerijt agoaijt ebaijt, fe robust

Fixed-effects (within) regression	Number of obs	=	191
Group variable (i): importer	Number of groups	=	6
R-sq: within = 0.3540	Obs per group: min	=	31
between = 0.6077	avg	=	31.8
overall = 0.0099	max	=	32
	F(5,180)	=	15.92
corr(u_i, Xb) = -0.6284	Prob > F	=	0.0000

lnxiijt	Coef.	Robust Std. Err.	t	P> t	[95% Conf. Interval]	
lngdppcitexp	3.521365	1.886094	1.87	0.064	-.2003344	7.243064
lngdppcjt	.000229	.0000616	3.72	0.000	.0001075	.0003504
lnrrerijt	-.8928163	.3876609	-2.30	0.022	-1.657761	-.1278719
agoaijt	-2.323531	.6513127	-3.57	0.000	-3.608722	-1.038341
ebaijt	.0334351	.6741833	0.05	0.961	-1.296884	1.363754
_cons	36.3896	12.68316	2.87	0.005	11.3628	61.4164

sigma_u		2.2591638
sigma_e		1.5662508
rho		.67537997 (fraction of variance due to u_i)

. reg lngdppcitexp lngdppcjt lnrrerijt agoaijt ebaijt

Source	SS	df	MS	Number of obs	=	191
Model	.286567949	4	.071641987	F( 4, 186)	=	11.93
Residual	1.11688508	186	.006004758	Prob > F	=	0.0000
				R-squared	=	0.2042
				Adj R-squared	=	0.1871
Total	1.40345303	190	.007386595	Root MSE	=	.07749

lngdppcitexp	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lngdppcjt	-2.13e-06	9.45e-07	-2.26	0.025	-4.00e-06	-2.69e-07
lnrrerijt	-.0333711	.0110498	-3.02	0.003	-.0551702	-.011572
agoaijt	.1001782	.0388506	2.58	0.011	.0235338	.1768227
ebaijt	.0826139	.020009	4.13	0.000	.0431402	.1220875
_cons	-7.023051	.0286037	-245.53	0.000	-7.079481	-6.966622

. reg lngdppcjt lngdppcitexp lnrrerijt agoaijt ebaijt

Source	SS	df	MS	Number of obs =	191
Model	1.5331e	4	383271269	F( 4, 186) =	10.89
Residual	6.5458e	186	35192364.8	Prob > F =	0.0000
				R-squared =	0.1898
				Adj R-squared =	0.1723
Total	8.0789e	190	42520341.7	Root MSE =	5932.3

lngdppcjt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lngdppcitexp	-12501.59	5537.971	-2.26	0.025	-23426.9	-1576.28
lnrrerijt	1093.973	862.6959	1.27	0.206	-607.9537	2795.9
agoaijt	16101.94	2787.168	5.78	0.000	10603.41	21600.46
ebaijt	6057.217	1537.593	3.94	0.000	3023.852	9090.581
_cons	-64938.99	39195.26	-1.66	0.099	-142263.4	12385.42

. reg lnrrerijt lngdppcitexp lngdppcjt agoaijt ebaijt

Source	SS	df	MS	Number of obs =	191
Model	11.3465688	4	2.8366422	F( 4, 186) =	11.25
Residual	46.8807389	186	.252046983	Prob > F =	0.0000
				R-squared =	0.1949
				Adj R-squared =	0.1776
Total	58.2273077	190	.306459514	Root MSE =	.50204

lnrrerijt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lngdppcitexp	-1.400735	.4638112	-3.02	0.003	-2.315742	-.4857286
lngdppcjt	7.84e-06	6.18e-06	1.27	0.206	-4.35e-06	.000002
agoaijt	-.7110636	.2508016	-2.84	0.005	-1.205845	-.2162822
ebaijt	-.4819726	.1307522	-3.69	0.000	-.7399206	-.2240246
_cons	-11.54638	3.232388	-3.57	0.000	-17.92323	-5.169524

. reg agoaijt ebaijt lngdppcitexp lngdppcjt lnrrerijt

Source	SS	df	MS	Number of obs =	191
Model	1.02808849	4	.257022123	F( 4, 186) =	12.45
Residual	3.84102146	186	.020650653	Prob > F =	0.0000
				R-squared =	0.2111
				Adj R-squared =	0.1942
Total	4.86910995	190	.025626894	Root MSE =	.1437

agoaijt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
ebaijt	-.1291135	.0375954	-3.43	0.001	-.2032818	-.0549452
lngdppcitexp	.3445178	.133609	2.58	0.011	.0809339	.6081017
lngdppcjt	9.45e-06	1.64e-06	5.78	0.000	6.22e-06	.0000127
lnrrerijt	-.0582587	.0205486	-2.84	0.005	-.098797	-.0177204
_cons	2.150704	.9433493	2.28	0.024	.2896646	4.011744

. reg ebaijt agoaijt lngdppcitexp lngdppcjt lnrrerijt

Source	SS	df	MS	Number of obs	=	191
Model	4.16652683	4	1.04163171	F( 4, 186)	=	14.10
Residual	13.7392323	186	.07386684	Prob > F	=	0.0000
				R-squared	=	0.2327
				Adj R-squared	=	0.2162
Total	17.9057592	190	.094240838	Root MSE	=	.27178

ebaijt	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]
agoaijt	-.4618357	.1344779	-3.43	0.001	-.7271337 - .1965377
lngdppcitexp	1.016265	.2461378	4.13	0.000	.5306845 1.501846
lngdppcjt	.0000127	3.23e-06	3.94	0.000	6.35e-06 .0000191
lnrrerijt	-.1412506	.0383193	-3.69	0.000	-.2168469 -.0656544
_cons	6.725683	1.740383	3.86	0.000	3.292255 10.15911



## Declaration

I the undersigned, declare that this is my original work and has not been presented for a degree in any other university, and that all sources of materials for a paper have been dully acknowledged.

Declared by:

Name: Daniel Tesfaye

Signature: 

Date: Jun /2008



Confirmed by Advisor:

Name: Girma Estephanos

Signature: 

Date: June 30/2008