ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

An Empirical Analysis of the Effects of the African Growth and Opportunity Act (AGOA)

Case of Ethiopia's Exports

BY

Jotework Gudeta

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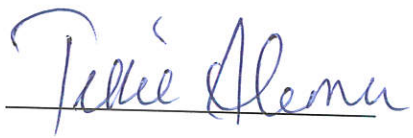
Approved By: **Signature**



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Acronyms

AGOA - African Growth Opportunity act

EBA: Everything but Arms

EU: European Union

FTA - Free Trade Area

GATT - General Agreement on Trades and Tariff

GSP- Generalized System of Preference

LDBCs - Lesser Developed Beneficiary Countries

LDC- Least Developed Countries

OECD – Organization for Economic Cooperation and Development

SSA- Sub - Saharan Africa

US - United States

USITC - US International Trade Commission

USTR - US Trade Representative

Abstract

The US congress approved the African growth and opportunity act legislation in 2000GC to assist the economies of SSA and to improve economic relations between the US and the region. Ethiopia qualified for the act in October of the same year. This paper has empirically examined the effect of AGOA on Ethiopia's exports to US. Using a dataset that ranges from 1980-2007 GC, descriptive statistical techniques and error-correction time series econometric modeling have been employed to analyze the effect of AGOA on Ethiopia's export. The descriptive analysis shows that Ethiopia's export to US in post-AGOA years has a clear positive trend, in contrast to the pre-AGOA period export which had declining tendency. The analysis has also reviled that Ethiopia is not benefiting from the act as much as other African countries. The error correction model also shows that the country is not benefiting from the act. The model has revealed statistically significant and positive impact of Ethiopia's GDP on export to the US, implying that the country should build its capacity to fulfill the quality and quantity standards of the importing country The number of years elapsed since Ethiopia was declared eligible for the act was also found to be positively affecting export to the US, being statistically significant as well. It indicates the importance of experience gained by exporters in promoting export to US. Hence, engaging the private sector by means of technical assistance provision as well as by enhancing awareness on how to benefit from the act happen to be essential to further benefit from the act. The data set suffers from post-AGOA years being short relative to the whole sample and hence it is recommended that a disaggregated sector level study takes place to further explore the effect, with the passage of time and with the availability of sufficient data in the area of analysis.

1 Introduction

Besides financial assistance and aid, Africa is linked to the rest of the world through international trade. The share of Africa in global trade in the past three decades has been, on average, 2.46% indicating that the continent is almost inexistent to the world. Despite its virtual insignificance to the world pertaining to international trade, the world economy is vital; as Africa relies on import to satisfy almost all its needs. Moreover, export often lay short of import as it relies mainly on few primary commodities whose value is deteriorating over time. Primary commodity dependence is making "African countries vulnerable to the global economy because such commodities are characterized by low income elasticity of demand, volatile and secular declining prices and generally come from sectors where the scope for technical progress is limited. African countries are also highly dependent on few developed countries as destination for their export. Accordingly, free trade agreements, whether unilateral or bilateral, are expected to raise trade flows, thereby contributing to enhanced long-run economic growth of the continent" (Alemayehu, 2009).

This poses a need to improve Africa's trade relations with developed countries, along with alleviating its internal constraints. A first and important step towards improving its current international trade position would be to improve access to the European and American markets and also making sure that African firms become the beneficiary of such preferential markets (Alemayehu, 2009).

Efforts to improve the continents' market access have been undertaken by providing non-reciprocal preferential market access to developed countries' markets. The two major non-reciprocal efforts are the Europeans' Everything but Arms (EBA) and the United States' African Growth and Opportunity Act (AGOA).

AGOA is a US legislation that aims at relaxing market access of Sub Sahara African (SSA) countries. This legislation expands the benefits previously available only under the Generalized System of Preference (GSP). AGOA came to effect as of October 2000, covering all items previously eligible for preferential market access under the GSP, together with approximately 1800 product tariff lines that were specifically added by AGOA (http://www.agoa.info/index.php?view=about&story=about).

The act was initially planned to end in 2008, but it was later extended to 2015. Similarly, the acts' apparel special provision, which permits LDCs to use foreign fabric for their garment exports, has been extended to 2012 by legislation passed by the US Congress. The legislation also gave the president of the US the mandate of determining which SSA countries would be eligible for the act. Currently there are 41 AGOA-eligible States.

Country eligibility criteria include the implementation of the rule of law and democracy in the beneficiary countries, policy towards US, protection of intellectual property, market based economies, efforts to combat corruption, policies to reduce poverty, increasing availability of health and educational opportunities, protection of human rights and worker rights and elimination of certain child labor practices (http://www.agoa.info/index.php?view=about&story=country_eligibility).

In addition to being classified as a 'Lesser Developed Country'[1], Ethiopia qualified for AGOA on October 2, 2000, and met the 'Rules of Origin' requirements for wearing apparel on August 2, 2001. Currently Ethiopia is mainly exporting agricultural products and cut flowers to the US market, as the sector is the main stay of the nation.

AGOA legislation allows the US President to grant duty free treatment for non-apparel articles only after other US officials have determined that the products are not import sensitive when imported from African countries. If the concessions are applied to products Africa is not comparatively advantageous, then it can be difficult to obtain positive effects. (Frazer and Van Biesebroeck, 2007)

By expanding preferential export access to the US markets in more than two thousand different products, the act has the potential to increase trade flows between the US and SSA countries thereby encourage long-term economic growth of the eligible countries (Bedasa and Bichaka, 2008).The initiative would promote Africa's export to the US, increase foreign direct investment, and create new employment opportunities in SSA. (Nouve and Staatz, 2003)

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[1] Providing a window of opportunity for sourcing third country textile inputs for the production

SSA accounts for slightly more than one percent of the US merchandise export, and slightly more than three percent of the US merchandise import, of which about 81 percent are petroleum products. Similarly, SSA accounts for a little more than one percent of both EU merchandise export and import (USTR, 2008). Africa exports less to the US than to Europe, Asia and the Middle East, respectively, and exports to the US account for less than intra-African trade (The International Food and Agricultural Trade Policy Council, 2009).

Although US imports from Africa have tripled from 2000-07, and the US buys roughly one quarter of Africa's total exports, these imports are heavily concentrated in the oil and petroleum product sector benefiting only import from few countries. Agriculture is only a small fraction of US import from Africa, usually at $1.2-$1.4 billion per year (http://www.agoa.info/index.php?view=trade_stats&story=all_trade). Though oil and petroleum products could have been imported regardless of AGOA, it shows that other products which should have been encouraged due to AGOA are not benefiting from the act.

As can be seen from AGOA official website also, small number of oil producing countries dominated much of the export. Overall exports to the US by Nigeria, Angola, Gabon and South Africa far exceed those of other countries, while only a handful of other AGOA-eligible countries have managed to export an amount of any real significance. An additional reason one might not expect positive effects from AGOA is that in the African context, the primary constraint on exports might rather be internal. The literature identifies the chief factors explaining Africa's poor economic performance as distorted product and credit markets, high risk, inadequate social capital, inadequate infrastructure, and poor public services rather than developed countries' trade restrictions. (Biggs, 2007; Meon and Sekkat, 2006; Fugazza, 2004; Mbekeani, 2007)

A review of the available reports and data on the US trade with SSA countries after the implementation of AGOA, on the other hand, seems to indicate the contrary. AGOA imports (including GSP) totaled $51.1 billion in 2007, more than six times the amount in 2001, the first full year of AGOA. While petroleum products accounted for the largest portion of AGOA import, non-oil AGOA trade totaled $3.4 billion in 2007; more than double the amount in 2001. Several non-oil sectors experienced sizable increases during this period, including apparel, footwear, vehicles, fruits and nuts, prepared vegetables, leather products, cut flowers, prepared seafood, and essential oils (USTR, 2008).Non-oil products like Ethiopian flowers are also getting customers.

Although the aggregate SSA figures appear to indicate a rise in the post AGOA US imports from the region, whether the changes are the result of the unilateral trade policy concession or the result of other trade promoting factors or rather a combination of the two factors, needs to be investigated. Therefore, this paper aims to empirically examine whether the recent unilateral trade policy change granted by the US to selected SSA countries under AGOA has contributed in promoting Ethiopia's exports and thereby fill the gap of absence of such studies at the country's level.

2 Literature Review

2.1 Empirical Literature Review

The determinants of export performance are classified into two major categories; domestic factors related to supply side conditions and external market factors affecting import demand (Love and Turner, 2001; Fugazza, 2004).

2.1.1 Supply Side Conditions

Africa's export performance is poor not necessarily due to lack of external market access but, perhaps, more significantly, due to constraints' existing in the responsiveness of supplying more export. This prevents them from exploiting available market access opportunities. While foreign assistance can contribute to export development in all sectors, the fundamental requirement for success is that LDCs alleviate the supply constraints and governance failures (UNCTAD, 2008; Biggs, 2007; Meon and Sekkat, 2006; Fugazza, 2004).

Collier and Gunning (1999) review microeconomic and aggregate-level literatures to identify key explanations for Africa's slow growth performance and massive flight of capital. According to their findings, the four important factors explaining Africa's poor performance are lack of openness to international trade, high-risk environment, low level of social capital, and poor infrastructure.

Weak infrastructure is a major obstacle to trade, competitiveness and sustainable development in most African countries, particularly land-locked and small island countries (K. Mbekeani, 2007). Infrastructure and trade facilitation services reduce market access, because "firms find it costly to get to international markets. They also raise input costs, because suppliers face higher transport costs and handling charges, because domestic substitutes for importable inputs are higher, and because producer's inventory costs are higher, in that producers are forced to carry higher inventories on account of delays and uncertainties in importing inputs". (Biggs, 2008)

Market access, infrastructure and trade facilitation services, anti-export bias in trade Policies, real exchange rates, weak institutions, human capital and learning mechanisms,

financial depth and market failure are identified as the main determinants of export supply by Biggs (2007) while Meon and Sekkat (2006) observed in their analysis that exports of manufactured goods are positively affected by enabling institutional frameworks such as the control of corruption, the rule of law, government effectiveness, and the lack of political violence.

The real exchange rate is often uncompetitive in low – income countries as a result of poor macroeconomic management and instability in financial markets. Volatility of the real exchange rate is also very high creating a risky climate for new export investment, as it makes future returns and payments uncertain. (Biggs, 2007)

Using quantile regression techniques, Fugazza (2004) investigated export performance of 84 countries over the period 1980-99. The investigation shows that higher GDP, better access to foreign markets, better institutions, a more competitive macroeconomic framework and less internal transport frictions lead to higher export performance. It was also found that FDI contribution to capital formation has a positive impact on export performance.

Using annual data of Ethiopia and its 30 trading partners for the years 1995-2007, Yishak, (2009) investigated determinants of Ethiopia's exports by means of gravity model of bilateral trade. Major supply side factors such as internal transport infrastructure, domestic income and institutional quality are found to be statistically significant and have positive effects on Ethiopia's exports; while FDI and real exchange rate are found to be statistically insignificant.

2.1.2 Foreign Market Access Conditions: Case of AGOA

Results of Fugazza (2004) suggest that foreign market access remains essential in explaining export performance even after controlling for supply capacity constraints. Different studies have also shown supporting findings that "lack of market access is the main constraint to Africa's exports which undermines incentives in low income countries to move into higher productivity, nontraditional export areas". (Collier and Gunning, 1999; Biggs, 2007)

Various efforts have been made at different levels to improve market access conditions for the continent. Exports from developing countries have historically received unilateral tariff preferences in industrial country markets via the GSP, the Lome Convention of the EU, and other similar arrangements. Since the late 1990s, the preferences available to low–income developing countries have broadened through initiatives such as the European Unions' EBA and the United States' AGOA (UNCTAD, 2008).

AGOA is a US unilateral initiative that provides preferential market access to SSA Countries. The act aims at "promoting open markets, expanding the US-Africa trade and investment, stimulating economic growth, and facilitating SSA integration into the global economy."[2] However, there is still an ongoing debate on the realization of the potential of the Act in improving Africa's exports to the US.

One argument that AGOA is not very useful is due to the preferences on oil and other energy products. Petroleum products account for the largest portion of AGOA imports. An analysis of the trade data by Product/ Sector shows that there are three sectors, namely 'energy-related products', 'textiles and apparel' and 'transportation equipment' that account for over 90% of exports currently qualifying for AGOA benefits (http://www.agoa.info/index.php?view=trade_stats&story=all_groups).

The magnitude and importance of preferences under AGOA are also claimed to differ from country to country. Brenton and Ikezuki (2004), by using descriptive analysis, indicated that for many developing countries the products that they currently exported are often subject to different degrees of preference in different OECD markets which imposes difficulties for developing countries' firms to invest and develop capacity on the basis of serving a global market.

According to the study, for certain countries AGOA is of no relevance under the current structure of exports, since there is no or only a few export products eligible for preferences. They indicate that there are nine AGOA beneficiaries for whom less than 5 percent of current exports are eligible for preferential access to the US and a further 14 countries, including South Africa, for whom the amount of exports eligible for preferential access to the US market comprises less than 50 percent of total exports to that market. There are then

[2] USTR (2008), "Comprehensive Report on U.S. Trade and Investment Policy toward Sub-Saharan Africa and Implementation of the African Growth and Opportunity Act".

16 countries for which AGOA preferences are more significant, with exports eligible for preferences amounting to more than 50 percent of the total. Within this group there are five countries for which more than 90 percent of their current exports to the US are eligible for preferences.

Nouve and John (2003) investigated whether AGOA has led to increased agricultural exports from SSA. Based on panel data regression using a fixed effects gravity trade model, the authors found that the response was positive. However, the AGOA-induced gains in agricultural exports are found not to be statistically different from zero. The result could have been a consequence of an early investigation, conducted only two years after the act has been in effect.

By using a gravity model augmented by trade reducing and facilitating variables such as stock of immigrant population from each SSA country residing in the US; whether English is the official language in the beneficiary SSA country; a dummy variable that indicates if each SSA country has access to the sea; and an index of economic openness, Bedasa and Fayissa (2008) evaluated the impact of AGOA on US imports from eligible SSA countries. To capture the effect of time lag that may occur due to time taken by exporters till they realize AGOA advantages, they also augment the gravity model with a variable that measures the number of years elapsed since each SSA country has started exporting its first product under AGOA. Using US – SSA countries' trade data that span the years 1991–2006, they found out that AGOA has contributed to the initiation of new and the strengthening of existing US imports in both manufactured and non-manufactured goods and several product categories.

Most studies on the subject use export performance to measure the impact of AGOA. However, Rolfe and Woodward (2005) argue that export value and growth, often used to measure the success of preferential trade agreements like AGOA, can be misleading. Examining value added in Kenya, their results imply that the real benefits of AGOA in apparel may be smaller than commonly believed.

Frazer and Van Biesebroeck (2007) who used the triple difference-in-difference method for evaluating the impact of AGOA on US imports from SSA countries found that AGOA has a large and robust impact on apparel imports into the US, as well as on the agricultural and manufacturing products covered by AGOA. They also found that AGOA has not resulted

in decrease in exports to Europe, suggesting that AGOA-US imports were not due to trade diversion effects.

Employing a standard gravity model augmented by a number of cultural, geographical and historical extra conditioning variables that affect trade and a panel data set covering over 50 years and 197 countries, Rose (2004) found that generalized system of preference (GSP) has a large positive effect on trade.

2.2 AGOA Country Eligibility and Product Coverage

Country Eligibility

Whether a nation can be eligible to the benefits of AGOA is determined by the US president, taking in to account a number of requirements. As listed in section 107 of the AGOA "Countries are required to have established, or are making continual progress towards establishing market-based economies, the rule of law and political pluralism, elimination of barriers to US trade and investment, protection of intellectual property, efforts to combat corruption, policies to reduce poverty, increasing availability of health care and educational opportunities, protection of human rights and worker rights, and elimination of certain child labor practices". Countries cannot engage in gross violations of internationally recognized human rights, support for acts of international terrorism, or activities that undermine US national security or foreign policy interests

The eligibility criteria for the GSP overlap with the criteria for AGOA eligibility and hence countries must be GSP eligible to be eligible for AGOA. GSP eligibility alone, however, doesn't imply AGOA eligibility. Currently 45 of 48 SSA countries are GSP eligible out of which only 37 are also AGOA eligible.

AGOA eligibility does not automatically imply eligibility for the 'Wearing Apparel' provisions. In order to export clothing and certain textile items to the US duty-free under AGOA, countries must have implemented a 'Visa System' to the satisfaction of US authorities and one that ensures compliance with the AGOA rules of origin.

Product Eligibility

On December 21, 2000, former US President Clinton extended duty-free treatment under the Generalized System of Preferences (GSP) to AGOA-eligible countries for more than 1,800 tariff line items, in addition to the current list of approximately 4,600 GSP items available to non-AGOA GSP beneficiary countries. The additional GSP line items include previously excluded items such as footwear, luggage, handbags, watches, and certain automotive components.

AGOA authorizes the President to provide duty-free treatment under GSP for any article, after the US Trade Representative (USTR) and the US International Trade Commission (USITC) have determined that the article is not import sensitive to the US when imported from African countries. GSP[3] benefits were originally aimed to last up to 2008. AGOA later extended the benefits for eligible SSA beneficiary countries to September 30, 2015. SSA beneficiary countries are also exempted from "competitive need limitations" which still limit the GSP benefits available to beneficiaries in other regions. These limitations place a ceiling on the total value and percentage of products and product categories that may be imported into the US.

2.3 Evolution of AGOA

The original terms of AGOA was signed in 2000 by President Clinton. A number of amendments to the original terms of the Act were signed into law by President George Bush during the latter part of 2002. These amendments were collectively known as AGOA II.

The major amendments included under AGOA II concern product eligibility criteria, treatment of Botswana and Namibia as LDCs and Volume cap on duty-free treatment for apparel made from fabric made in AGOA region or, for lesser developed beneficiary countries from fabric made anywhere. The term "fabric" interpreted by US Customs, in

[3] The GSP Program is authorized under GATT and is one whereby industrialized countries offer certain non-reciprocal tariff preferences to developing countries. The US GSP program authorizes the US President to grant duty-free access to the US market for certain products that are imported to the US from designated countries

AGOA I, excluding components that are "knit-to-shape"[4] was made to qualify under AGOA II and "hybrid cutting" [5]does not render fabric ineligible under the new amendments. LDCs were also provided with duty free apparel eligibility for duty-free treatment regardless of origin of textile and regardless of origin of fiber.

Intense lobbying by many stakeholder groups, including African country Presidents, brought about AGOA III, which further improved different conditions of the act. AGOA III extends the act from 2008 up to 2015 as well as apparel provisions for LDBCs from 2004 to 2007. The applicable quota is set at 2.4% of total US imports of apparel in the previous period, but drops by half to 1.2% in the third year (October 2006 – September 2007). The amendment also declared that "where beneficiary countries migrate to a FTA with the US, other beneficiary countries will not be disadvantaged as such countries will still be regarded as AGOA beneficiaries for purposes of sourcing regionally produced fabrics."

However, the adjustment was not as satisfactory as expected since it has not included some originally proposed factors. AGOA III does not remove the import sensitivity test requirement, as proposed by its earlier versions. Moreover, it does not allow the US Congress to prohibit the President from terminating the eligibility of an AGOA beneficiary country. The prediction that it would extend duty-free treatment to certain excluded agricultural products did not materialize either.

The succeeding amendment in the history of AGOA was made on December 2006, by a bill signed by the congress. The bill extends the use of third country fabrics by countries classified as LDBCs to 2012. In addition, it increases the volume cap on garments made by and shipped under AGOA to 3.5% of total US imports, thereby removing the reduced quota for the 2006/2007 year. The bill also extended duty free access to garment and textiles to LDBCs provided that all materials originate in the lesser developed AGOA beneficiaries. In addition, GSP benefits set up to expire at the end of 2006 were extended to end up to 2008 by the bill.

A new legislation which further improves the terms of AGOA has been introduced in November 2009. The bill, Known as "A New Partnership for Trade Development Act of

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[4] That is, components that take their shape in the knitting process, rather than being cut from a bolt of cloth

[5] That is, cutting that occur both in US and in AGOA countries

2009", seeks to "widen AGOA benefits by extending the act's scope and coverage, to harmonize and broaden US preferential trade policy more generally amongst least-developed countries, by extending certain benefits to other beneficiaries of the US Generalized System of Preferences, and to simplify the US GSP by implementing a single rules of origin, reviewing current statutory exclusions (for example of textiles and clothing) and extending the programmes timeframe"[6].

[6] H.R. 4101 from AGOA.info

3 Methodology, Model Specification and Data Source

In this section, a time series econometrics analysis method is presented first. The examination of the effect of AGOA on Ethiopia's exports continues with identification and definition of variables determining export performance along with a brief discussion of source of the obtained data. After describing and establishing credibility of the data, the analysis of the effect of AGOA on exports takes place with the application of both descriptive and econometrics techniques.

3.1. Methodology

The classical methods of estimation used in applied econometric work are based on a set of assumptions one of which is the stationarity of the variables used in the model.

3.1.1 Stationarity

A time series is said to be strictly stationary if the joint distribution of any set of n observations $X_1, X_2 \ldots X_t$ is the same as the joint distribution of $X_{1+k}, X_{2+k} \ldots X_{t+k}$ for all n and k. The distribution of X_t is independent of time and thus it is not only the mean and the variance that is constant but also all higher values of t are independent of t. In practice this is a very strong assumption and stationarity is defined in less restrictive way only in terms of first and second moments (Madala, 1992).

Stochastic process is said to be weakly stationary if its mean and variance are constant over time and the value of the covariance between the two time periods depends only on the gap between the two time periods and not on the actual time at which the covariance is computed (Gujarati, 2004).That is:

$$E[x_t] = \mu \text{ and } Cov\ [x_t, x_{t+k}] = \delta_k$$

In time series analysis, most encountered series are in fact non-stationary. Contrary to the situation of stationary process which fluctuates around their mean, the reversion to a fixed value rarely occurs for non-stationary process. If a non-stationary time series is regressed on one or more non-stationary time series, the results are prone to spurious regression problems. This is a situation where results obtained suggest there are statistically

significant relationships between the variables in the regression model when in fact all that is obtained is evidence of contemporary correlations rather than meaningful causal relations.

Hence, before proceeding to the regression analysis it's necessary to check for stationarity of included variables. Stationarity is determined by performing unit-root test.

Testing for unit-roots

Unit-roots are important to detect the stationarity of time-series data. To test if the series, used have unit-roots we apply a test based on the work of Fuller (1976) and Dickey and Fuller (1979, 1981).For the Dickey-Fuller (DF) test, consider the following equation;

$$Yt = \beta 0 + \beta 1 Yt - 1 + Ut \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Estimate equation (1) by using the ordinary least squares (OLS) method and if β_1 carries the value $-1 < \beta_1 < 1$, then the variable *Y* is stationary. But if the value of β_1 is one, then the variable *Y* is non-stationary. Hence, the Dickey-Fuller unit root hypothesis is:

Ho: $\beta_1 = 1$

The Augmented Dickey-Fuller test is a similar but modified version of the Dickey-Fuller test which is used when u_t is not a white noise process. While testing for stationarity, if a variable becomes stationary at level, then it is said to be integrated of order zero, I (0). And if the variable is stationary at its first difference, it is said to be integrated of order one I (1). Similarly, if a variable can be transformed to stationary series by differencing n times, then it is integrated of order *n*, I (*n*).

3.1.2 Cointegration and the Error Correction Model

Many macroeconomic time series are not stationary at levels and are most adequately represented by first differences. Differencing procedure, however, throws away potential valuable information about long-run relationships. The theory of cointegration addresses the issue of integrating short-run dynamics with long run equilibrium. Two I (1) series are said to be cointegrated if there exists a linear combination of the series which is stationary. Suppose that Y_t is I(1) and X_t is also I(1), then Y_t and X_t are said to be cointegrated if there exists a β such that $Yt - \beta Xt$ is I(0). In that case the regression equation $Yt = \beta Xt + Ut$ makes sense because Y_t and X_t don't drift too far apart from each other over time (Madala, 1992). If X_t and Y_t are cointegrated, there is a long-run relationship between them. Furthermore, the short-run dynamics can be described by the error correction model (ECM).

Two broad approaches of testing for Cointegration have been developed; The Engle and Granger (1987) two step procedure and the Johansen maximum likelihood approach. The Engle–Granger approach requires running a regression and testing for a unit root in the residuals. This can be done using the ADF tests on the OLS residuals. If the unit root hypothesis is rejected, the hypothesis of no-cointegration is also rejected. In this case, the static regression gives consistent estimates of the cointegrating vector, while in a second stage; the error-correction model can be estimated using the estimated cointegrating vector from the first stage.

There are some problems with this Engle–Granger approach. First, the results of the tests are sensitive to the left-hand side variable of the regression that is, to the normalization applied to the cointegrating vector. Second, the residual-based test tends to lack power because it does not exploit all the available information about the dynamic interactions of the variables. Third, it is possible that more than one cointegrating relationship exists between the variables (Verbeek, 2003).

An alternative approach that does not suffer from these drawbacks was proposed by Johansen (1988), who developed a maximum likelihood estimation procedure, which also allows one to test for the number of cointegrating relations.

Under this procedure the variables under consideration are vector auto regressive (VAR) of lag Y_t given by:

$$Yt - \delta + \Gamma 1 Yt - 1 + \Gamma 2 Yt - 2 + \ldots\ldots + \Gamma p - 1 Yt - p + 1 + Yt - 1 + \iota \quad \ldots 3.1.2.1$$

Where:

The error term ε_t is an independently and identically distributed n-dimensional vector. Assuming that Y_t is a vector of I (1) variables, while r linear combinations of Y_t are stationary, we can write

$$\pi = \gamma\beta' \quad \ldots\ldots 3.1.2.2$$

Where:

β denotes the matrix of cointegrating vectors, while γ represents the matrix of weights with which each cointegrating vector enters each of the ΔYt equations. γ and β are of dimension *kxr.*

The approach of Johansen is based on the estimation of the equation 3.1.2.1 by maximum likelihood while imposing the restriction in 3.1.2.2 for a given value of *r.*

The first step in the Johansen approach involves testing hypotheses about the rank of the long-run matrix Π or equivalently – the number of columns in β. In the above formulation, the rank of the matrix Π is equal to the number of independent cointegrating vectors. If rank (Π) = 0, the matrix is null implying no cointegration. If instead, Π is of rank n, and then the vector process is stationary. For cases in which 0< rank (Π) < Π, there are multiple cointegrating vectors and in particular if rank (Π) = 1, then there is a single cointegrating vector.

The rank of a matrix is equal to the number of its characteristic roots (λ_i) that differs from Zero. Once π and λ_i*'s* are estimated, the test for the number of characteristic roots that are insignificantly different from unity can be conducted using the *trace* λ(r) and max λ *(r)* statistics

In the *trace* $\lambda(r)$ test statistic the null hypothesis is that the number of distinct cointegrating vectors is less than or equal to *r* against a general alternative while in max $\lambda(r)$ statistics the null is that the number of cointegrating vectors is r against the alternative of *r+1* cointegrating vectors (Verbeek, 2004).

3.2 Model specification

Definition of variables and data source

Factors influencing performance of a nation's exports has been identified in the literature review section. In this section the identified variables are taken in to account to model exports.

1. Market Access (AGOA)

Improved market access is expected to enhance export performance of nations. One of such efforts is the unilateral concession of the US given to SSA countries including Ethiopia. The effect of AGOA, which is this study's variable of interest, is captured by including AGOA as a dummy variable. It takes a value of 0 in the years before the act and the value of 1 afterwards. The coefficient of the AGOA dummy variable is expected to capture the effect of implementation of the Act on Ethiopia's exports by comparing the post- versus pre-AGOA export flows to the US.

2. Stock of Foreign Direct Investment (FDI)

The role of FDI in export promotion in developing countries remains controversial depending on the motive of such investment. If the motive behind FDI is to capture the domestic market, it may not contribute to export growth. On the other hand, if the motive is to exploit export markets by taking advantage of the country's comparative advantage, then FDI may contribute to export growth. FDI could also help in improved use of advanced technology which can enhance export productivity of a nation. Thus, we include the stock of FDI to capture its effect on exports.

3. Gross Domestic Product (GDP)

The literature suggests that higher GDP values in the importing country imply greater potential for imports while higher GDP values in the exporting country imply increased capacities for export. GDP of Ethiopia and GDP of the U.S. are included as explanatory variables to capture this effect.

4 Institutional quality (IQ)

For nations to fully benefit from openness strategies, having the correct set up of institutions can be crucial. The quality of institutions and policies is important in determining whether countries can benefit from globalization. According to UNCTAD (2008) institutional quality included macroeconomic stability and openness to trade as well as the enabling environment for markets including the legal and judiciary systems, the financial system, taxation, labor relations, investment procedures, land tenure and customs administration.

Economic freedom index will be used to measure institutional quality of Ethiopia. The index, which ranks countries out of 100, contains measures for business freedom, trade freedom, fiscal freedom, monetary freedom, investment freedom, financial freedom, property rights, labor freedom and freedom from corruption.

5 Number of years elapsed (YRSE)

Exporters may not immediately reap the benefits of AGOA due to information asymmetry or production lag. The effect is captured by including a variable that shows number of years that passed since the country exported its first product. Its coefficient is expected to reflect the effect of experience gained in exploiting benefits from the Act (Bedasa and Bichaka 2007).

6 Real Exchange Rate (RER)

The real exchange rate is defined as the nominal exchange rate that takes the inflation differences among the countries into account. It is a useful measure of the country's international competitiveness. "The exchange rate can be a strong driver of export growth and diversification. Undervaluation (overvaluation) of the currency can strengthen (undermine) export competitiveness, as it raises (lowers) returns to entrepreneurial activity, especially in the area of discovering new, high-productivity exports" (Biggs, 2007).

The real exchange rate is defined in this study using the purchasing power parity concept. Accordingly, the real exchange rate is defined in the long run as the nominal exchange rate (E) that is adjusted by the ratio of the foreign price level (P_f) to the domestic price level (P). Mathematically, it can be is written as;

$$RER = E\left(\frac{Pf}{P}\right)$$

where, E is the bilateral nominal exchange rate , P_f is consumer price index of the foreign country and P is domestic consumer price index.

7 Stock of Immigrant Population (IMG)

Prior studies have established that immigrants exert positive influences on trade in three channels: via preferences for home country goods, by supplying otherwise unavailable information to individuals involved in trade, and through informal mechanisms that help enforce contracts (Bedasa and Bichaka, 2007).

Ethiopian immigrants in the US could promote exports as a result of lack of close substitutes to their country's products or due to connections to business, or social networks. They might also have knowledge of political or social obligations required to conduct business in their home countries. Their ability to communicate otherwise unknown information regarding trading opportunities can reduce transaction costs. To capture this effect, stock of immigrant population of Ethiopia residing in the US is included as one explanatory variable determining export

8 Transportation Infrastructure (INF)

Infrastructure has strong influence on competitiveness of domestic firms, especially in landlocked countries as a result of high road-transport costs. Reliable and reasonably priced infrastructure is one of the requirements for growth in export. Internal transport infrastructure of Ethiopia, in this study, is captured by the percentage of paved roads out of total roads of the country.

The model which will be estimated to capture the effect of AGOA on exports is thus given by:

$$LnXt = b0 + b11nGDPit + B2lnGDPjt + B3\,lnRERt + B4lnFDIt + B5YRXt + B6AGOAt + Ut$$

X_t= Export of Ethiopia to US at time t (in million US dollars).

GDP_{it} = Value of gross domestic product of Ethiopia at current market price at time t

measured in million US dollars.

GDP_{jt} = Value of gross domestic product of Ethiopia at current market price at time t measured in million US dollars.

RER_t = Average real exchange rate between Ethiopia and the US

FDI_t = Stock of foreign direct investment of Ethiopia

YRX_t = number of years elapsed since Ethiopia exported its first product under AGOA

$AGOA_t$ = dummy variable AGOA takes a value of 1 if Ethiopia has been declared eligible for benefits under the Act in the given year t, and 0 otherwise

3.3 Data base and Data Source

The study uses annual data from 1989-2008 for values of Ethiopia's exports to the US and its determinants. A dummy variable is included in the regression analysis to take care of the effect of AGOA on exports. Export values are taken from the IMF dots database 2007 edition. GDP values are taken from World Bank's "world development indicators" data base while average price indexes for both Ethiopia and the US are obtained from the IMF 2009 World Economic outlook data base.

Birr/dollar nominal exchange rate data is obtained from the Ethiopian economic association statistical data base, 2009. Institutional quality index of Ethiopia, as measured by economic freedom index, is taken from Heritage Foundation data base. FDI stock data is taken from the UNCTAD world investment report 2008 while transportation infrastructure, measured in the percentage of paved roads out of total roads, is obtained from world development indicators database of the World Bank.

3.4 Limitations of the Data Base

Nominal exchange rate data suffers from the limitation of years expressed in Ethiopian calendar while all other variables are expressed in the Gregorian calendar. Three variables namely Immigrant population of Ethiopia residing in US, transportation infrastructure and Institutional Quality are not included in the econometric model due to lack of time series data of the variables. The data obtained for the variables is rather used in the descriptive analysis section.

4 Empirical Analyses

4.1 Descriptive Analysis

4.1.1 Trade Profile under AGOA

US total trade with SSA (exports plus imports) increased by 28% in 2008, as both exports and imports grew. The growth is driven by growth in several sectors including machinery, vehicles and parts, wheat, non-crude oil, aircraft, and electrical machinery. US imports in 2008 increased by 27.8 percent, to $86.1 billion. As has been the case throughout 2008, this growth continues to be due to a significant increase of 31.9 percent in crude oil imports (accounting for 79.5% of total imports from SSA) (US - Africa trade profile, 2009).

Table 1: SSA – U.S. trade profile

year	US - trade with SSA (in million $)	
	US Export	US Import
2005	10,210.7	50,364.6
2006	11,859.7	59,092.8
2007	14,296.1	67,357.8
2008	18,471.9	86,052.7

Source: US-Africa trade profile online at
www.agoa.gov/resources/US_African_Trade_Profile_2009.pdf

Oil export (crude and non crude) is the leading SSA export to the US taking 82.75% of total exports in 2008 followed by platinum with a 3.5% share. Motor vehicles and parts are the third leading exports accounting for 2.25%. Minerals (diamonds, iron and steel) take the fourth and fifth place followed by textile. Other leading exports include ores, slag and ash, cocoa, organic chemicals, petroleum and other gases.

Table 2: Leading SSA exports to US in 2008

Item ($ Millions)	SSA export to US	Share of product in total SSA exports
Oil (Crude & non-Crude)	71,208.2	82.75%
Platinum	2,966.9	3.45%
Motor Vehicles and Parts	1,932.7	2.25%
Diamonds	1,572.7	1.83%
Iron and Steel	1,235.9	1.44%
Woven & Knit Apparel	1,151.5	1.34%
Ores, Slag, & Ash	896.8	1.04%
Cocoa	695.0	0.81%
Organic Chemicals	627.5	0.73%
Petroleum Gases & Other Gases	513.4	0.60%
Other products	3235.58	3.76%
Total	**86,052.7**	**100%**

Source: US-Africa trade profile 2009 online at www.agoa.gov/resources/US_African_Trade_Profile_2009.pdf

The country has also been one of the most important destinations of Ethiopia's exports in recent years. The highest exports to the US were recorded in 2007/08, declining in the consecutive year. The major factor for the relatively lower share in 2008/09 could be the financial crisis which has hit the country hard in the respective year. The share has picked up to 5% in August, 2009.

Table 3: Share of Exports to the US in Total Exports of Ethiopia

Year	% share of U.S. imports in total Ethiopia's exports	Ethiopia's export to the US (in million USD)
2005/06	4.81	48.14
2006/07	4.99	59.24
2007/08	7.25	106.30
2008/09	4.12	59.72

Ethiopia's share in total SSA's exports to US is however insignificant. Similarly, Ethiopia forms a very small fraction of Africa's total exports to US ranging from a maximum of 0.93% in 1982, pre- AGOA period, to a minimum of 0.02% in 2001, the first year of AGOA implementation. This can be explained by other African countries taking the lions' share. Nigeria, Angola, South Africa, and Republic of Congo accounted for 83.7 percent of US purchases from Africa in 2008 (US-Africa trade profile, 2009). The share of Ethiopia's in total Non- oil imports of the US is also insignificant.

Table 4: Ethiopia – U.S. trade profile

year		Ethiopia – U.S. trade profile			
	Exports of Ethiopia to US (in million $)	Total US imports under AGOA (in million $)	Share of Ethiopia's export in US total imports under AGOA	Oil import under AGOA	Share of Ethiopia's export in US non-oil imports under AGOA
2005	43.1	44,239.19	0.09%	41,081.606	1.36%
2006	77.64	35,865.70	0.21%	33,306.498	3.03%
2007	84.64	66,258.82	0.12%	61,154.766	1.65%

Source: http://www.agoa.info/index.php?view=trade_stats&story=all_groups and "DOTS" IMF CD ROM

Ethiopia's exports to US have been increasing significantly as indicated in the above table despite its insignificant relative export share. The share though insignificant, also shows an increasing trend in post AGOA period as can be seen from the following graph.

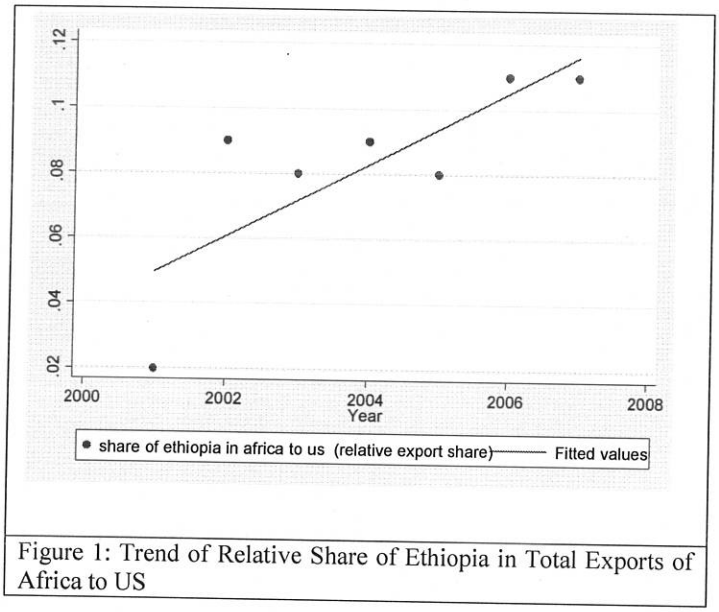

Figure 1: Trend of Relative Share of Ethiopia in Total Exports of Africa to US

More than three-quarters of Ethiopia's exports to US were agricultural products during the period 2005/06-2008/09. Coffee exports dominated followed by oil seeds which almost doubled in 2008/09 from its 2007/08 values. The only non-agricultural exports in the five most exportable products are textiles and garment which ranked third in 2005/06. Flower exports which is a newly introduced export item, ranked third in 2006/07 and maintained its rank for the following years.

Table 5: Ethiopia's Exports to the US by Product

	2005 / 06	2006 / 07	2007 / 08	2008 / 09
Total	48,138,494.04	59,243,973.41	106,304,602.2	59,722,216.93
Rank				
1	coffee (69)	coffee (60.46)	coffee (63.18)	coffee (41.32)
2	oil seeds(18)	oil seeds (24.42)	oil seeds (24.35)	oil seeds (43.48)
3	textile and garment (2.84)	flower (4.20)	flower (3.35)	flower (5.68)
4	flower (1.66)	textile and garment (3.89)	textile and garment (3.07)	textile and garment (4.34)
5	pulse (1.65)	skin (1.92)	pulse (1.87)	chat (0.89)

*Figures in bracket indicate percentage shares of the respective products
Source: Ethiopian Customs Authority

4.1.2 Pre / post AGOA exports

Average annual values (pre-and post-AGOA) of aggregate Ethiopia's exports to the US are presented in table 6 below. As can be observed, there is a significant post-AGOA decline in the value of Ethiopia's exports, compared to earlier years. The trend is however reversed in post-AGOA period. Exports in the pre-AGOA period, Graph 1, shows a decreasing trend over the years while its post- AGOA counterpart shows an increasing trend, Graph 2.

Table 6: Descriptive Statistics of Export (In Million USD)

Variable	Mean	Standard deviation	Min	Max
Exports to US*(Pre AGOA)	47.51	27.67	7.17	104
Exports to US*(Post-AGOA)	40.73	30.56	3.56	84.64

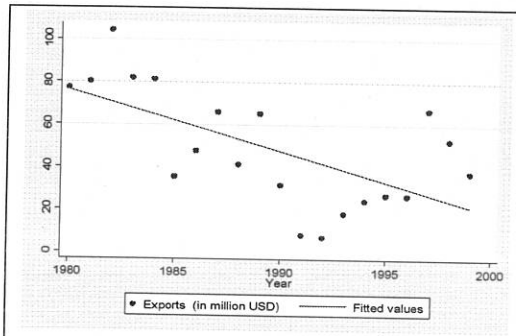

Figure 2.1: Exports of Ethiopia to U.S. (1980-2000)

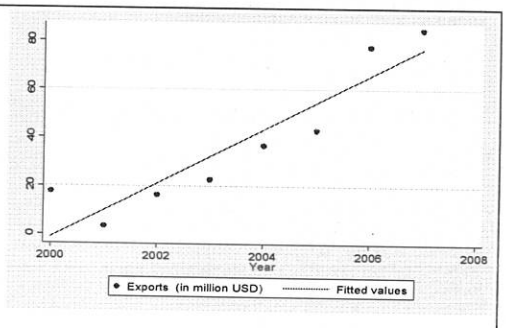

Figure 2.2. :Exports of Ethiopia to US (2001 - 2007)

4.1.3 Relationship between Export and its determinants

i. GDP of Ethiopia

Higher GDP values in the exporting country imply increased capacities for export. Graphical analysis shows that, the expected positive relationship between exports and Ethiopia's GDP holds only in the years of AGOA implementation.

Post - AGOA years show a tremendous improvement in the GDP of Ethiopia as can be seen from the descriptive statistics presented below. Ethiopia's GDP has shown 41.39% increase from its pre- AGOA average level. In addition to other favorable factors contributing to improve GDP, the Act could have also played its part by strengthened incentives in the country to move into higher productivity, nontraditional export areas. (Collier and Gunning, 1999; Biggs, 2007)

Table 7: Descriptive Statistics of Ethiopia's GDP (In Billions)

	Mean	Standard Deviation	Min	Max
GDP of Ethiopia* (pre-AGOA)	47.99	7.74	37.77	64.39
GDP of Ethiopia* (Post- AGOA)	89.38	21.55	67.75	

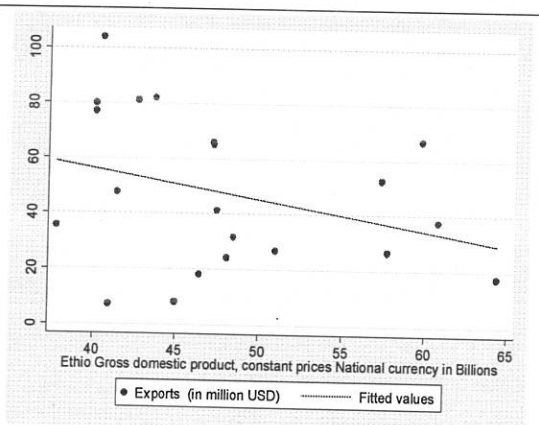

Figure 3.1: Pre – AGOA GDP of Ethio. and Export

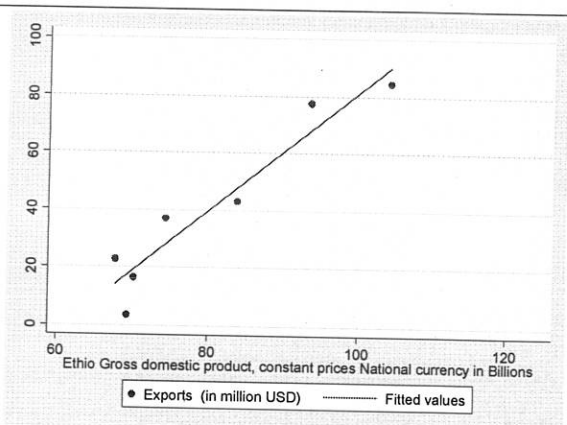

Figure 3.2: Post-AGOA GDP of Ethio and Export

ii. GDP of the US

Higher GDP values in the importing country imply greater potential for imports. As can be seen from the following graph, GDP of US shows a positive relationship only after the introduction of AGOA. The result indicates that Ethiopia has started responding to US's improved market after its access to US market has been improved by AGOA.

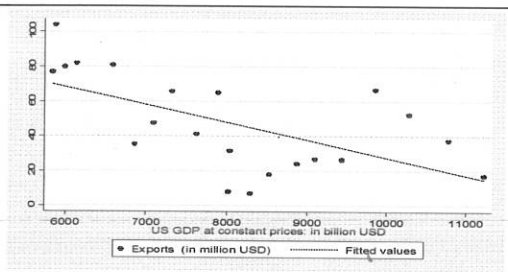

Figure 4.1: pre – AGOA GDP of U.S. and export

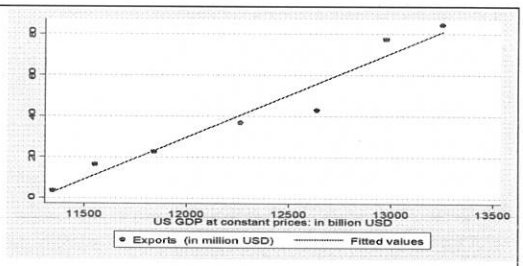

Figure 4.2: post – AGOA GDP of U.S. and export

Average value of US GDP has shown a 35% increase in post-AGOA period as can be seen from its descriptive statistics presented below.

Table 8: Descriptive Statistics of GDP of the US (In Billions)

	Mean	Standard Deviation	Min	Max
GDP of U.S. (Pre-AGOA)	8074.31	1621.48	5839	11225.97
GDP of U.S. (Post-AGOA)	12459.36	739.68	11347.17	13312.17

iii. Transport Infrastructure

"Weak infrastructure is a major obstruction to trade, competitiveness and sustainable development in most African countries, particularly land-locked and small island countries" (Mbekeani, 2007). Infrastructure has strong influence on competitiveness of domestic firms, especially in landlocked countries as a result of high road-transport costs. Better transportation facilities reduce cost to get to international markets and lessen input costs as suppliers face lower transport costs (Biggs, 2008).

Table 9: Descriptive statistics of Infrastructure (In Percentage)

	Mean	Standard deviation	Min	Max
INF of Ethiopia (pre-AGOA)	14.54	1.12	12	16
INF of Ethiopia (Post-AGOA)	12.71	0.48	12	13

The expected positive trend between the variable and exports is demonstrated only in post-AGOA period as shown in Graph 5 below. The improvement in other variables must have contributed to the trend regardless of the almost similar value of the variable over the years.

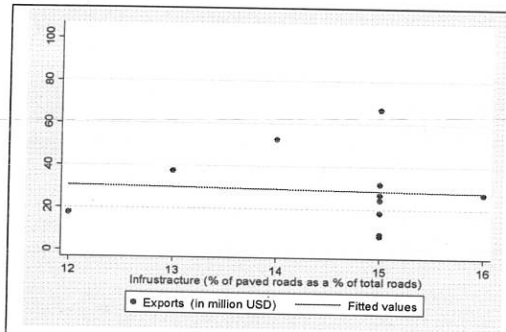

Figure 5.1: pre – AGOA INF and export

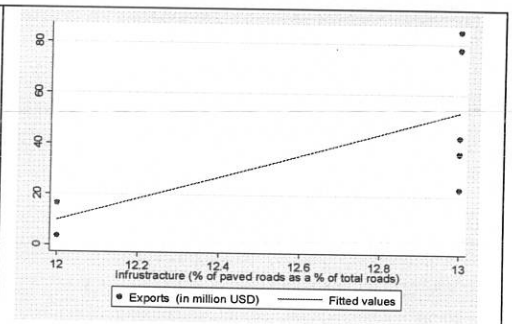

Figure 5.2: post – AGOA INF and export

iv. FDI stock in Ethiopia

If the motive behind FDI is to capture the domestic market, it may not contribute to export growth. On the other hand, if the motive is to exploit export markets by taking advantage of the country's comparative advantage, then FDI may contribute to export growth.

Both during the imperial and Derg regimes had been adopting inward oriented trade strategies indicating FDI inflows directed to capture the domestic market. This trend was changed by the implementation of the World Bank and IMF's structural adjustment program (SAP) and trade liberalization in 1992 (SAP) which aimed to promote the export sector. The change in strategy implies that FDI in Post- AGOA period is directed to exploiting foreign markets (Teshale, 2005) .The trend is demonstrated by the following graphs which indicate post- AGOA FDI promoting exports as compared to pre-AGOA period.

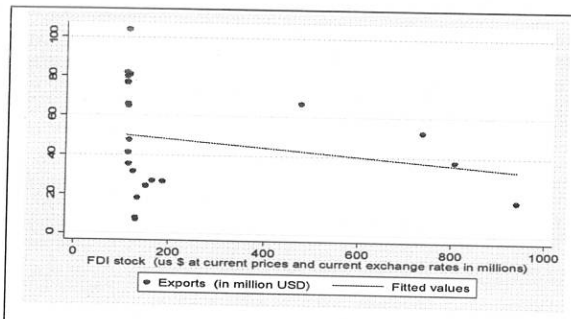

Figure 6.1: Pre – AGOA FDI Stock and Export

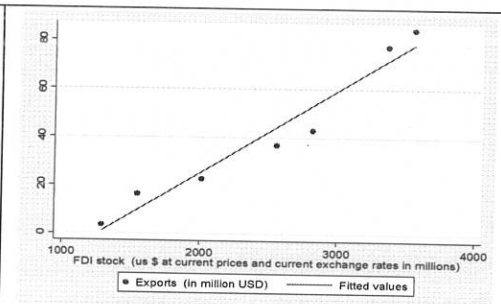

Figure 6.2: Post – AGOA FDI Stock and Export

Average value of the stock has also shown a 91% increase from its pre-AGOA level as can be seen from its descriptive statistics.

Table 10: Descriptive Statistics of FDI stock (In Millions)

	Mean	Standard Deviation	Min	Max
FDI of Ethiopia*(pre-AGOA)	242.95	259.28	109	941
FDI of Ethiopia* (Post-AGOA)	2603.75	917.68	129	3681

v. Institutional Quality

The quality of institutions and policies is important in determining whether countries can benefit from globalization. Economic freedom index is used in this paper to indicate institutional quality, which includes business freedom, trade freedom, fiscal freedom, monetary freedom, investment freedom, financial freedom, property rights, labor freedom and freedom from corruption. The descriptive statistics shows a 9% improvement in post-AGOA average score as compared to its pre-AGOA level.

Table 11: Descriptive Statistics of Institutional Quality (Score out of Hundred)

	Mean	Standard deviation	Min	Max
IQ of Ethiopia* (Pre-AGOA)	47.11	2.71	42.6	50.2
IQ of Ethiopia* (Post-AGOA)	51.65	2.30	48.8	54.5

Relationship between the variable and export shows a clear positive trend, with a better tendency in post- AGOA years, as can be seen below. Due to improved market access and better institutional quality to benefit from the opportunity, Post - AGOA effect of Institutional quality on Exports turns out to be stronger. But it should be noted that export can be the cause and also the effect of institutional quality.

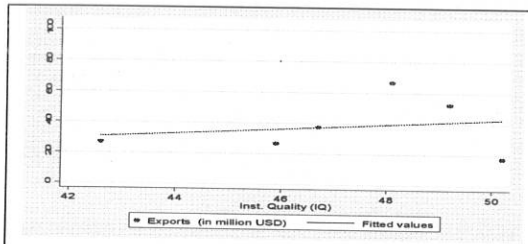

Figure 7.1: Pre – AGOA IQ and Export

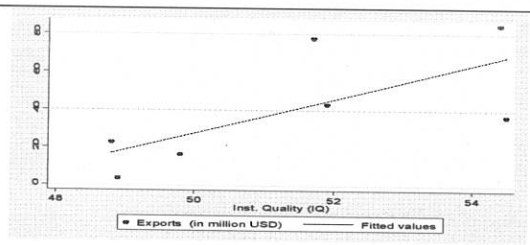

Figure 7.2: Post – AGOA IQ and Export

vi. Stock of immigrant population residing in U.S.

Immigrants exert positive influences on trade via preferences for home country goods, by supplying otherwise unavailable information to individuals involved in trade, and through informal mechanisms that help enforce contracts (Bedasa and Bichaka, 2007).The descriptive statistics of the variable indicates a 14% increase in its post- AGOA average level as compared to pre AGOA.

Table 12: Descriptive Statistics of Stock of Immigrant Population (In Thousands)

	Mean	**Standard Deviation**	**Min**	**Max**
IMG pop'n of Ethiopia in U.S (Pre- AGOA)	4942.44	960.10	3389	6086
IMG pop'n of Ethiopia in U. S(Post-AGOA)	5728.28	1739.02	4061	8237

The graphs below demonstrate the expected positive relation between exports and Ethiopian immigrant population living in US. Due to improved post- AGOA level of the variable as described above, the positive relationship is more pronounced in the period.

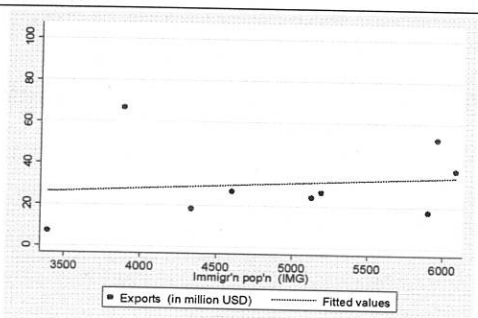

Figure 8.1: Pre – AGOA IMG and Export

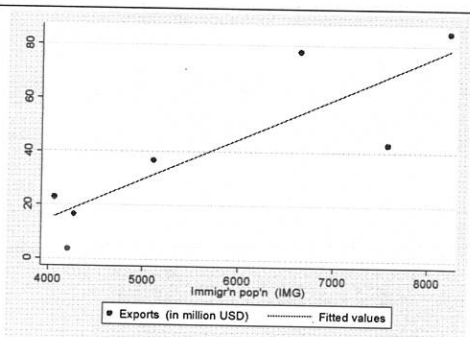

Figure 8.2: Post – AGOA IMG and Export

vii. Real Exchange Rate (Birr/Dollar)

Undervaluation of the currency can strengthen export competitiveness, as it raises returns to entrepreneurial activity. On the other hand, overvaluation of the currency can undermine competitiveness as it lowers returns to entrepreneurial activity especially in the area of discovering new, high-productivity exports. (Biggs, 2007)

The Ethiopian Birr was devaluated from 2.07 Birr per USD to 5.00 per USD in October 1992. This measure was taken to raise the profitability of export production and to make exports competitive thereby promoting exporters and redirect from unofficial to official channel market. (Teshale, 2005).The exchange rate further rose to 8.31 in 2000. As a result, the negative pre- AGOA relationship between RER and exports is completely reversed in Post-AGOA period as shown below.

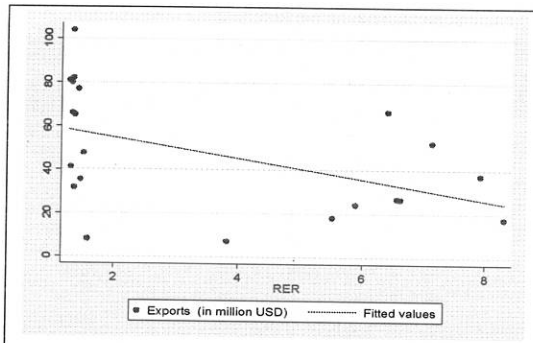

Figure 9.1 : Pre- AGOA RER (Birr/Dollar) and Export

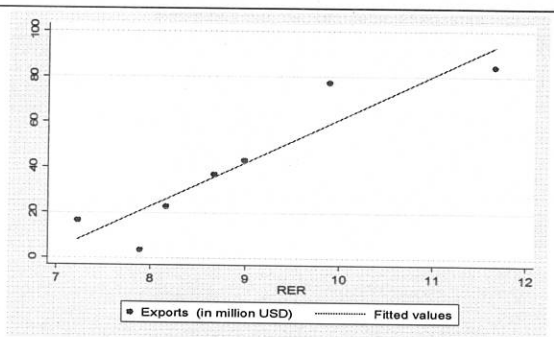

Figure 9.2: Post – AGOA RER (Birr/Dollar) and Export

Descriptive statistics of the variable also shows a 60% post –AGOA increase in average RER as compared to its Pre-AGOA level as presented below.

Table 13: Descriptive Statistics of Real Exchange Rate

	Mean	**Standard Deviation**	**Min**	**Max**
RER (pre-AGOA)	3.55	2.71	1.27	8.314
RER (Post- AGOA)	8.92	1.47	7.22	11.66

The graphical analysis shown above aligns with the results of Fugazza (2004) which suggest that foreign market access remains essential in explaining export performance even after controlling for supply capacity constraints. Supply side factors resulted in theoretically expected relationship with export only after the introduction of AGOA.

4.2 Econometric Analysis

4.2.1 Results of Unit Root Analysis

In time-series data it's necessary to check for stationarity of included variables before proceeding to any meaningful regression analysis. Stationarity is determined by performing unit-root test. The results of ADF test for unit roots is presented below

Table 14: Results of Unit Root Test for Order of Integration of the Variables

		ADF	
variables	Random walk	With drift (constant)	With trend and intercept
Log (EXPORT)t	-0.43	-2.20	-1.97
Log (Ethiopia's GDP)t	2.67	1.32	-1.04
Log (USGDP)t	9.40	-0.32	-4.10
Log (Foreign direct investment)t	3.75	1.47	-1.55
DLog (EXPORT)t	-4.92	-4.82	-4.87
DLog (Ethiopia's GDPt)	-3.33	-4.06	-4.44
DLog (GDP USt	-1.60	-3.96	-3.88
DLog (Foreign Direct Investment)t	-2.42	-3.17	-3.49
Critical value 1%	-2.66	-3.75	-4.38
5%	-1.97	-2.99	-3.60
10%	-1.60	-2.64	-3.24

The above result shows that the variables are non-stationary at levels while they are stationary at first difference. So the variables are considered as I (1).

4.2.2 Estimation of Error Correction Models

Having found that the variables are I (1), the next step is to check if any linear combination of the variables is stationary or if there exists a long run relationship. If Y_t and X_{ts} are not cointegrated they can drift from each other more and more and regression can result in spurious relationship. Cointegration test using the Johansen framework is performed and the result is presented below.

Table 15: Johansen Cointegration Test

Hypothesis No. of CE(s)	Eigen value	Trace Statistic	Max-Eigen Statistic	Critical Value 0.05	Prob.**
None *	0.40	13.32	3.76	6.65	None **

*denotes rejection of the hypothesis at 0.05.
Max-Eigen value and Trace test indicate 1 cointegrating eqn(s) at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The result shows the existence of one cointegration equation. The existence of cointegrating relationship indicates that there is a long run relationship between the series. Further, the short run dynamics can be described by the error correction model. (Madala, 1992)

Having found one cointegrating vector among the variables, the cointegrating equation is then estimated. The cointegrating equation gives precise estimates of the long-run parameters and valid t-statistics about the significance of these parameters. Accordingly, the following long run model is estimated with the given coefficients and t- values;

Table 16: Results of Estimated Long Run Model

Variable	Coefficient	t-Statistic
Constant	53.9	3.61
Log(Gdp of US)	6.29	12.58
Log (Ethiopia's Gdp)	-5.86	-9.6
Log (Foreign Direct Investment)	-0.13	1.44
Log (Real Exchange Rate)	0.10	1.11
Africa Growth and Opportunity Act	0.71	3.73

In the above model all coefficients, except Ethiopia's GDP, have the expected results. Agoa is statistically significant having a positive relationship with Ethiopia's exports to US in the long run.

Having obtained the long-run model and estimated the coefficients, the next step will be estimation of coefficients of the short-run dynamics from the error correction model.

The procedure adopted for estimation is the" general to specific modeling". In this approach a large model is estimated first which includes as many of the explanatory variables and their lags as possible. Then all insignificant explanatory variables are continuously dropped until a parsimonious model with few explanatory variables but acceptable in terms of significance, economic interpretation and diagnostic validity is obtained (Campos, Ericsson and Hendry, 2005). The Error Correction Model is estimated using OLS and the results are presented below:

Table 17: Results of Error Correction Model

Variable	Coefficient	t-Statistic	p-value
C	0.34	-1.39	0.17
dLog (US GDP)	6.60	1.01	0.32
Dlog (GDP Of Ethiopia)	4.25	2.61	0.01
Dlog(Years elapsed)	1.30	2.23	0.0373
Africa growth and opportunity act	-1.14	-2.05	0.05
E_{t-1}	-0.91	-3.78	0.00
R-squared			**0.525667**
Adjusted R-squared			**0.407084**
Durbin-Watson stat			**1.869173**
Breusch-Godfrey Serial Correlation LM Test: Obs*R-squared			1.97
ARCH Test Obs*R-squared			0.53
Ramsey RESET Test: F-statistic			0.14

The results of various diagnostic tests (the Breush-Godfrey Lagrange Multiplier (LM) test for serial autocorrelation, the autoregressive conditional hetroscedasticity test, and Ramsey's general test of model misspecification are reported and all tests did not detect any problem of serial correlation, hetroscedasticity and model misspecification.

The coefficient of the error correction term is significant with expected sign and large magnitude (-0.907). Its magnitude indicates that deviation from the long run equilibrium is adjusted fairly quickly where 90.7% of the disequilibrium is removed each period. Coefficients of the short run dynamics show that GDP of Ethiopia, number of years elapsed and AGOA are significant at 5%, indicating that the variables significantly affect exports of Ethiopia to US in the short run.

AGOA has a statistically significant result on exports at 5% though with unexpected negative coefficients. The negative coefficient of dummy for AGOA can be an indication of the shorter period of the act relative to the whole sample as supported by the descriptive analysis in the previous section. The graphical analysis of export against AGOA shows negative relationship, taking the full sample of 1980-2007. The trend is, however, completely different comparing Pre/post AGOA periods.

The statistically significant variable, the number of years elapsed since Ethiopia has benefited from the act reflects positive effect of experience gained over time in exploiting benefits from the Act. GDP of Ethiopia is an indication of the potential capacity of Ethiopia for export. Increased level of Ethiopia's GDP has resulted in increased level of exports to US as indicated by the positive and statistically significant results of the variable.

5 Conclusions and Recommendation

The central question investigated in this paper is whether AGOA has led to increased export from Ethiopia to the US. The investigation is based on time series data regression using an Error Correction Model. The study generates a statistically significant but unanticipated negative result of AGOA on Ethiopia's exports to US, in the short run error correction model. Regardless of the unexpected result concerning the impact of AGOA on Ethiopia's export to the US however; it was found that Ethiopia's export to the US have consistently trended up during post-AGOA period. The long run model also shows a positive and statistically positive impact of AGOA on Ethiopia's export to US.

The descriptive analysis shows that Ethiopia has not benefited from the act as much as other eligible countries. The statistically significant and positive impact of Ethiopia's GDP on export to the US imply that the country should work towards building its capacity to fulfill the quality and quantity standards of the importing country to be competitive in the US market and to further benefit from the act. The findings imply that the success of AGOA in further increasing Ethiopia's exports to the US market also depends on the experience gained by exporters in the process. Experience building should be knowledge based to be effective. Hence, awareness creation on how to benefit from the act and providing the necessary technical assistance to help business people engaged in exporting by the act is expected on the part of the government.

With the passage of time and the availability of sufficient cross-section and time series data, a country based study such as this one can result in a better econometric analysis result. Hence, until then, a panel data analysis comparing the beneficiary countries' status is recommended. It is also recommended that a further research to be conducted to analyze what proportion of Ethiopia's exports are destined to the US or whether Ethiopia is exporting more to other countries and if that has led to such results.

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Declaration

I, the undersigned, declare that this project work is my original work and has not been presented, in part or whole, in any other university or college. All sources of the materials used for this project work have been duly acknowledged.

Name Jotework Gudeta Ayele

Signature 

Date May 31, 2010